



# **An ontological analysis of the visual expression of water based homeopathic remedy, *Natrum muriaticum*, as droplet glass stain patterns**

By

**Dinesha Naicker**

Dissertation submitted in partial compliance with the requirements of the Master's Degree in Technology: Homeopathy in the Faculty of Health Sciences at the Durban University of Technology.

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I, Dinesha Naicker, do declare that this dissertation is representative of my own work, both in conception and execution.

_____	_____
Signature of student	Date of signature

## **Approved for Examination**

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Signature of Co-Supervisor	Date of signature
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Dedicated  
to the  
Seeker of true Healing.

## **ACKNOWLEDGEMENTS**

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My long time love affair with Homeopathy finally ends with a commitment: It is this healing art that fills my being with purpose; my Meraki!

## ABSTRACT

### INTRODUCTION:

The idea of the memory of water arose in the laboratory of immunologist, Jacques Benveniste in the late 1980s where his research into allergies took him deeper into trying to find out how the smallest amount of a substance could affect an organism. He experimented with Homeopathy by using highly diluted antibodies in his basophil degranulation test. He observed that highly dilute biological agents were still able to trigger the relevant biological system. (Thomas, 2007)

The memory of water is a controversial topic that requires more research to be properly understood and as such, it is the researcher's aim to gain insight on the memory of water.

### METHODOLOGY:

The purpose of this study was to examine the effect that the preparation of a Homeopathic remedy (*Natrum muriaticum*) has on water, as its solvent, using the glass stain analysis as outlined by Kroplin (2001). The possible ability of water to hold and store the memory of its solute, sodium chloride, was investigated. The results would be added to the critical reflection on current literature available.

In an experimental double blind study, Kroplin's glass stain method was used to analyse the following:

- The mother solution samples.
- The 9CH potency samples (within Avogadro's constant).
- The 30CH potency samples (past Avogadro's constant).
- As well as the water sample used to make the remedy as the control.

The above four samples were supplied from the following two manufacturers:

- Durban University of Technology (DUT) manufactured by the researcher (appendix 2).
- Samples manufactured by one commercial homeo-pharmaceutical company, Parceval Pharmaceuticals (appendix 3).

This research aimed to investigate, using homeo-pharmaceutical principles (dilution and succussion), the structural influence of a solute on water after the solution is diluted beyond Avogadro's constant. Repetition of the

experiment in week six aimed to investigate the validity of expiry time proposed by the homeopathic pharmacopoeia.

#### **RESULTS:**

- The stained picture patterns took on a consistent form of a starry night and the 'stars' seemed to increase in mass with potentisation suggesting that the homeopathic remedy manufacture process affects the outcome of the water's form.
- Overall consistency in picture patterns between both experimenters suggesting minimal observer effect.
- The experiment was repeated to test expiry date and these pictures displayed degradation and thus seemed to offer validation towards homeopathic remedy expiration.
- Although abstract qualitative results, a notable difference in water control and potentised water samples offer enough evidence for further investigations.

## CONTENTS:

ACKNOWLEDGEMENTS	3
ABSTRACT	4
<b>Chapter 1: Introduction</b>	
1.1. Water	19
1.2. Salt	20
1.3. The Glass Stain Method	22
1.4. Homeopathy& Science	22
1.5. Homeopathy& Health	23
1.6. An ontological perspective	24
1.7. Aim	25
1.8. Objectives	26
[A] Experimental	
[B] Ontological	
1.9. Hypothesis	27
1.10. Delimitations	28
<b>Chapter 2: Literature Review</b>	
2.1. Water	30
2.1.1. The Structure of Water	31
a) Water's density anomaly	31
b) Thermodynamic anomaly properties	33
1. Heat capacity - the capability to absorb heat energy	
2. Conductivity	
3. Entropy	
c) Water's complex behaviour in phase transitions	35
2.1.2. Nano-bubbles	36
2.1.3. Structure and Composition	37
2.1.4. Composition- The Addition of a Solute	39
2.2. Nanopharmacology	40
2.2.1. How the medicines are made (dilution and succussion	41
2.2.1.1. Homeopathic Remedy Manufacture	42
a) The Effects of Dilution on the Structure of Water	43
b) The Effects of Succussion / Agitation on the Structure of Water	44
2.2.1.2. Resonance	45
2.2.2. Basic understanding of how disease possibly affects the biological system / individual	46
2.2.2.1. Order And Chaos-Fractals	47
2.2.3. How the homeopathic remedy could affect the behaviour of the system/individual (rules of complex biological networks)	53
2.2.3.1. The Practitioner	53
2.2.3.2. The Placebo Effect	56
2.2.3.3. The Remedy	58
2.3. The Memory of Water	59
2.3.1. Theories to Consider for Water Memory	60
2.3.1.1. Super radiance	61
2.3.1.2. Water Clusters	62
2.3.1.3. Isotropic Lattices	62

<b>2.4. Salt: <i>Natrum Muriaticum</i></b>	63
2.4.1. The Remedy Personality of <i>Natrum muriaticum</i>	63
<b>2.5. Glass Stain Patterns</b>	65
 <b>3. Chapter 3: Research Methodology</b>	
<b>3.1. Materials and Method – The Guideline</b>	69
<b>3.2. Materials and Method as it Happened</b>	74
 <b>4. Chapter 4: Data Analysis</b>	
<b>4.1. Data Analysis Blinded</b>	82
4.1.1 Experiment 1	82
[A] Researcher's slides	82
[B] Microbiologist's Slides	84
[C] Researcher's Slides vs. Microbiologist Slides	86
4.1.2. Experiment 2	94
[A] Researchers Slides	94
[B] Microbiologist's Slides	95
[C] Researcher's Slides vs. Microbiologist Slides	97
 <b>4.2. Data Analysis Un-blinded</b>	106
4.2.1. Experiment 1	106
[A] Researchers slides	
i. Intra-group Analysis	
(a) Parceval	106
(b) Durban University of Technology	107
ii. Inter-group Analysis:	
Parceval vs. Durban University of Technology	109
[B] Microbiologist's Slides	111
iii. Intra-group Analysis	
(a) Parceval	111
(b) Durban University of Technology	113
iv. Inter-group Analysis:	
Parceval vs. Durban University of Technology	114
[C] Experiment 1:	
Intra-group Analysis - Researcher vs. Microbiologist	117
 4.2.2. Experiment 2	119
[A] Researchers slides	119
v. Intra-group Analysis	
(a) Parceval	119
(b) Durban University of Technology	121
vi. Inter-group Analysis:	
Parceval vs. Durban University of Technology	122



[B] Microbiologist's Slides	125
vii. Intra-group Analysis	
(a) Parceval	125
(b) Durban University of Technology	126
viii. Inter-group Analysis:	
Parceval vs. Durban University of Technology	127
Experiment 2:	
[C] Intra-group Analysis- Researcher vs. Microbiologist	130
[D] Intra-Group Analysis- Experiment 1 vs. Experiment 2	133
<b>Chapter 5: Data Analysis Conclusion</b>	
<b>5.1. Discussion</b>	138
<b>5.2. Obstacles For Further Investigation</b>	143
<b>Chapter 6: Conclusion</b>	145
<b>6.1. Suggestions</b>	149
<b>References</b>	150
<b>Appendix 1:</b> Preparation of Sodium Chloride, mother solution to <i>Natrum muriaticum</i> 30CH	150
<b>Appendix 2:</b> Permission for use of the DUT Homeopathic laboratory	157
<b>Appendix 3:</b> Permission to reprint in my thesis your company trademark name 'Parceval'	159
<b>Appendix 4:</b> Permission for use of UKZN laboratory	161

## **LIST OF FIGURES:**

<b><u>Chapter 2:</u></b>	
Figure 2.1: Typical water molecule (Chaplin, 2015)	31
Figure 2.2: Hexagonal structured water (Pollack, 2013)	32
Figure 2.3: Water Phase Diagram (Wikipedia, 2015)	35
Figure 2.4: Various water clusters (Daviss, 2004)	38
Figure 2.5: Water molecules to form a “thread-like” pattern (Lower, 2014)	38
Figure 2.6: Diagram of a typical pathophysiological frame representing the possible events involved in the disease process (Bellavite and Signorini et al., 2002:91)	46
Figure 2.7: (a) and (b) represent structure hydrate water cages with one "guest" molecule (methane) occupying each cavity. (Harrison, 2010)	62
Figure 2.8: The pictures (a) and (b) are from Emoto's (2005) flash freeze droplet experiments of water from Lake Lucerne, before praying for the water and after prayer	66
Figure 2.9: Fascinating pictures from Fisher's research - (c) Tears of timeless reunion and (d) Basal tears (Stromberg, 2013)	67
Figure 2.10: Homeopathic potency influence on water	68
<b><u>Chapter 3:</u></b>	
Figure 3.1: Slide dryings in UKZN Laboratory room	77
Figure 3.2: Dark field Microscope used at UKZN	78
Figure 3.3: Slide storage in UKZN Microscope Slide Case	80
<b><u>Chapter 4:</u></b>	
<b><u>Experiment 1:</u></b>	
Figure 4.1: Researcher: Slide 1: Three drops (1a), (1b), (1c) at magnification 2X left above and at magnification 4X left below	82
Figure 4.2: Researcher: Slide 2: Three drops (2a), (2b), (2c) at magnification 2X left above and at magnification 4X left below	82
Figure 4.3: Researcher: Slide 3: Three drops (3a), (3b), (3c) at magnification 2X left above and at magnification 4X left below	82
Figure 4.4: Researcher: Slide 4: Three drops (4a), (4b), (4c) at magnification 2X left above and at magnification 4X left below	83

Figure 4.5: Researcher: Slide 5: Three drops (5a), (5b), (5c) at magnification 2X left above and at magnification 4X left below	83
Figure 4.6: Researcher: Slide 6: Three drops (6a), (6b), (6c) at magnification 2X left above and at magnification 4X left below	83
Figure 4.7: Researcher: Slide 7: Three drops (7a), (7b), (7c) at magnification 2X left above and at magnification 4X left below	83
Figure 4.8: Researcher: Slide 8: Three drops (8a), (8b), (8c) at magnification 2X left above and at magnification 4X left below	84
Figure 4.9: Microbiologist: Slide 1: Three drops (1a), (1b), (1c) at magnification 2X left above and at magnification 4X right	84
Figure 4.10: Microbiologist: Slide 2: Three drops (2a), (2b), (2c) at magnification 2X left above and at magnification 4X right	84
Figure 4.11: Microbiologist: Slide 3: Three drops (3a), (3b), (3c) at magnification 2X left above and at magnification 4X right	84
Figure 4.12: Microbiologist: Slide 4: Three drops (4a), (4b), (4c) at magnification 2X left above and at magnification 4X right	84
Figure 4.13: Microbiologist: Slide 5: Three drops (5a), (5b), (5c) at magnification 2X left above and at magnification 4X right	85
Figure 4.14: Microbiologist: Slide 6: Three drops (6a), (6b), (6c) at magnification 2X left above and at magnification 4X right	85
Figure 4.15: Microbiologist: Slide 7: Three drops (7a), (7b), (7c) at magnification 2X left above and at magnification 4X right	85
Figure 4.16: Microbiologist: Slide 8: Three drops (8a), (8b), (8c) at magnification 2X left above and at magnification 4X right	85
Figure 4.17: Slide 1: Three drops (1a), (1b), (1c) at magnification 2x and at magnification 4x: researcher above and microbiologist below	86
Figure 4.18: Slide 2: Three drops (2a), (2b), (2c) at magnification 2x and magnification 4x: researcher above and microbiologist below	87
Figure 4.19: Slide 3: Three drops (3a), (3b), (3c) at magnification 2x and magnification 4x: researcher above and microbiologist below	88
Figure 4.20: Slide 4: Three drops (4a), (4b), (4c) at magnification 2x and magnification 4x: researcher above and microbiologist below	89
Figure 4.21: Slide 5: Three drops (5a), (5b), (5c) at magnification 2x and magnification 4x: researcher above and microbiologist below	90
Figure 4.22: Slide 6: Three drops (6a), (6b), (6c) at magnification 2x and magnification 4x: researcher above and microbiologist below	91
Figure 4.23: Slide 7: Three drops (7a), (7b), (7c) at magnification 2x	

and magnification 4x: researcher above and microbiologist below	92
Figure 4.24: Slide 8: Three drops (8a), (8b), (8c) at magnification 2x and magnification 4x: researcher above and microbiologist below	93
<u>Experiment 2:</u>	
Figure 4.25: Researcher: Slide 1: Three drops (1a), (1b), (1c) at magnification 2x left and magnification 4x right	94
Figure 4.26: Researcher: Slide 2: Three drops (2a), (2b), (2c) at magnification 2x left and magnification 4x right	94
Figure 4.27: Researcher: Slide 3: Three drops (3a), (3b), (3c) at magnification 2x left and magnification 4x right	94
Figure 4.28: Researcher: Slide 4: Three drops (4a), (4b), (4c) at magnification 2x left and magnification 4x right	94
Figure 4.29: Researcher: Slide 5: Three drops (5a), (5b), (5c) at magnification 2x left and magnification 4x right	95
Figure 4.30: Researcher: Slide 6: Three drops (6a), (6b), (6c) at magnification 2x left and magnification 4x right	95
Figure 4.31: Researcher: Slide 7: Three drops (7a), (7b), (7c) at magnification 2x left and magnification 4x right	95
Figure 4.32: Researcher: Slide 8: Three drops (8a), (8b), (8c) at magnification 2x left and magnification 4x right	95
Figure 4.33: Microbiologist: Slide 1: Two drops (1a), (1b) at magnification 2x left and magnification 4x right	95
Figure 4.34: Microbiologist: Slide 2: Three drops (2a), (2b), (2c) at magnification 2x left and magnification 4x right	96
Figure 4.35: Microbiologist: Slide 3: Three drops (3a), (3b), (3c) at magnification 2x left and magnification 4x right	96
Figure 4.36: Microbiologist: Slide 4: Three drops (4a), (4b), (4c) at magnification 2x left and magnification 4x right	96
Figure 4.37: Microbiologist: Slide 5: Three drops (5a), (5b), (5c) at magnification 2x left and magnification 4x right	96
Figure 4.38: Microbiologist: Slide 6: Three drops (6a), (6b), (6c) at magnification 2x left and magnification 4x right	97
Figure 4.39: Microbiologist: Slide 7: Three drops (7a), (7b), (7c) at magnification 2x left and magnification 4x right	97
Figure 4.40: Microbiologist: Slide 8: Three drops (8a), (8b), (8c) at magnification 2x left and magnification 4x right	97
Figure 4.41: Slide 1: Three drops (1a), (1b), (1c) at magnification 2x	

and magnification 4x: researcher's slides above / microbiologist below	97
Figure 4.42: Slide 2: Three drops (2a), (2b), (2c) at magnification 2x and magnification 4x: researcher's slides above / microbiologist below	98
Figure 4.43: Slide 3: Three drops (3a), (3b), (3c) at magnification 2x and magnification 4x: researcher's slides above / microbiologist below	99
Figure 4.44: Slide 4: Three drops (4a), (4b), (4c) at magnification 2x and magnification 4x: researcher's slides above / microbiologist below	100
Figure 4.45: Slide 5: Three drops (5a), (5b), (5c) at magnification 2x and magnification 4x: researcher's slides above / microbiologist below	101
Figure 4.46: Slide 6: Three drops (6a), (6b), (6c) at magnification 2x and magnification 4x: researcher's slides above / microbiologist below	102
Figure 4.47: Slide 7: Three drops (7a), (7b), (7c) at magnification 2x and magnification 4x: researcher's slides above / microbiologist below	103
Figure 4.48: Slide 8: Three drops (8a), (8b), (8c) at magnification 2x and magnification 4x: researcher's slides above / microbiologist below	104
<u>Researcher: Experiment 1:</u>	
Figure 4.49:Parceval aqua distillata	106
Figure 4.50:Parceval mother solution	106
Figure 4.51:Parceval <i>Natrum muriaticum</i> 9CH	106
Figure 4.52:Parceval <i>Natrum muriaticum</i> 30CH	107
Figure 4.53: The DUT Aqua Distillata	107
Figure 4.54: The DUT <i>Natrum muriaticum</i> mother solution	108
Figure 4.55: DUT <i>Natrum muriaticum</i> 9CH	108
Figure 4.56: DUT <i>Natrum muriaticum</i> 30CH	108
<u>Microbiologist: Experiment 1:</u>	
Figure 4.57:Parceval's Aqua Distillata	111
Figure 4.58:Parceval's <i>Natrum muriaticum</i> Mother Solution	111
Figure 4.59:Parceval's <i>Natrum muriaticum</i> 9CH	111
Figure 4.60:Parceval's <i>Natrum muriaticum</i> 30CH	112
Figure 4.61: The DUT Aqua Distillata	113
Figure 4.62: The DUT <i>Natrum muriaticum</i> Mother Solution	113
Figure 4.63: The DUT <i>Natrum muriaticum</i> 9CH	113
Figure 4.64: The DUT <i>Natrum muriaticum</i> 30CH	113

<u>Researcher: Experiment 2:</u>	
Figure 4.65:Parceval's Aqua Distillata	119
Figure 4.66:Parceval's <i>Natrum muriaticum</i> Mother Solution	119
Figure 4.67:Parceval's <i>Natrum muriaticum</i> 9CH	119
Figure 4.68:Parceval <i>Natrum muriaticum</i> 30CH	120
Figure 4.69: The DUT Aqua Distillata	121
Figure 4.70: The DUT <i>Natrum muriaticum</i> mother solution	121
Figure 4.71: DUT <i>Natrum muriaticum</i> 9CH	121
Figure 4.72: DUT <i>Natrum muriaticum</i> 30CH	121
<u>Microbiologist: Experiment 2:</u>	
Figure 4.73:Parceval's Aqua Distillata	125
Figure 4.74:Parceval's <i>Natrum muriaticum</i> Mother Solution	125
Figure 4.75:Parceval's <i>Natrum muriaticum</i> 9CH	125
Figure 4.76:Parceval's <i>Natrum muriaticum</i> 30CH	125
Figure 4.77: The DUT Aqua Distillata	126
Figure 4.78: The DUT <i>Natrum muriaticum</i> Mother Solution	126
Figure 4.79: The DUT <i>Natrum muriaticum</i> 9CH	126
Figure 4.80: The DUT <i>Natrum muriaticum</i> 30CH	127
<b><u>Chapter 5</u></b>	
Figure 5.1: Slide 8: <i>Natrum muriaticum</i> 9CH, left and Slide 1: <i>Natrum muriaticum</i> 30CH, right.	139
Figure 5.2: Potentised <i>Thuja</i> or <i>Aloe</i> , left and <i>Nat mur</i> 30CH, right.	139
Figure 5.3: <i>Natrum muriaticum</i> Mother Solution	140
Figure 5.4: Depicts the clathrate formation (Eyring, 2015)	140
Figure 5.5: Researcher's Aqua Distillata control stains, DUT experiment 1 on the left and Parceval experiment 2 on right.	141

#### **LIST OF TABLES:**

<b><u>Chapter 2:</u></b>	
Table 2.1. - <i>Natrum</i> svs <i>Muriaticum</i> s (Scholten, 1996)	64
<b><u>Chapter 4:</u></b>	
<u>Experiment 1:</u>	
Table 4.1. - Researcher's inter-group analysis of Aqua Distillata.	109
Table 4.2. - Researcher's inter-group analysis of <i>Natrum muriaticum</i>	

Mother Solution.	109
Table 4.3. - Researcher's inter-group analysis of <i>Nat mur</i> 9CH.	110
Table 4.4. - Researcher's inter-group analysis of <i>Nat mur</i> 30CH.	110
Table 4.5. - Microbiologist's inter-group analysis of Aqua Distillata.	115
Table 4.6. - Microbiologist's inter-group analysis of <i>Nat mur</i> Mother Solution.	115
Table 4.7. - Microbiologist's inter-group analysis of <i>Nat mur</i> 9CH.	115
Table 4.8. - Microbiologist's inter-group analysis of <i>Nat mur</i> 30CH.	116
Table 4.9. - Researcher vs. Microbiologist intra-group analysis of Aqua Distillata.	117
Table 4.10. - Researcher vs. Microbiologist intra-group analysis of <i>Natrum muriaticum</i> Mother Solution.	117
Table 4.11. - Researcher vs. Microbiologist intra-group analysis of <i>Natrum muriaticum</i> 9CH.	118
Table 4.12. - Researcher vs. Microbiologist intra-group analysis of <i>Natrum muriaticum</i> 30CH.	118
<u>Experiment 2:</u>	
Table 4.13. - Researcher's inter-group analysis of Aqua Distillata.	122
Table 4.14. - Researcher's inter-group analysis of <i>Nat mur</i> Mother Solution.	122
Table 4.15. - Researcher's inter-group analysis of <i>Nat mur</i> 9CH.	122
Table 4.16. - Researcher's inter-group analysis of <i>Nat mur</i> 30CH.	123
Table 4.17. - Microbiologist's inter-group analysis of Aqua Distillata.	127
Table 4.18. - Microbiologist's inter-group analysis of <i>Nat mur</i> Mother Solution.	127
Table 4.19. - Microbiologist's inter-group analysis of <i>Nat mur</i> 9CH.	128
Table 4.20. - Microbiologist's inter-group analysis of <i>Nat mur</i> 30CH.	128
Table 4.21. - Researcher vs. Microbiologist intra-group analysis of Aqua Distillata.	130
Table 4.22. - Researcher vs. Microbiologist intra-group analysis of <i>Natrum muriaticum</i> Mother Solution.	130
Table 4.23. - Researcher vs. Microbiologist intra-group analysis of <i>Natrum muriaticum</i> 9CH.	131
Table 4.24. - Researcher vs. Microbiologist intra-group analysis of <i>Natrum muriaticum</i> 30CH.	131
Table 4.25. - Experiment 1 vs. Experiment 2: Intra-group analysis of	

Aqua Distillata	133
Table 4.26. - Experiment 1 vs. Experiment 2: Intra-group analysis of <i>Natrum muriaticum</i> Mother Solution.	134
Table 4.27. Experiment 1 vs. Experiment 2: Intra-group analysis of <i>Natrum muriaticum</i> 9CH.	135
Table 4.28. - Experiment 1 vs. Experiment 2: Intra-group analysis of <i>Natrum muriaticum</i> 30CH.	136



### Table of Definitions:

- **Avogadro's constant** ( $6.0221412927 \times 10^{23} \text{ mol}^{-1}$ ) – the number of atoms or molecules that are contained in the amount of substance given by one mole.
- **Clathrate** - water clusters of a salt informed grid-like cavities (Bellavite et al, 2012).
- **Conductivity** - the ability or power to transmit heat, electricity or sound (Chaplin, 2015).
- **Copenhagen interpretation**- proposed physical systems do not have definite properties prior to being measured but rather lies in a superposition of probability. The act of measurement affects the system by reducing all probabilities to only one possible outcome making the act of measurement fundamental in the creation of what occurs (Baker, 2013).
- **Epitaxy** - the transmission of structural information from the surface (hence “epi”) of one material (usually a crystalline solid) to another (usually but not always a liquid) causing an ordered change of arrangement by the epitaxial film on the substrate (Rustum et al., 2005).
- **Energy** – the potential, kinetic, thermal, electrical, chemical, nuclear or other various forms of power available for change (Baker, 2013).
- **Entanglement** – correlated signals between particles. (Baker, 2013)
- **Entropy** - The unavailable thermal energy of a system needed for mechanical work often interpreted as the degree of disorder of a system (Chaplin, 2015).
- **Euclidian** – based on the geometry of definitions and undefined terms, the Euclidian structure becomes the distance between points and angles between lines which satisfy certain conditions creating the euclidian space (Buhner, 2004)
- **Expiry Date** – The date from when the medicine should no longer be used, as its medicinal effect is no longer effective. (Benyunes, 2005)
- **Fractals** – Benoit Mandelbrot created the term from the Latin word ‘fractus’, which means “something broken apart into irregular shapes”. Fractus is also the origin of the English words fraction and fragment. A fractal is something that has irregular, non-periodic shape. (Thus, fractal to describe Nature evokes the fundamental realisation that

everything we see, including ourselves, is only a fractional part of one very large whole.) (Buhner, 2004)

- **Gibbs free energies** - a thermodynamic potential measuring the reversible or maximum work that could be performed by a thermodynamic system at a constant pressure and temperature (Chaplin, 2015).
- **Heat capacity** - the capability to absorb heat energy by the ability to raise the temperature of 1 mole/gram of a substance by 1 degree Celsius without changing the phase of that substance. (Chaplin, 2015).
- **Isotopes** - atoms that have the same number of protons but different number of neutrons (Bellavite et al., 2002).
- **Locality** –principle that an object is influenced only by its immediate surroundings. (Baker, 2013)
- **Materia medica** (homeopathic) - is a text of the formal compilation of guiding symptoms of medicines obtained from “provings” (Vithoulkas, 1987:76-77). Different materia medica texts vary widely from each other in terms of length and utility, and its use is guided primarily by educational and clinical experience (Gordon, 2003:112).
- **Meta** – characterizes something that is characteristically self-referential. (Dara, 2005)
- **Nano** - a prefix in the SI unit; a system of units denoting  $10^{-9}$  (one billionth) (Chaplin, 2015).
- **Nano-bubbles**– are nanoscopic gaseous cavities. smaller than the wavelength of visible light, in aqueous solutions that have the ability to change the normal characteristics of water(Chaplin, 2015).
- **Observer** – in quantum mechanics, the witness to a measurement. (Baker, 2013)
- **Ontological** - relating to or based upon being or existence; a specification of a conceptualization (Corazzon, 2015)
- **Placebo** - a medicinally inactive substance used in controlled studies for comparison with presumed active drugs or prescribed with the intent to relieve symptoms or meet a patient's demands i.e. it is a “make believe medicine”, and it is allegedly inert and harmless (Beers and Berkow, 1999). It refers to a chemically inert, or inactive substance administered to a patient, and which has no direct chemical impact on the condition for which it is applied (Sue et al., 2000:106,521).

- **Potency or dynamization** - the biophysical property of a homeopathic medicine, conferred by serial dilution, succussion and/or trituration (Swayne, 1998:214). The potency indicates the specific strength of a homeopathic medicine. Remedies of 30CH potency or less are considered low potency remedies. (Ullman &Reichenberg- Ullman, 2000:101).
- **Quantum Entanglement** - where pairs or groups of particles interact in such a way that the quantum state of each particle cannot be described independently but rather particles can be invisibly connected despite time and space (Baker, 2013).
- **Remedy** - A means for the cure of a disease or other disorder of body, mind or spirit; any medicine or treatment that promotes restoration of health (O'Reilly, 2001).
- **Simillimum** - Swayne (1998) defines the simillimum as the drug picture most like the clinical picture in the patient. It is arrived at through carefully analysis of information found in the homeopathic case record.
- **Vital force** - According to Hahnemann, health and all life functions of an organism are attributed to the immaterial spirit-like life force (vital force) that enlivens the material organism, and keeps all parts of the organism in harmony. The vital force permeates our bodies animating it and only when there is an energetic imbalance of this vital force does the outward and inward manifestation of disease occur, perceived as symptoms (O'Reilly, 2001).
- **Vortexing / agitation / succussion**- the process employed in the homeopathic remedy manufacture whereby the bottle is held firmly in manufacturers hand/ machine and forcefully moved in a vertical up-down motion to stimulate a vortex within the liquid (O'Reilly, 2001).

### Major Abbreviations:

DUT – Durban University of Technology

UKZN – University of KwaZulu Natal

Nat mur – *Natrum muriaticum* (Homeopathic remedy)

# Chapter 1

## INTRODUCTION

*“All know that the drop merges into the ocean, but few know that the ocean merges into the drop”- Kabir(2014)*

### 1.1. Water:

Water makes up almost half our body weight, flowing through us to nourish, remove waste, lubricate joints and even regulate our body temperature. It plays an important role in almost every biochemical reaction within living organisms; by keeping ourselves hydrated we are able to sustain a degree of consciousness that allows us to experience life. In fact, one of the critical criteria for life to exist here, and probably everywhere else in the universe, is a planet with a liquid water environment. This life sustaining substance is one of the only molecules in the universe that can interact with so many of the elements on the periodic table and one of the only substances that can simultaneously exist in three states, solid, liquid and gas (Ball, 2000).

This marvellous substance has fascinated humans for eons, playing an integral part in folklore and even today scientists are perplexed over its various anomalous properties. It refuses to be like all other substances and often plays by its own rules (Ball, 2000): One of the most obvious deviations is its ability to float, as ice. A normal substance would get denser, and therefore heavier, as it changes from liquid to solid but not “rebel” water. This is due to water's refusal to be densest at freezing point, i.e. zero degrees centigrade, but rather it is densest at four degrees centigrade. The repercussion of this anomaly allows water in the oceans, rivers and lakes to freeze from top down allowing life in this aqueous environment to continue even in the coldest of winters (Ball, 2000).

According to Martin Chaplin (2012), an emeritus Professor of Applied Science at London South Bank University, there are forty one somewhat anomalies of water, some of which will be discussed in Chapter 2.

Water has valuable information to offer and it was the researcher's aim to explore the concept of water having the ability to hold information, i.e. memory.

## 1.2. Salt:

Sodium chloride commonly known as table salt occurs in nature as the mineral halite. Forty(40%) percent sodium and sixty (60%) percent chloride, salt produced by mining, by evaporation of brine from underground salt deposits and from seawater by solar evaporation. Found throughout the body, sodium chloride, together with potassium, forms an essential nutrient factor as part of the blood, lymph and cellular fluids and maintains the body's proper water balance. Sodium and potassium provide the electrical potential necessary for cell membrane selectivity. Sodium and chloride ions are needed in the nervous system, for muscular functions and to help stimulate gastric juices for digestion (Vermeulen, 2002).

This compound is used to preserve and flavour food but also holds spiritual properties. A powerful purifier to help cleanse, heal, balance energy and defend against negativity (Hamilton, 2014).

Salt equilibrium is often physically associated with the kidneys, adrenals and the water balance control in the body, so in prolonged states of stress the adrenal glands become exhausted and reduce the creation of aldosterone; a hormone that helps to retain sodium therefore the body attempts to replenish what is lost, resulting in a craving for salt. A metaphysical reason for the craving of salt could be a kind of self-mineralized fortification, using solidity and hardness to deal with experiences where fluidity of trust and acceptance is required (Grove, 2012).

Despite its bad reputation for being a contributing factor in major health issues, like hypertension when consumed in excess, there is no doubt that an adequate intake of salt in the human diet is required to maintain good health. It is also one of the major minerals associated with the maintenance of the electrical charge of the body (Cousens, 2005).

In Homeopathy the innate healing properties of the common table salt is awoken through the Homeo-pharmaceutical process into the remedy, *Natrum muriaticum*.

*“The physical world is an aggregate of frequencies” –Buckminster Fuller (Buhner, 2004).*

Towards the end of the 18<sup>th</sup> century, Dr Samuel Hahnemann (1755-1843) published Essay on New Curative Principle (Bellavite et al., 2002) that would merit him a prominent place in the history of medicine as the founder of Homeopathy. Even though many of the prominent principles that govern Homeopathy can be traced much earlier in history, Hahnemann was the first to systematise it.

Homeopathy is a safe and gentle form of natural medicine that aims to treat the individual rather than focusing on the physical symptoms. It works on the principle that the mind and body are so closely linked that to curatively treat the disease, an understanding of the unique character and constitution of the individual is required. This holistic diagnostic approach is the corner stone of Homeopathy (Lockie, 2000).

The movement of a mechanistic worldview of Cartesian-Newtonian science to a deeper understanding of matter through the Quantum Field outlook has been the motivation for searching for scientific evidence for the various phenomena in Homeopathy. The intent of this research was to explore the various theories surrounding the understanding of water and its ability to hold and store information. The experiment shall explore the possibility of structural changes in support of water memory.

### **1.3. The Glass Stain Method:**

For 15 years Prof. Kroplin (2001) worked with a group of scientists researching the understanding of the behaviour of the human body. Studying the bio-resonance techniques he aimed to predict the performance of organs and cells in the body under the effect of electromagnetic waves. This he believed would give a deeper insight to the energy of the cells that allows functioning of the body and as such invariably lead to the cure of many diseases. The research in bio-resonance led to the study of water as the basic element responsible for transporting information throughout the body. Understanding the way water collects, stores and transports information became essential in understanding the complex behaviour of our body. The glass stain method offered a way to gain a deeper insight in the study of water. The glass stain method was discovered by an artist, Ruth Kubler in 1989, who photographed dried drops of water under a dark field microscope. She found that the dried drops of water reflected typical structures according to their origin (Kroplin, 2001).

In their article 'A Preliminary Study on Pattern Analysis of Dehydrated Droplets', Matjaz Bevk, Igor Kononenko and Marko Sikonja from Ljubljana University in Slovenia investigated the electromagnetic influence on a substance using the glass stain method. (Bevk et al, 2003).

It is common knowledge to any housewife that water can stain glass. This is because tap water known as hard water contains high levels of calcium or magnesium, which is what is left behind as cloudy white spots after evaporation (Dickinson, 2015). This inspires the subtle idea of what water could possibly be carrying and as such it is the researchers aim to explore the glass stain technique within the field of Homeopathy.

### **1.4. Homeopathy and Science:**

The opinion that allopathic treatment is the only effective form of treatment for any disease has been reinforced by the tremendous progress conventional medicine has made in this century by treating through means of 'opposites'. Against this background there would seem to be little to no scope for Homeopathy though at present Homeopathy is still spreading. The efficacy of Homeopathy lies largely if not totally within the domain of experience, which is established in its many centuries of practice. Initially it seemed sufficient

for a self-contained homeopathic experience but now Homeopathy seeks theoretical innovation to evolve,

- Deeper understanding of the mechanism of action in Homeo-pharmaceuticals.
- Deeper insight into:
  - Water
  - Waters ability as a solvent and vehicle in Homeo-pharmacology.
- Homeopathic potentization has lead to the controversial aspect, which is that homeopathic medicines are diluted beyond Avogadro's number which means the end product has no molecules of the original substance and thus no crude active ingredient. This leaves much debate as to the authenticity of Homeopathic remedies as quality control is nothing more than paper trail. This research investigated a possible method of quality control for the manufacture of homeopathic remedies.

### **1.5. Homeopathy and Health:**

- Water plays a vital role in our body, as the one responsible for transporting information through the different parts of the body. Approximately seventy (70%) percent of the human body consists of water therefore understanding the way water collects, transports and stores information can be an important step in understanding the complex behaviour of our organs and their reaction to external agents and hence disease.
- Water in the form of a liquid is considered the one critical criterion necessary to sustain life on this planet. Its interaction with many of the elements in the periodic table produces the chemicals necessary for life (Porter, 2015). And as such may hold the key to understanding life itself.
- The Homeopathic rationalization of its theoretical basis is not only scientifically desirable but also necessary in view of the public health, social welfare and economic implications involved.



## **1.6. An ontological perspective:**

All that is real is not measureable as experienced in values such as love, trust and honour. But it is worthwhile to investigate the possibility of abstract concepts of information permeating matter to generate systematic changes with broader insight.

Medicine was created with the intention of alleviating man's suffering, whereby an individual continually seeks to improve, mend, and alter the overall nature and quality of his or her life (Levin, 2012). Due to the advancement in quantum field science we have been given a glimpse into the subtle energetic involvement of matter and yet the quantum theory began with Planck in the 1900 (Baker, 2013) medicine seems to still hold on to the Newtonian understanding where the disease is often investigated exclusively at the level of its dysfunction (Levin, 2012).

The perception of Homeopathy by scientists, doctors and the general public is profoundly influenced with the evolving concepts of science. The entangled relationship between Homeopathy and science lie with the scientist Count Amedeo Avogadro who proposed the Avogadro principle, which enables the number of particles in a given mass of a substance to be calculated. The implications for Homeopathy are that none of the starting Homeopathic remedy material is present in the high 'ultra-molecular' dilutions (Bellavite et al., 2002)

Although, it would be impossible within the framework of this research to explain all the philosophical related problems the researcher shall not avoid these considerations completely. The significance of understanding such philosophical concepts in relation to this research is to try to understand the homeopathic remedy in relation to its purpose of design in the whole scheme of things. The researcher aimed to give the reader a notion of what is measured in relation to its actuality in the world.

### 1.7. Aim:

- To compare the glass stains of samples from two different sources, i.e. DUT manufactured and one commercial source, before and after it is used as a solvent for homeopathic remedy *Natrum muriaticum* 30CH, using the Kroplin (2001) glass staining method,
- To evaluate the available theories on the structure and nature of water with reference to the experiment conducted and the understanding of water within the context of Homeopathy in order to provide a critical self-reflective ontological analysis.

The purpose of this study was to examine the effect that the preparation of a Homeopathic remedy (*Natrum muriaticum*) has on water, as its solvent, using the glass stain analysis as outlined by Kroplin (2001). The possibility of water to hold and store the memory of its solute, sodium chloride, will be investigated. The researcher aimed to evaluate the available theories on the structure and nature of water with reference to the experiment conducted and the understanding of water within the context of Homeopathy in order to provide a critical self-reflective ontological analysis.

The motivation for this analysis lies in the theory proposed by Hahnemann, founder of homeopathy, in his writings on medicinal dosage for cure i.e. The Law of Infinitesimal Dose (O' Reilly, 1996). In chemistry, water is known to be one of the best solvents, capable of holding the information of the solute in solution (Chaplin, 2012), but through the process of dilution the amount of solute decreases until, at the point of Avogadro's constant ( $6.0221412927 \times 10^{23} \text{ mol}^{-1}$ ), none of the crude substance is left.

In an experimental double blind study, the Kroplin's glass stain method were used to analyze the following:

- The mother solution samples,
- The 9CH potency samples (within Avogadro's constant) and
- The 30CH potency samples (past Avogadro's constant),
- As well as the water sample used to make the remedy as the control.

The above four samples were supplied from the following two manufacturers:

- Durban University of Technology (DUT) manufactured by the researcher.

- Samples manufactured by a commercial homeo-pharmaceutical company namely, Parceval Pharmaceuticals.

### 1.8. Objectives:

#### [A] Experimental:

For each observer as well as between observers:

First week of experiment:

1. Intragroup comparison of photographed samples, i.e., comparison between water, mother solution, 9CH *Natrum muriaticum* and 30CH *Natrum muriaticum* samples for each individual company.
2. Intergroup comparison of photographed samples, i.e.:
  - All water samples compared,
  - All mother solution samples compared,
  - All 9CH *Natrum muriaticum* samples compared and
  - All 30CH *Natrum muriaticum* samples compared.

Six weeks later: (As samples are supposed to expire within six weeks (Benyunes, 2005))

3. Intragroup comparison of photographed samples taken in week six.
4. Intergroup comparison of photographed samples taken in week six.
5. Intragroup analysis of comparisons between photographed samples taken in weeks one and six
6. Intergroup analysis of comparisons between photographed samples taken in weeks one and six

#### [B] Ontological:

- To critically evaluate some of the available theories on the structure and nature of water with reference to the experiment conducted and the understanding of water within the context of Homeopathy.
- What we observe and measure is a part of and not the whole and therefore the researcher aims to use available theories to gain and present a deeper and more complete outlook of what the experiment presents.

### 1.9. Hypothesis:

Considering the possible pictures of samples taken in week one and week six by both researcher and external technician:

1. The four water sample pictures of week one and the four water samples of week six shall hold a similar picture/ pattern to each other.
2. The eight water samples (week one and six) shall hold a different picture to the following:
  - The four mother solution samples of week one.
  - The four 9CH *Natrum muriaticum* samples of week one.
  - The four 30CH *Natrum muriaticum* samples of week one.
3. The eight mother solution samples (week one and six) shall hold a similar picture/ pattern to each other.
4. The eight mother solution samples (week one and six) shall hold a similar picture/ pattern to the following:
  - The four 9CH *Natrum muriaticum* samples of week one.
  - The four 30CH *Natrum muriaticum* samples of week one.
7. The four pictures of 9CH and 30CH *Natrum muriaticum* samples taken six weeks later shall show a loss in their structural pattern as compared to the four pictures of 9CH and 30CH *Natrum muriaticum* samples taken in week one.

### **1.10. Delimitations:**

Certain mechanisms of actions and influences on the pharmaceutical manufacture of Homeopathic remedies lie beyond the scope of this study and need to be excluded. These delimitations are as follows:

- The study will not seek to prove the authenticity of Homeopathy as it is the researcher's subjective view that the proof lies in Homeopathy's tenacity to help and heal the sick.
- The researcher has chosen a soluble substance as not to involve the trituration process employed in the manufacture of Homeopathic remedies, as this would now present with, the challenge of memory of sugar of milk, which is used in the trituration process.
- The study will exclude alcohol, which is regularly used in the manufacture of Homeopathic remedies as this would present one with the challenge of memory of alcohol.

This technological age demands explanations and science must not shy from daring hypotheses if they can lend themselves to experimental verification or invalidation. The following chapters shall journey into an ontological analysis of the visual expression of water based Homeopathic remedy, *Natrum muriaticum*, as droplet glass stain patterns. It is the researchers request that the reader step outside Euclidean thinking and perceive with more than just the rational mind.

*I have been thinking...*  
*I have been thinking of the difference between water*  
*I have been thinking of water and the waves on it.*  
*Rising, water's still water, falling back,*  
*It is water, will you give me a hint*  
*How to tell them apart?*  
*Because someone has made up the word*  
*'wave,' do I have to distinguish it from water?*  
*There is a Secret One inside us,*  
*The planets in all the galaxies*  
*Pass through his hands like beads.*  
*That is a string of beads one should look at with luminous eyes."*  
*-(Kabir, 2014)*

## CHAPTER 2:

### LITERATURE REVIEW

*“In science, it is only by observing new phenomena and eliminating errors in the antecedent theories that a more accurate picture of reality can be depicted” (Bellavite and Signorini et al, 2002)*

#### 2.1. Water

By definition, water is a chemical compound consisting of two hydrogen atoms and one oxygen atom. In water, each hydrogen nucleus is bound to the central oxygen by a pair of electrons shared between them as a covalent chemical bond. The name water typically refers to the liquid state of the compound. The solid phase is known as ice and gas phase is called steam. Also Known As: Dihydrogen monoxide, H<sub>2</sub>O (Helmenstine, 2012).

Water molecules are tiny and V-shaped with molecular formula H<sub>2</sub>O and molecular diameter about 2.75 Å. In the liquid state, the three atoms do not stay together as the hydrogen atoms are constantly exchanging between water molecules due to protonation / deprotonation. In water only two of the six outer shell electrons of oxygen are used for this purpose leaving the four electrons as two non-bonding pairs, repulsively arranged furthest from each other pushing the hydrogen atoms closer causing the tetrahedral geometry of the water molecule. The electron pairs are tetrahedrally arranged at angles of 109.47°. H<sub>2</sub>O ÷ trimers, oligomers and polymers where x varies from 2 to say 250, where Chaplin clearly shows water molecules appear in a whole range of sizes (Chaplin, 2015).

Water has the capacity to interact with various types of biological molecules due to its polar nature. It readily interacts and dissolves with polar molecules (hydrophilic molecules; water loving) such as acids, salts, sugars, and various regions of proteins and DNA and in contrast does not interact well with non-polar molecules (hydrophobic molecules; water-fearing) like oils and fat (Wan Ho, 2015).

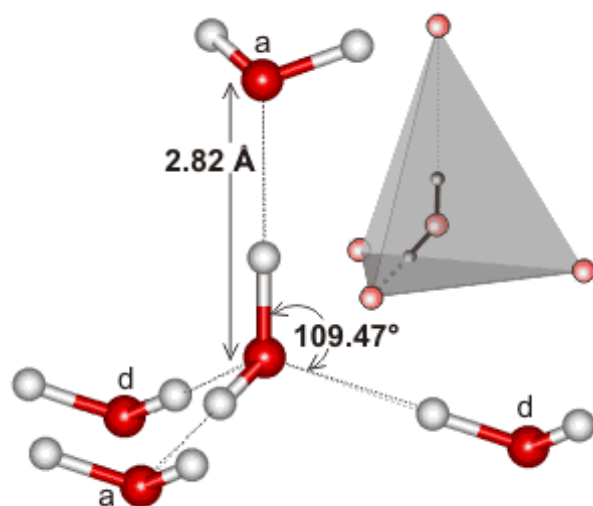


Figure 2.1: Typical water molecule (Chaplin, 2015).

#### 2.1.1. The Structure of Water-anomalies:

As introduced in chapter 1, water has fascinated science with its numerous anomalies and these anomalies may hold a key to understanding how water could possibly 'remember' Information. A brief overview of some of the anomalies that may be relevant will be elaborated further:

##### a) Water's density anomaly:

Solid state- highly developed static aspects of order.

Gas state- open system exchanging energy with environment, where dynamic aspects of order dominate.

The structure of solids and gases are fairly well understood at the molecular level with the findings of the regimented density of the regularly arranged particles for solids and the virtual isolation of particles of gasses. The structure of liquids on the other hand was less simple. Even though it may be constantly changing it is also not just random due to (Bellaviteand Signorini et al., 2002):

- Greater density of particles on the surface (Bellaviteand Signorini et



al., 2002)

- Weak forces of attraction of the particles (not strong enough for a rigid structure like in solids) (Bellavite and Signorini et al., 2002)
- Repulsive forces (imposes packing restrains of particles)-Van de Waal forces (Bellavite and Signorini et al., 2002)

Liquid water may include a fourth phase, a gel like phase known as exclusion zone water (EZ). EZ occurs when typical water comes in contact with water loving hydrophilic surfaces when infrared energy is available. The physical and chemical properties of EZ water differs from that of typical liquid water. EZ water has a negative potential and is more viscous, ordered and ten percent (10%) more dense than regular water. This structured water takes on the formulae of  $H_3O_2$ . (Pollack, 2013)

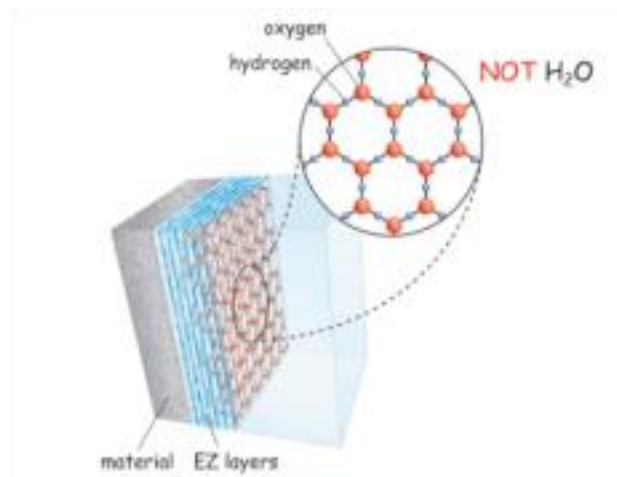


Figure 2.2: Hexagonal structured water(Pollack, 2013)

Structured water can be found in (Pollack, 2013):

- Spring water
- Glacial melt
- Plant juice water – juicing
- Infrared light
- Sunlight
- Vortexing

Interestingly, homeopathy employs vortexing / agitation / succussion in its homeopathic remedy manufacture (O' Reilly, 1996).

The high density of liquid water is due mainly to the cohesive nature of the hydrogen-bonded network, with each water molecule capable of forming four hydrogen bonds (Wan Ho, 2015).

One of the benefits of water's density anomaly allows ice to float on liquid water. It is usual for liquids to contract on freezing and expand on melting because the molecules are in fixed positions within the solid but require more space to move around within the liquid. But when water freezes which is at 0 °C its volume increases by about 9% under atmospheric pressure; therefore ice floats on water. The expansion between -4°C and 0°C is due to the formation of larger hydrogen bonded aggregates. The thermal expansion above 4 °C sets in as the vibrations of the O-H (Oxygen- Hydrogen) becomes more vigorous shoving the molecules farther apart (Chaplin, 2015).

An insect walking across the surface of a pond takes advantage of water's elastic film-like surface. Water's surface resists deformation when a small weight is placed on it due to water's surface tension. A water molecule within the bulk experiences attraction to neighbouring molecules in all directions but a molecule on the surface experiences forces of attraction only side wards and downwards creating a stretch membrane effect, giving rise to the liquid water's surface tension. Small quantities of liquids tend to form spherical drops because the sphere is the geometric shape that has the smallest ratio of surface area to volume and as the drops get bigger; their weight deforms them into the typical tear shape (Lower, 2014).

b) Thermodynamic anomaly properties:

The state of equilibrium of a system in an environment is said to be defined by its thermodynamic variables i.e. the forces acting on the system by its outside environment is counterbalanced by its inside forces. Thermodynamic variables include volume, concentration, temperature, pressure, etc., in relation to energy and or work. Thermodynamics helps to describe how thermal energy is converted from and to other forms of energy and how it affects matter (Resch & Gutmann, 1987).

Phase transitions in liquids are based on thermodynamic properties, mainly measurements of (Bellavite and Signorini et al., 2002):

1. Heat capacity - the capability to absorb heat energy (Chaplin, 2015).

When heat is absorbed hydrogen bonds are broken and water molecules can move more freely. When the temperature of water drops the hydrogen bonds form and release a large amount of energy. The specific heat or amount of heat 1g of water needs to absorb or lose to change its temperature by one degree Celsius is 1 calorie or 4,184 joules. As such water takes a long time to heat and to cool (Chaplin, 2015). Water's high heat capacity explains why oceans cool slower than land. The resistance to sudden changes in temperature makes water ideal for organisms to live in and gives humans the ability to absorb high amounts of heat before increasing temperature, thus maintaining body temperature (Ball, 2000).

2. Conductivity - the ability or power to transmit heat, electricity or sound (Chaplin, 2015).

A current arises from the flow of electrons and in water this is dependent on the number of ions and therefore the water's conductivity increases as the concentration of ions increases. Pure water is not a good conductor of electricity (Chaplin, 2015). In a study conducted by Elia et al. (2004) testing physico-chemical properties of extremely diluted aqueous solutions of homeopathic medicines, found increases of electrical conductivity in the treated solvent as compared to the untreated ones.

3. Entropy - the measure of the disorder of a system; when energy is unavailable to do work (Chaplin, 2015).

Entropy gives information of the evolution of an isolated system giving the direction of time because the natural course of an isolated system is to move towards a more disordered state. Water has high entropy of vaporization due to loss of hydrogen-bonded order during the vaporization of liquid to gas (Chaplin, 2015). Entropy simply tells us that in reality completely irreversible processes are not possible (Resch & Gutmann, 1987).

### c) Water's complex behaviour in phase transitions

A molecule as light as water should theoretically exist in the world as a gas boiling at  $-90\text{ }^{\circ}\text{C}$  but due to water's H-bonds it finds itself in a liquid state boiling at the higher temperature of  $100\text{ }^{\circ}\text{C}$  (Lower, 2014). But water can still move to the gaseous state without reaching boiling point as seen in evaporation where conditions (temperature and pressure) are such that at the phase interface there is a net reduction of free energy to take a molecule out of the liquid and into the gaseous phase. The difference between evaporation and boiling is that in the latter bubbles of gas form within or at the surface of liquid. The formation of the bubbles requires extra energy and comes from surface tension and from the need to expand against (atmospheric or container) pressure (Berezovsky, 2015).

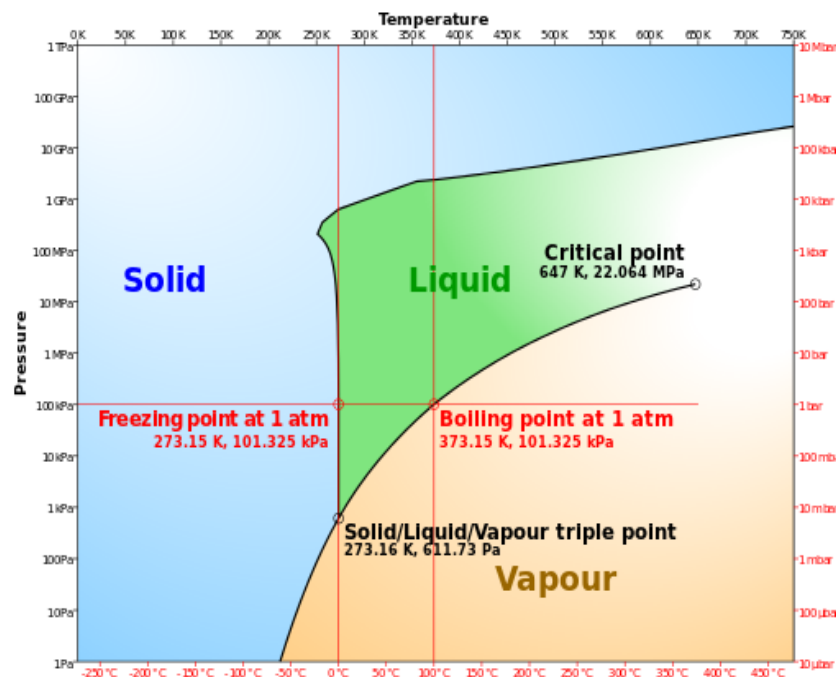


Figure 2.3: Water Phase Diagram (Wikipedia, 2015)

According to the phase diagram, temperature and pressure influence the physical state of water in a closed container, where;

- The triple point allows all three states of water to co-exist having identical Gibbs free energies but may abruptly and totally change into each other given a slight change in temperature or pressure. But at this singular temperature / pressure conditions, the boiling point of water and melting point of ice is equal. The 3 phases may

co-exist in equilibrium (Chaplin, 2012).

- Critical point occurs at the end of a phase line where the properties of the two phases become indistinguishable from each other, for example when, under singular conditions of temperature and pressure, liquid water is hot enough and gaseous water is under sufficient pressure that their densities are identical. At temperatures above the critical temperature a gas cannot be liquefied. Critical points are usually found at the high temperature end of the liquid-gas phase line (Chaplin, 2012).
- Supercritical point exists beyond critical point as small but liquid-like hydrogen-bonded clusters dispersed within a gas-like phase where physical properties whether gas-like or liquid-like behaviour vary in response to changing density and the normal distinction between gas and liquid has disappeared (Chaplin, 2015).
- Water has an unusually high melting point, boiling point and critical point (Chaplin, 2012).

#### 2.1.2. Nano-bubbles:

Solutions containing large numbers of bubbles are made by the vigorous shaking of gas and water, where the gas cavity has an internal equilibrium pressure of at least that of the outer environment. There are large bubbles, small bubbles and nano-bubbles of which the latter are smaller than the wavelength of light thus invisible to the naked eye. It is thought that bulk nano-bubbles exist in most aqueous solutions constantly created by cosmic radiation and agitation. Large bubbles are buoyant and following Stokes equation and other properties rise to surface but micro nano-bubbles can exist in both aqueous solutions as well as aqueous submerged hydrophobic surfaces for extended periods of time that they may be considered stable. Their long-lived presence could be due to their charged gas-liquid interface. Bulk nano-bubbles are subjected to Brownian motion and so behave as if they have a solid shell, like a nano-particle (Chaplin, 2015).

Water's density, surface area, thermodynamic properties and its unique ability to morph in either direction; solid, liquid, gas, are some of water's beautifully strange abilities. For the purpose of this section of research, it has been the researcher's aim to introduce the reader to water as an anomalous substance

and give rise to the possibility of water holding the ability to encode, store and retrieve information, in other words; remember.

The list of anomalies above is by no means exhaustive, but has been selected as relevant to this research project. Chaplin, (2015) does elaborate on a wider spectrum of anomalies.

### 2.1.3. Structure and Composition:

It is structure (not composition) that largely controls properties, and structures can easily be changed in inorganic phases without any change of composition. Science has found there is no difference in composition between a Homeopathic remedy and the pure water used to make it. But can there be no differences at all between them. The plausibility of the biological action of ultra diluted water remedies, are based on some very old (e.g. homeopathy) and some very new (e.g. metallic and nano-bubble colloids) observations, which have been rejected on invalid grounds or due to a lack of understanding of the materials research literature and its theoretical basis. Pure, thermodynamically stable or meta-stable liquid water can have more than one 3-D condensed matter structure and therefore its structure changed rather easily in non-linear ways without any change of composition. Thus, although there may be no difference in composition between untreated water and a homeopathically treated water remedy, there can be structural differences (Rustum et al., 2005).

Therefore, the appropriate question is actually on the longevity of particular structures, and the statistical distribution of particular structures, and function of temperature and other thermodynamic variables of influence. The concentration of the different clusters or fragments resembling “dense ice” which must be present in all water samples at say 3°C or 4°C, is very much higher than that present at room temperature and these clusters do not appear to disappear because of various bond breakage phenomena. They are in thermodynamically stable equilibrium (i.e. last forever) (Rustum et al., 2005).

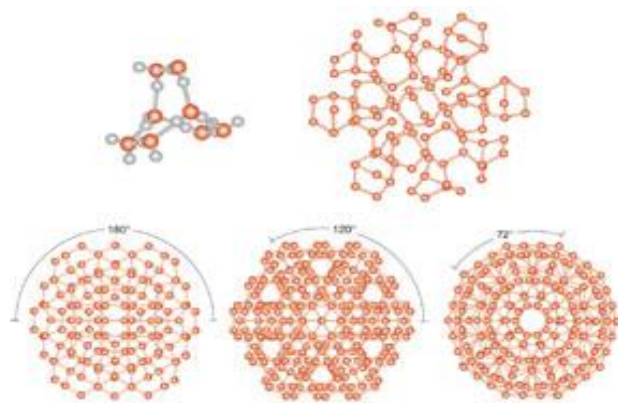


Figure 2.4: Various water clusters (Daviss, 2004)

As evident in figure 2.4, water molecules cluster to form hydrogen-bonded bicyclo-octamers ( $\text{H}_2\text{O}$ )<sub>8</sub> (top left) that can link into larger structures (top right). Ideally they form 280-member icosahedral clusters, ( $\text{H}_2\text{O}$ )<sub>280</sub>, (below), shown looking down the two-fold, three-fold, and five-fold axes of symmetry. Only the oxygen atoms of the constituent water molecules are shown (except at top left) (Daviss, 2004).

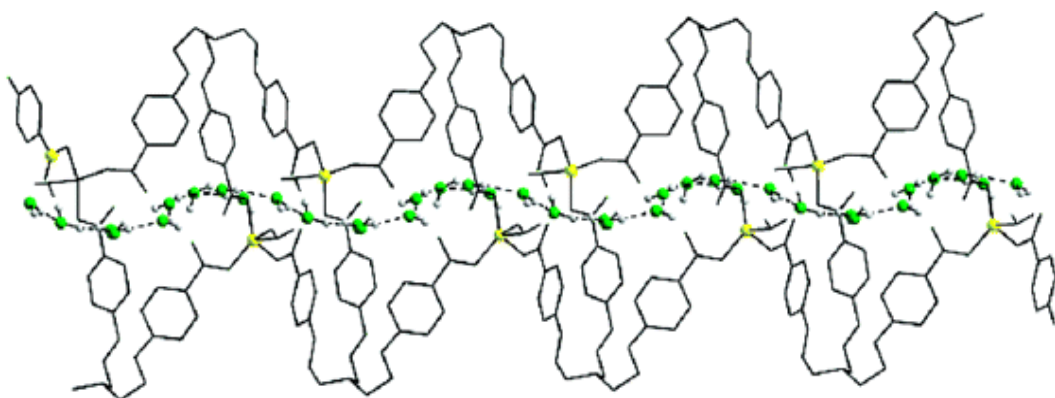


Figure 2.5: Water molecules to form a “thread-like” pattern (Lower, 2014)

In 2003, chemists in India found that a suitable molecular backbone (above) could cause water molecules to form a “thread-like” pattern that can snake its way through open space of the larger molecules, showing that water can have highly organized local structures when it interacts with molecules capable of imposing these structures on the water (Lower, 2014).

#### 2.1.4. Composition- The Addition of a Solute:

The polarity of the water molecule plays a major part in the dissolution of ionic compounds during the formation of aqueous solutions. Although the solubility of substances in water is an extremely complex process, the interaction between the polar water molecules and the solute (i.e. the substance being dissolved) plays a major role. When an ionic solid dissolves in water, the positive ends of the water molecules are attracted to the anions, while their negative ends are attracted to the cations. This process is called hydration. The hydration of its ions tends to cause a salt to break apart (dissolve) in the water. In the dissolving process the strong forces present between the positive and negative ions of the solid are replaced by strong water-ion interactions. When ionic substances dissolve in water, they break apart into individual cations and anions. For instance, when sodium chloride (NaCl) dissolves in water, the resulting solution contains separated  $\text{Na}^+$  and  $\text{Cl}^-$  ions (Encyclopaedia Britannica). The inclusion of molecules or ions generally destroys the local tetrahedral geometry of water. During the dissolution of salt (sodium chloride) into water it is found that the sodium chloride dissociates into two ions, each of which is surrounded by a layer of hydration where the dipoles of the water and the strong electrostatic interactions between the charge of the ion generates a mini-cluster. The lifetime of this cluster is 10 to 100 times greater than the lifetime of hydrogen bonds but not infinite (Teixeira, 2007).

Epitaxy is the transmission of structural information from the surface (hence “epi”) of one material (usually a crystalline solid) to another (usually but not always a liquid) causing an ordered change of arrangement by the epitaxial film on the substrate. Concentrations of the solute irrespective of Avogadro’s limit, dissolves and changes the liquid phase by providing a specific structure by the epitaxial film as a template (Rustum et al., 2005).

The seeding of clouds is an example of epitaxial growth of crystalline-ice on a substrate of AgI (silver iodide), whereby dispersing substances into the air that serve as cloud condensation or ice nuclei, which alter the microphysical processes within the cloud and thus the amount or type of precipitation that falls from cloud. Information and “memory” are transmitted from the seed or substrate to adjacent layers of the liquid phase, which can completely control



the structure of what is formed from it. No chemical transfer whatsoever occurs (Rustum et al., 2005).

In water composition becomes important when we only acknowledge the strong hydrogen bonds that give water its structure but in material science the weakest bonds (van de Wall forces) determine properties and can possibly influence the stronger bonds to change its structure (Rustum et al., 2005).

*“When he abandons discriminating knowledge, non-discriminating knowledge of itself arises within him.”- Masanobu Fukuoka (Buhner, 2004).*

## **2.2. Nanopharmacology:**

To understand the nature and the rationale of Homeopathic Pharmacology, it will be important to know: (O’ Reilly, 1996)

- How the medicines are made (dilution and succussion)
- Basic understanding of how disease possibly affects the biological system / individual.
- How the homeopathic remedy could affect the behaviour of the system/ individual (rules of complex biological networks).

### 2.2.1. How the medicines are made (dilution and succussion).

8, the internal spirit-like medicinal powers of crude substances. It does so by means of a procedure which belongs exclusively to it (and which was untried before my time) whereby these substances become altogether more than ever - indeed, immeasurably – penetratingly effective and helpful, even those substances which, in their crude state do not manifest the least medicinal power in the human body.

This remarkable alteration in the properties of natural bodies is achieved through mechanical action on their smallest particles by trituration and succussion, while these particles are separated from one another by means of an intervening, indifferent substance that is either dry or liquid. This procedure develops the latent dynamic powers of the substance which were previously unnoticeable, as if slumbering. The dynamic powers of these substances mainly have an influence on the life principle, on the condition of animal life. Therefore, this process is called dynamization or potentisation (development of medicinal power). Its products are called dynamizations or potencies of different degrees” (O’ Reilly, 1996:235-237).

Thus, according to Hahnemann’s writings in the *Organon* (O’ Reilly, 1996), it must be emphasized that Homeopathic remedies are made following vital steps to ensure the awakening of the substances latent healing powers.

If a substance is insoluble the basic steps per potency are as follows:

- Trituration
- Dilution
- Succussion

If a substance is soluble the basic steps per potency are as follows:

- Dilution
- Succussion

#### 2.2.1.1. Homeopathic Remedy Manufacture:

The current deterministic biomedicine has its primary focus on molecular pharmacology leaving homeopathic therapy at the outskirts. There has been research showing molecules of substances dissolved and diluted in water clump together rather than move further apart suggesting possible molecular mechanism of action of low potency homeopathic remedies (Milgrom, 2002).

Homeopathy is a complex science and its remedies too are complex. Homeopathic remedies are manufactured using the Law of minimal dose, which according to this Law, the more dilute the homeopathic remedy the more powerful the effect (O' Reilly, 1996). Homeopathy's founder (Samuel Hahnemann) himself realized there was virtually no chance that an original molecule would remain after extreme dilutions. He declared that vigorous shaking ("succussion") or pulverizing between dilutions would leave behind a spirit-like essence that cures by reviving the body's "vital force" -aphorism 269 (O'Reilly, 1996). Modern proponents postulate that the solution retains a "memory" of the substance. If this were true, every substance encountered by a molecule of water might imprint an "essence" that could exert powerful and unpredictable medicinal effects (Barrett, 2002).

In considering what is actually in our Homeopathic remedies numerous theories have been hypothesized. One theory is that during preparation, the dilution and agitation (succussion) process cause interactions between the original material and the vehicle (water/ alcohol) it is mixed with, creating tiny structures which are known as nanostructures or nano-bubbles which become the 'active ingredients' and is what remains present, dilution after dilution (Barrett, 2002).

*“One of our greatest limitations is our tendency to look only at the static, picture, the one confrontation. We want one-picture answers; we want key pictures. But we are now discovering that they are not available” – Buckminster Fuller (Buhner, 2004)*

a) The Effects of Dilution on the Structure of Water:

The study of high dilutions is a new field of study inextricably connected to the old problem on the nature of homeopathic medicine that has been the source of scepticism in homeopathy because its medicine are subjected to a series of dilution resulting in extremely low often non-measurable levels of active principles challenging the dose response dogma (Bellavite et al, 2012).

A substance is usually diluted in an inert medium like water or alcohol. Dilutions are called potencies and are prepared according to two principles employed in making a Homeopathic remedy, namely, dilution and succussion, and are numerically represented as the first potency containing 1 part substance to 100 parts medium, each successive potency is 100 times more dilute than the previous one. The Homeopath most commonly uses the 30<sup>th</sup> potency, which has a dilution of  $1 \times 10^{200000}$  (Sankaran, 1991).

Dilution denotes the addition of pure solvent to a solution, the initial solvent of which has dissolved a substance for example, an aqueous sodium chloride solution is diluted by adding pure water, thereby decreasing the concentration of sodium chloride. In a liquid the static aspects are weaker and the dynamic aspects more strongly developed than in a solid. Thus the solution would contain structural information from the 'structure breaking' solutes. Gases (structure makers) within the solution would act as maintaining the new structural information (Resch & Gutmann, 1987). The gases are found in the formation of nano-bubbles during agitation. Dilution would not result in a loss of information but rather chaotic oscillations, a change and variety of form, that is similar to the recurrent regularity typical of chaotic systems and fractals (Bellavite and Signorini et al., 2002).

b) The Effects of Succussion / Agitation on the Structure of Water:

Perhaps, scepticism would be justified if Homeopathic medicine were nothing more than high dilutions, however the process of high dilutions also involves agitation (succussion) that introduces mechanical energy and turbulence into the system that might impart a nano-heterogeneous structure to watery means of phenomena like coherence, epitaxy, temperature-pressure alterations. Succussion may also cause the formation of nano-bubbles that contain gaseous inclusions of oxygen, nitrogen, carbon dioxide, silica and possibly solute material. Water is a complex liquid capable of self-organization induced by mechanical perturbations, even small ones, Clathrate-like hydrate nanostructures formed during the dilution/succussion process is due to the chemical reactivity of different geometrical structures. High dilutions influenced by agitation, has been recently considered as colloidal solutions of nanoparticles of the original source material, the solvent and possibly the containers make-up (Bellavite and Signorini et al., 2012).

Succussion and dilution are vital steps in the manufacture of homeopathic remedies. In a thesis, *A New Approach to the Memory of Water*, German scientists, experimentally tested the difference between a succussed and an unsuccussed medium and found a significant difference. A greater intensity was found in the succussed medium. Thus succussion is thought to be an important means in a medium for retaining memory of its solute (Tschulakow and Yan et al., 2005). At each succussion step the less differentiated system (the dilute) would be modified by the static boundary conditions of the solution to a greater extent. Shaking facilitates the integral structural information from the solution and spreads it over the more diluted solution (Resch & Gutmann, 1987).

Stochastic resonance may also offer the physical explanation of the effect of agitation in the manufacture of high dilution remedies. Stochastic resonance is where a signal that is too weak to be detected by a sensor and can be boosted by adding white noise to the signal, which contains a wide spectrum of frequencies. This phenomenon shows that the susceptibility of a complex system is enhanced close to phase transition or critical point and when random energy is added even minute perturbations push the system over the energy barrier. Thus, stochastic resonance could offer the physical

explanation of the effect of succussion/ agitation in the preparation of high dilution remedies (Bellavite and Signorini et al., 2012).

Dilution brings about much of the controversy of Homeopathic remedies among mainstream medicine.

Although the idea that solutions beyond Avogadro's constant may exhibit biological and pharmacological activity remains inconceivable, Homeopathy continues to flourish as a medical system with quantum science lending us valuable insight as to its mechanism of action. Dilution on its own does not affect the solution but together with succussion, they become inseparably vital processes in the transfer of meta-molecular information potency after potency (Bellavite and Signorini, 2012).

#### 2.2.1.1. Resonance:

All living bodies consist of electromagnetic frequencies and it has been shown the homeopathic remedies have frequencies in the MHz-region, where cells and enzymes are working. Methods of measuring photon activity:

a) Tesla-coils, b) Delayed luminescence measured by a photomultiplier

Therefore, if the Law of Similars is fulfilled, the homeopathic remedies as photons would work by resonance. There are two possibilities for the remedy: to delete the ill frequency or to enhance its amplitude, i.e. the same remedy is able to cure an ill stimulation or an ill inhibition of the pathological pathways. Homeopathy is an electromagnetic regulation therapy that works by resonance (Lenger et al., 2014).

Homeopathy is regarded essentially by many doctors; as a commercial ploy exploiting the placebo effect. An open minded scientific approach of Homeopathy can offer both the medical practitioner and biological researcher major surprises and fascinating fields of investigation (Bellavite and Signorini, 2002).

*"It is the marriage of the Soul with Nature that makes the intellect fruitful, that gives birth to imagination"- Henry David Thoreau (Buhner, 2004)*

## 2.2.2. Basic understanding of how disease possibly affects the biological system / individual.

What is Disease?

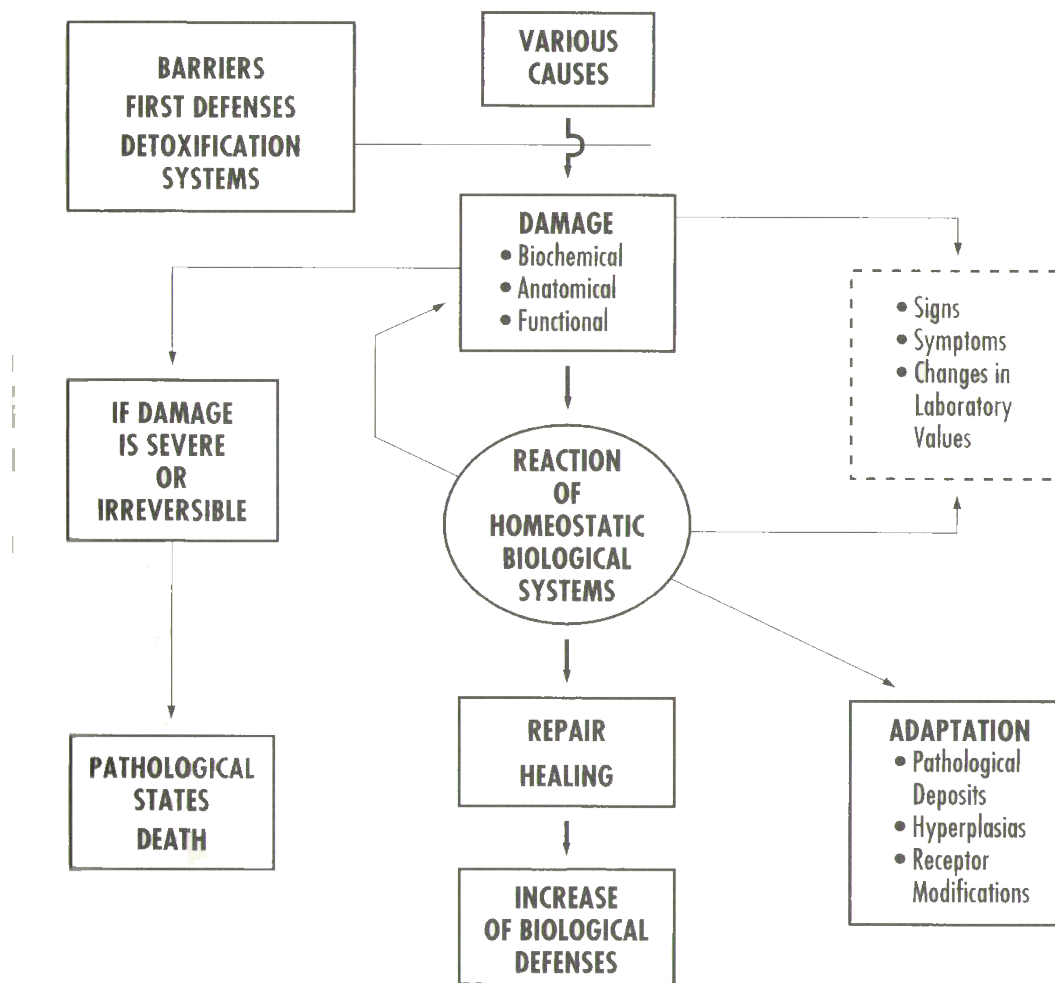


Figure 2.6: Diagram of a typical pathophysiological frame representing the possible events involved in the disease process (Bellavite and Signorini, 2002:91).

Easily interpreted, figure 2.6 shows the disease process as the invasion of some known or unknown cause breaking the barriers of defence of the organism resulting in biochemical, anatomical or functional damage that ultimately results in death, healing or adaption.

From the molecular standpoint taken by modern medicine today, disease is a disorder of structures and or functions with characteristic cellular and molecular abnormalities (Bellavite and Signorini, 2002). According to Lipton and Bhaerman, (2009) disease reflects the body's inability to maintain normal control of its function providing systems and because behaviour is created through the interaction of proteins with their complementary signals, disease would be either due to defective proteins or distorted signals to the proteins.

This progression in molecular based knowledge has helped to better diagnosis and thus offers a more rational drug prescription and continues to clarify the biological bases of disease. But even the most detailed molecular biology will not suffice in a satisfactory definition of the nature of disease and in pinpointing the true cause. Enquiry into understanding the nature of reality we can deduce that all that is perceived as real is part of a complex interrelating system and disease is no different. Disease is disorder from and within the system and more complex than an alteration of the molecular order (Bellavite and Signorini, 2002).

#### 2.2.2.1. Order And Chaos-Fractals:

Diversity of an ordered unknown can be initially mistaken as disorder or chaos. The ordered relations become obvious as soon as we have awareness of knowledge of purpose. Thus, purpose of order must be present even though we do not have knowledge about it. Disorder cannot exist without order. In relation to chaos and order we may now consider health as the condition of a human being that enables his or her body, soul and mind to contribute in an optimal way towards the actualization of his or her telos as a man or woman. Health is the functionality that meets the needs of the individual, the undisturbed dominance of the soul over the body showing itself in wellbeing and harmony. Thus, once man no longer behaves according to this innate programme, then that individual enters a diseased state that affects the whole being in a way that hampers fulfilment of purpose (Resch & Gutmann, 1987).

Chaos in itself is not negative since there lies within it an element of flexibility and an ability to generate diversity. The connectivity of the system as a whole in relation to the rest of the body can be lost when oscillations of the control parameters of the various physiological systems considered in biology and medicine oscillates in an excessively pointless and unpredictable manner generating amplified localised or systemic fluctuations of chaos of disease (Bellavite and Signorini, 2002).

Close observation of any natural object discloses a very irregular structure that becomes more disordered with depth of magnification. The irregular chaotic form, of all things natural always seems to elude Euclidean geometry but can be understood within the domain of fractals. Fractals bring to light



that everything we view including ourselves is but a fraction of a larger whole. Fractal geometry of Nature are the shapes created as life flows through physical space and because of its continuous flux nothing in this reality is ever static (Buhner, 2004). Pharmacology, particularly pharmacodynamics calculates the mathematical probability of chaos and order by means of strange attractors (to which a system is attracted to, thus order) and fractals, which, is the most suitable in describing chaos and complexity within the organism. The effect induced by a drug is a series of simultaneous changes in several variables that interrelate in a non-linear manner, implying that a dose of any drug may induce unpredictable changes in a complex system. Conventional medicine utilizes the statistical mean to overcome the variability but this does not work if the individual is considered to be a chaotic system (Bellavite and Signorini, 2002).

Chaos theory has been described in cardiology reporting that the heart rate of a healthy person varies over time with an intrinsically chaotic periodicity and not as was believed according to a sinus rhythm (Bellavite and Signorini, 2002; Buhner, 2004). Observation over time reveals similar fluctuations that can be understood with fractals (Bellavite and Signorini, 2002).

A study by Davidson et al. (2013) proposes that disruption of the biological water structure in extracellular and intracellular in cell space underlines many disease conditions. Using magneto-biology, nano-biology, and colloid and interface science a water driven route in pathology is reviewed. This study concluded that pathology could be traced to initial disruption of the coherent structure of water by very subtle stimuli, supporting exogenous interfacial water stress. In regards to disease, both gene structure and protein structure are intricately influenced by the biophysical status of interfacial water. It is hypothesized that an ionic influence in the water short circuits the coherent nano-engines of our bio membranes dramatically disrupting the delicately balanced structural entropy consumption that is required for charge separation and transmission of both energy and information throughout the body (Davidson and Lauritzen et al., 2013).

It can now be more easily understood that the individual is an organism of chaos and a multi-faceted holistic approach to his/her understanding as a fractal of the whole is required for assisting him/her in his or her journey

towards health.

According to Hahnemann, health and all life functions of an organism are attributed to the immaterial spirit-like life force (vital force) that enlivens the material organism, and keeps all parts of the organism in harmony. The vital force permeates our bodies animating it and only when there is an energetic imbalance of this vital force does the outward and inward manifestation of disease occur, perceived as symptoms. Therefore to understand the mistunement one must understand the entire organism in relation to its symptoms (O' Reilly, 1996).

*"You are not in the universe; you are the universe, an intrinsic part of it. Ultimately you are not a person, but a focal point where the universe is becoming conscious of itself. What an amazing miracle."*  
-Eckhart Tolle (2005)

As a self organized living system anything that touches it affects its balance by stimulating the system to shift its functioning in order to maintain its dynamic equilibrium and thus all living organisms are not static but rather poised, powerfully balanced, held in dynamic tension from one tiny fractal moment to the next (Buhner, 2004). Hahnemann may have had the same insight when he proposed his theory on health and disease when he attributed all life functions to a dynamic vital force, which has the ability to adjust according to circumstances without damaging the organism. Unable to function optimally the vital force manifests its derangements as mental, physical and/or emotional symptoms. Health would not be to live disease free but rather to experience this mistunement and then return to one's balance, which is not to the point from which it began but rather find a new ordered state.

*"Only through the vital force can cure proceed or disease be established."* –  
Kent (Resch & Gutmann, 1987)

#### Aphorism 9

"In the healthy human state, the spirit-like life force (autocracy) that enlivens the material organism as dynamis, governs without restriction and keeps all parts of the organism in admirable, harmonious, vital

operation, as regards both feelings and functions, so that our indwelling, rational spirit can freely avail itself of this living, healthy instrument for the higher purposes of our existence.” (O’ Reilly, 1996:65).

Hahnemann’s belief that all organisms were “enliven” by a spirit-like force, the vital force, could be why Hahnemann sort to treat disease which he felt was the mistunement of this vital force with a similar force, the ‘enlivened’ substance, the Homeopathic remedy. He originally diluted substances to make them less toxic in treatment but found together with succussion the substance became more potent. Somehow this process of potentization released the substance’s ‘spirit-like’ power (energy) creating the Homeopathic remedy!

In order to grasp the concept of disease and its influence on the individual the physician should also be somewhat aware of the nature of man and the phenomena we experience as reality.

*Frank Herbert, an American science fiction writer once said, “Deep in the human unconscious is a pervasive need for a logical universe that makes sense. But the real universe is always one step beyond logic.” (Buhner, 2004)*

But this is not science fiction. What we perceive through the senses may seem real and if real is something that we can taste, touch, smell and see then it is simply electrical signals interpreted by the mind. Bruce Lipton (2009) goes further to explain this as the information from our environment that triggers and activates our receptor cells to communicate this knowledge to the body via the effector cells. Thus suggesting that our perception of the world around us is what actually controls our behaviour (Lipton and Bhaerman, 2009). For a long time science seemed to avoid certain fundamental questions like ‘what is matter?’ Seemingly an easy question, most would consider matter the stuff that has mass and occupies space but this does not define what it is. Through logic of radical abstraction matter remains a principle, neither measurable nor observable itself. As we search for that one indivisible particle to which we could possibly endow with the title

of matter we enter the quantum realm where the interconnectedness or commonality of quanta provides little room for an independent mass. Yet matter is the fundamental concept through which we are able to perceive this reality and as such it is stretched out as a continuum, an undivided whole, a prerequisite for all forms although unperceivable itself because to imagine it is to give it form (Resch & Gutmann, 1987). So do we restrict ourselves to only what is perceived?

How can understanding that our thoughts and consciousness is somehow directly connected with the quantum physical world help make a difference in our physical world? (Milgrom, 2002)

The Copenhagen interpretation proposed physical systems do not have definite properties prior to being measured but rather lies in a superposition of probability. The act of measurement affects the system by reducing all probabilities to only one possible outcome making the act of measurement fundamental in the creation of what occurs (Baker, 2013). This according to quantum mechanics means that reality lies in an indeterminate state until observed and interactions between different locations in the universe are light speed limited, i.e. local (Milgrom, 2002)

*“It is by obeying the suggestions of a higher light within you that you escape from yourself and, in transit, as it were see with the unworn sides of your eye, travel totally new paths”-Henry David Thoreau. (Buhner, 2004)*

The implicate and explicate order proposed by quantum physicist, David Bohm (1917-1992) validates a holistic worldview in which things only become definable by time and space once the order unfolds, revealing the interdependent occurrence (Baker, 2013). Baker proposes that organisms interact with their inorganic surroundings to form a complex self-regulating system that contributes to the maintenance of life, an interdependent reality. The interdependent nature of reality suggests a connectedness, which should not be neglected when analyzing any concept because any knowledge of an isolated molecule alone would be of no value to predictions of the continuum. There is an objective world independent of whether we observe it or not where the elements within it are somehow connected non-locally, i.e. instantaneously. This entanglement suggests that the universe is fundamentally holistic and is the theory behind the Transactional

Interpretation of quantum mechanics (Milgrom, 2002). As we move away from the linear mechanistic worldview of Cartesian-Newtonian science it may be difficult for most of us to logically comprehend what we experience as reality through the quantum outlook but we must strive to bring awareness to our experience.

*"I regard consciousness as fundamental. I regard matter as derivative from consciousness. We cannot get behind consciousness. Everything that we talk about, everything that we regard as existing, postulates consciousness."*  
–Max Planck (Buhner, 2004)

Scientific research lends us insight to the workings of the marvellous continuum but it must be noted that what we measure and observe is a part of and not the whole. The researcher aims to gain insight, through what is offered from this research, into the mysterious element, water.

Quantum physics lends us the idea that reality is not as solid and predictable as we would like to assume it to be yet the experience of the phenomena known as life cannot be denied by those experiencing. And when the experience becomes more important than the cause as an assumed dominating rule over nature is taken and we forget our complex interconnected and interdependent relationship with nature. It is the illusion of the single self, where the experience supersedes the idea; I think therefore I am? If a relationship between all things exists, an observation and a measurement of any part of any system are relative to that part and its investigator. Increased knowledge of the part creates increased difficulty in describing the system itself in scientifically precise terms and thus shows the limitations of a reductionist approach (Resch & Gutmann, 1987).

### 2.2.3. How the homeopathic remedy could affect the behaviour of the system/ individual (rules of complex biological networks).

*“For the theatre of the world is so ordered that there exist in it suitable signs by which human minds, likenesses of God, are not only invited to study the divine works, from which they may evaluate the founder’s goodness, but are also assisted in inquiring more deeply’ –Johannes Kelper (Baker, 2013).*

#### 2.2.3.1. The Practitioner:

The homeopathic practitioner not only requires academic knowledge and skills but also compassion, patience, and an ability to provide human comfort and reassurance, sensitivity to the patient’s emotional problems and therapeutic skills in the management of the psychological aspects of the illness. These attitudes and skills are important in the self-development journey from student to practitioner because in Homeopathy the identification and treatment of a specific disease is not the essence of the medical care.

The entire edifice of Homeopathic diagnosis lies in understanding the total symptomatic picture of the diseased individual, this includes:

- The mental, emotional and physical pathological alterations
- Personal traits, likes and dislikes
- Life history and
- The influence of environmental factors. (O’ Reilly, 1996).

It is important to note that the patient as a subject sometimes has difficulties in describing him or herself as the object therefore the art of the Homeopath must now be brought to the forefront in order to supply a comprehensive picture of the conscious and unconscious symptoms of the patient (Resch & Gutmann, 1987). The doctor-patient relationship is built on trust and willingness of open uninfluenced communication.

Quantum theory involving non-locality and entanglement could operate at not just the microscopic level but also at the macroscopic level. Every homeopath’s greatest challenge lies in finding the correct remedy that matches the patient’s particular pattern of symptoms. Considering quantum mechanics the patient, practitioner and the remedy may be entangled (Milgrom, 2002).

But one could consider why the need for such a broad symptom picture of

mentals, emotions as well as physicals.

Candace Pert (Pert, 1999) who is a neuroscientist who did a lot of research on the neuropeptides gives insight into the world of neuropeptides. She describes amino acids as the letters that when combined in certain sequences, form the words that are peptides, or the sentences that are polypeptides or proteins which make up a language that forms and directs the function of every single cell, organ and system inside the body, from the deepest vibrations of the DNA molecule inside the nucleus of every cell, to the macrocosmic systems function of the whole individual being. Pert explains that all neuropeptides have a similar molecular structure, with subtle differences in the tertiary structure, meaning that only the frequency and amplitude at which each molecule oscillates (wavelike vibrations of electrons in each molecule), differ. She explains neuropeptides change configuration (like a chameleon) due to emotional influence. She was the first to call neuropeptides molecules of emotion. Pert says: 'it is possible now to conceive of mind and consciousness as an emanation of emotional information processing, and as such, mind and consciousness would appear to be independent from brain and body' (Pert, 1999). Neuroscience can now show that our thoughts and emotions play an intricate role to our physical wellbeing.

*"I suggest that the body and soul react to each other in sympathy. A change in the state of the soul would necessarily have an effect on the body and vice versa"—Aristotle (Resch & Gutmann, 1987).*

As discussed earlier, reality is an interconnected mesh, the continuum. Quantum science suggests observability is in fact intricately woven into the unfolding experience of reality.

Homeopathy lies outside the deterministic paradigm. A non-local model based on Jungian synchronicity and semiotics may offer a better understanding of the homeopathic experience. The quantum transactional interpretation considers all parts (energetic or matter) as part of a holistic network filling the universe and this suggests this connectivity between particles is instantaneously 'aware' of what is occurring to every other particle

regardless of their spatial and temporal separation in the universe (Milgrom, 2002).

According to the homeopathic materia medica each remedy offers a 'personality', which is derived from the 'artificial symptoms' produced by healthy volunteers that have ingested that particular remedy in a homeopathic drug proving. If the remedy shows proven ability to cure patients presenting with the symptoms detected during the proving then, the symptom picture of that remedy is recorded in the so-called 'materia medica', the encyclopaedia of homeopathic drug effects. The materia medica is continually being checked, modified and updated. Using the materia medica, the homeopath matches this 'personality' to that of the dis-eased patient's symptom picture and by the Law of Similars a healing reaction is triggered which appears as an initial aggravation of the disease before the patient's ailments are alleviated (O' Reilly, 1996). The healing is not a direct suppressive effect by the substance administered as is according to the 'Law of Opposites' but rather a result of the individual's reaction to the action of the 'vital force' or 'life force' that the remedy would have, according to classical homeopathy, triggered (Bellavite and Signorini, 2002).

*"Remedies can be considered homeopathic when their locality, as defined by preparation and potency, becomes by prescription entangled with the non-local therapeutic interaction between patient and practitioner; the triadic totality curing the case."-(Milgrom, 2002).*

If one assumes there is nothing in Homeopathic remedies then how does cure come about? One thought is that the detailed holistic approach to case taking provides the patient with an opportunity to reflect on his/her disease thus can be seen as the Homeopaths true means of treatment, which would make one assume that all diseases treated and cured by homeopathy was merely psychosomatic, mind over matter. Could healing just be a matter of being receptive to suggestion?



#### 2.2.3.2. The Placebo Effect:

The human body is seen as a biomechanical machine and due to its apparent observable nature the body has taken precedence over the mind in the medical model. This perception has the general public convinced of our genetic determinism as victims of heredity. Many doctors have reported spontaneous remission in the terminal after a fundamental change in the patient's personal belief. The value of the mind in healing is dismissed because it just does not fit into the Newtonian paradigm (Lipton and Bhaerman, 2009). The spontaneous recovery of Dr Deepak Chopra's terminally ill patients lead him to investigate the human bodies healing capabilities. Using western medicine, neuroscience, physics and Ayurvedic theory, he discovered that the human body is controlled by a network of intelligence based in quantum reality. He proposes that this 'intelligence' has the ability to redesign our physiology (Chopra, 1990). Dissociative identity disorder (DID) has some surprising physiological consequences like each alternate personality has a unique electroencephalogram (EEG) profile. The eye colour can change in the short interval it takes to transition from one ego to the other. These implications lead to the premise that the 'mind' controls the immune system and shapes the character of our health (Lipton and Bhaerman, 2009). Is this 'intelligence' the same 'vital force' Hahnemann intuitively understood was the centre of disease and health of any individual, so many years ago.

Pavlovian conditioning shows the behavioural influence of association. Repetitive action of a neutral through added association to the original act/stimulus can elicit the same reflex / unlearned response and thus becomes a conditioned reaction to the neutral according to Pavlov (McLeod, S.A. 2013). If Homeopathic healing was related to repetitive administration of its remedy dosage then any homeopathic remedy would elicit the same drug response, which it does not. Although Homeopathic remedies have similar aesthetic qualities, i.e. alcohol tinctures or sugar pills; they hold the imprint of various plant, mineral, animal and other sources. Homeopathic remedies boast that it comes with no side effects, no drug interactions and is completely safe to use (O' Reilly, 1996). Critics consider any effect to be placebo due to the absence of any active ingredient in these remedies and this is the source of most of the controversy behind Homeopathy.

Throughout the 19<sup>th</sup> and 20<sup>th</sup> centuries the controversy of Homeopathy seemed about to be decided in favour of Allopathy, yet Homeopathy survived. To this day Homeopathy receives criticism with physicians throughout the world divided into supporters and opponents. Homeopathy's efficacy is proven through its unbelievable tenacity to survive more than 200 years using the same methodology as which it began but accusations, insinuations and imputations are held steady by the lack of Euclidean knowledge of Homeopathy's mode of action. Homeopathy claims that 'meta-molecular information' is contained in the aqueous or water-alcohol solution, which would mean that some sort of order and memory occurs when information from solute to solvent is, transferred (Resch & Gutmann, 1987). Thus, the complex behaviour of the liquid is investigated and now as science acknowledges the quantum realm, a deeper scientific understanding of the pharmaceutical manufacture of Homeopathic remedies and its dynamic nature may be possible. It is not the researchers aim to prove Homeopathy but to gain insight of those aspects of Homeopathy that seem to elude scientific reasoning. To do this we may have to step outside Euclidean reasoning and attempt to view the natural non-linear order of Nature.

#### 2.2.3.3. The Remedy:

Through his visionary understanding of the energetic basis of health and healing Hahnemann formulated Homeopathy as a scientific system of medical treatment, based on his doctrine of the law of cure, 3 basic principles of Homeopathy which is the bases of classical Homeopathy is outlined:

1. *Similia Similibus Curentur* (Likes are cured by likes). This simply implies a disease can be cured by administering the patient a substance (the *similimum*) that, in healthy humans, causes symptoms similar to those of the disease.
2. The Law of Infinitesimal Dose, the minimal dose of the substance should be used in order to prevent toxicity and forms the bases of homeo-pharmacology where substances are diluted in a stepwise manner and subjected to vigorous shaking (*succussion*) at each step removing toxicity and initiating the inherent medicinal properties of the substance.
3. The Law of Minimum Dose, only a single remedy or substance should be used in a patient at any one time. (O'Reilly, 1996).

Homeopathy's efficacy has been proven through experience with its ability to survive over 200 years as a medical art. The biological mechanism resulting in the regulatory processes affected by high dilution remedies must yet be unravelled. Various investigations into high dilution remedies suggest some subtle and early levels of signal transduction and/or genetic expression. Changes in the structure of water influenced by *succussion* and high dilution might influence water surrounding the cells and therefore also signal detection and transduction. Further investigation is required to confirm this hypothesis (Bellavite and Signorini, 2012). This research may bring more insight.

A deeper understanding of Homeopath's pharmaceutical manufacture is needed and as science acknowledges the quantum realm a scientific understanding of its remedies may be possible and as such this study aims to investigate one possible theory, that is, 'the memory of water'.

### **2.3. The Memory of Water:**

The idea of the memory of water arose in the laboratory of immunologist, Jacques Benveniste in the late 1980s where his research into allergies took him deeper into the mechanisms that create such responses. In trying to find out how the smallest amount of a substance could affect an organism he experimented with homeopathy by using highly diluted antibodies in his basophil degranulation test. He observed that highly dilute biological agents were still able to trigger the relevant biological system. The experiment when repeated by those challenging Benveniste's results were not reproduced to a certain type of reproducibility that is required in scientific research and thus lead to much controversy (Thomas, 2007). Benveniste's conclusions proved so intriguing that it led many scientists to further investigate.

Scientists found that the activity causing basophil degranulation has a chaotic and unpredictable recurrence pattern and could be explained with the mathematical iterations that generate fractals (Bellavite and Signorini, 2002). Many chemists agree that any temporary disruption of the water structure by a dissolved agent would disappear within a fraction of a second after its removal by dilution past Avogadro's constant due to the vigorous thermal motions of the water molecules (Lower, 2014). Lower (2014) points out that, other scientists have not yet convincingly replicated Benveniste's results. He also goes on to state that in 2010, a UK parliamentary committee report requested the government to withdraw funding and licensing of homeopathy suggesting it's non-effective as a medicine.

According to Bellavite and Signorini (2002) Homeopathy is presently being revived through emerging quantum scientific research accompanied by the awareness of the indeterminacy of our reality. The movement of a mechanistic worldview of Cartesian-Newtonian science to a deeper understanding of matter through the Quantum Field outlook has been the motivation for searching for scientific evidence for the various phenomena in Homeopathy.

The intent of this research is to explore the various theories surrounding the understanding of water and its ability to hold and store information for later retrieval. The experiment shall explore the possibility of structural changes in support of water memory.

Homeopathy is a complex science and its remedies are also complex. Homeopathic remedies are made using the Law of minimal dose, which according to this law, the more dilute the homeopathic remedy the more powerful the effect. Hahnemann himself realized there was virtually no chance that an original molecule would remain after extreme dilutions. He declared that vigorous shaking ("succussion") or pulverizing between dilutions would leave behind a spirit-like essence that cures by reviving the body's "vital force" (O Reilly, 1996). Modern proponents postulate that the solution retains a "memory" of the substance. If this were true, every substance encountered by a molecule of water might imprint an "essence" that could exert powerful and unpredictable medicinal effects (Barrett, 2002).

The new theory by Gerald Pollack of the University of Washington, relates to the structuring effect of the water molecule on the dynamics of the cytoplasmic gel (Lower, 2014). Cell biology may be governed by a single unifying mechanism – the phase transition – fourth phase of water.

#### 2.3.1. Theories to Consider for Water Memory:

Highly diluted remedies, prepared according to the homeopathic methods, assumed to be endowed with specific biophysical information. Theories to consider:

- Super radiance
- Water Clusters
- Isotropic lattices

It is important to have some understanding of water organization in liquid water. Liquid water is highly structured in its tetrahedral forming state and at the same time highly flexible due to its thermodynamic nature as was discussed above.

#### 2.3.1.1. **Super** radiance

Water molecules are electric dipoles. Studies done by a group of physicists from the Milan Institute of Nuclear Physics have discovered that the interaction between water molecules is taken as the sum of intermolecular binary interaction. This electromagnetic field contributes insignificantly to the dynamics of water in quantitative terms hence when a number of elements interact via electromagnetic field which is beyond a certain density whose value depends on the wavelength of the electromagnetic field thus resulting in the system setting itself in a configuration in which most of the molecules move coherently and are kept in phase by the field itself. Thus, this electromagnetic radiation field, i.e. a long-range messenger, brings order to the vibratory motion of the molecules. Super radiance brings to light the theory of water-mediated long-range interactions that make it possible for a molecule to transmit information independently of direct contact with the other molecule. The stability of such a field still has to be investigated (Bellavite and Signorini, 2002).

In regard to Homeopathy, the process of its remedy manufacture i.e. dilution and succussion brings about turbulence that can possibly cause the shell of hydrogen bonds of the coherent domains to relax. This gives the external electric field (generated by the dissolved material) a chance to communicate with the polarization field of the water solvent and assign its new vibratory frequency. It can be postulated that the shell re-forms, protecting the new frequencies from outside influence at the end of the succussion process (Bellavite and Signorini, 2002).

### 2.3.1.2. Water Clusters

The memory of water may be based on clathrates, which are aggregates of water molecules that assume a grid-like arrangement set around an internal niche or cavity. The molecules can align themselves in pentagonal or hexagonal forms due to their hydrogen bonds. During dissolution a certain number of molecules of the solute are thought to be surrounded by the water molecules forming a kind of shell or niche around it. It is thought that such a niche may remain stable even if the original compound is expelled from the niche itself. Thus, dilution and succession would empty the clathrates but the empty shell would remain acting as the nucleus for the formation of other clathrates with the same original pattern potency after potency (Bellavite and Signorini, 2002).

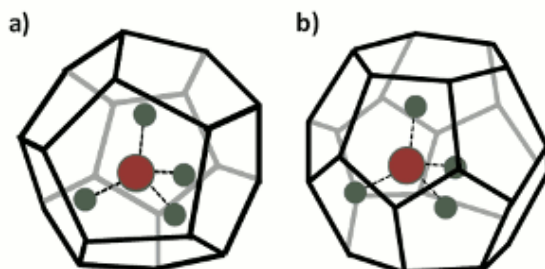


Figure 2.7: (a) and (b) represent structure hydrate water cages with one "guest" molecule (methane) occupying each cavity. (Harrison, 2010)

It is thought that these micro cavities are able to exist in a variety of forms and combinations. It may be possible that clathrates form chains, which could represent the site of coherent interaction. Resonance between coherent patterns of the solution and a frequency pattern of a living organism may present the means of interactive communication for healing (Bellavite and Signorini, 2002).

### 2.3.1.3. Isotropic Lattices:

Chemical elements are mixtures of various stable isotopes (atoms that have the same number of protons but different number of neutrons). Water is mainly made up of Hydrogen (H) and Oxygen (O) but a small proportion of

water is made of these elements isotopes, 2 stable oxygen isotopes and 3 stable hydrogen isotopes. In solution these are randomly distributed. The hypothesis is that the distribution of the isotopes can create an information-carrying pattern (isotropic lattice ghosts) because of its various positional organisations. It is thought that the coded information is protected from thermal disordering by polarization effects, which can energetically stabilize isotopic interaction (Bellavite and Signorini, 2002).

But like the clathrate theory, isotropic lattices are hypothesis and require further investigation to prove or disprove its actuality. This research may provide some insight.

#### **2.4. Salt: *Natrum muriaticum***

We consume food on a daily bases often taking for granted its complete purpose and function in offering sustenance and life to this organic body. For most people that have access to food indulgence in its sensory pleasure it is common the idea that nutrition lies almost exclusively within the materialistic mechanistic paradigm. We understand the caloric and nutrient service this provides our bodies for its physiological functioning.

##### **2.4.1. The Remedy Personality of *Natrum muriaticum*:**

The Element theory by Jan Scholten is an analysis of all the elements of the periodic table of Mendeleev with which an analysis of the whole mineral kingdom became possible. According to him, similarities in qualities of elements are reflected in similarities in the homeopathic pictures of those elements. The rows, called series, of the periodic system have a theme and the columns represent stages in the development of the theme of a series. Thus the *Natrum* and *muriaticum* concepts are as follows (Scholten, 1996):



Table 2.1. –Natrums vs Muriaticums (Scholten, 1996)

<i>Natrums</i>	<i>Muriaticums</i>
<ul style="list-style-type: none"> <li>• Impulsive relationships</li> <li>• Changing relationships</li> <li>• Vulnerable</li> <li>• Lack of perseverance</li> <li>• Withdrawn</li> <li>• Alone / Lonely</li> <li>• Silent / Closed</li> </ul>	<ul style="list-style-type: none"> <li>• Broken relationship</li> <li>• Mother / Child</li> <li>• Nurturing</li> <li>• Attention</li> <li>• Self-pitying</li> <li>• Sorry / Clinging</li> <li>• Sadness</li> <li>• Alone</li> <li>• Antisocial</li> </ul>

Being a mineral, there seems to be some order in their presentation of physical complaints which occur at predictable intervals and therefore useful in pathological states like malaria. Their migraine attacks, which are common to *Natrums*, occur between 10am and 3pm and their asthmatic attacks occur between 5pm and 7 pm. (Vithoulkas, 1990).

*Natrum muriaticum* is one of the most commonly used remedy and although it is made from the common salt it provides the homeopathic materia medica with a remedy of profound importance in the treatment of emotional suffering, depression, which is most often hidden from others (Vermeulen, 2002).

Emotionally: The primary characteristic underlying the *Natrum muriaticum* pathology is introversion due to a feeling of emotional vulnerability and when hurt is experienced they defend by building a wall, enclosing themselves in their own safe world. They may be emotionally sensitive and empathically feeling the pains of others but they are mentally and physically strong with a high sense of responsibility. Throughout the *Natrum muriaticum*'s lifetime impressions of life are experienced deeply resulting in them having an awareness and understanding of life beyond their age (Vithoulkas, 1990).

They can be so sensitive that they can feel rejected or ridiculed by the slightest gesture or comment, even imagined slights would cause suffering and repeated hurts real or imagined causes them to become more cautious and they will think twice before getting emotionally involved again. They are sensitive to disharmony, to the point of causing a physical ailment. They are

introverted to be emotionally 'safe'. They can be quite and withdrawn with a sense of responsibility and integrity, holding quite a serious demeanour. But when nervous or under stress they tend to laugh over serious matters. To avoid hurt they are rarely flirtatious or friendly (Vithoulkas, 1990).

Physically: There is a tendency for the *Natrum muriaticum* type to be of thin and delicate structure. They may have oily, dry, harsh or unhealthy skin. They may be inclined to chaps or herpetic eruptions especially around their mouth (Vermeulen, 2002).

Like any personality they even have likes and dislikes, aggravated by the sun, loving salty, sour foods and averse to slimy or fatty foods (Vermeulen, 2002).

The pathological state of the *Natrum muriaticum* develops from not dealt with fears, severe grief and or humiliation exacerbating their introversion and emotional vulnerability. Their pathology progresses from the physical deeper inward toward depression (Vithoulkas, 1990).

There is much more to the *Natrum muriaticum* personality in terms of mentals, generals and particulars in understanding their pathology but this brief account offers a glimpse of the Homeopathic remedy spirit being dealt with in this research.

## **2.5. Glass Stain Patterns**

Fourth year homeo-pharmacology lectures at DUT introduces students to the fascinating world of homeopathic remedy manufacture. Even to the astute student, Homeopathic medicine manufacture can boggle the mind. It was during these lectures that the fascinating world of water came to light. Jacques Benveniste and Dr Emoto's experiments stirred curiosity towards water's intricate relationship in Homeopathic manufacture. Further investigation proved that water was and is a most mysterious substance on this planet, with the scientific community striving to unravel its secrets.

A hypothesis on the mode of action of homeopathy on water-based remedies shall be experimentally investigated using Kroplin's (2001) glass stain method. Water is the most studied material on Earth but the science behind its behaviour and function are so poorly understood (Chaplin, 2012). The entire field of water-structure research by scientists has focused largely on water's composition and, within that, the composition and structure of

“molecules” or small oligomers, and often not even on liquid water at all (Emoto, 2007).

According to Emoto (2007) a study by physicists and material scientists found water to exist in nearly infinite set of structures, which are uniquely labile, changeable among themselves, establishing that common highly covalent liquids like water can exist in even thermodynamically stable structures. Japanese author and entrepreneur, Emoto, used water crystal photography by method of a flash freeze technique to claim that human consciousness has an effect on the molecular structure of water. The results of the experiments pointed to the idea that positive intentions will produce symmetric and aesthetically organized crystals. If the intangible consciousness can affect the structure of water then hypothetically solutes should be capable of imparting a new structure regardless of dilution.

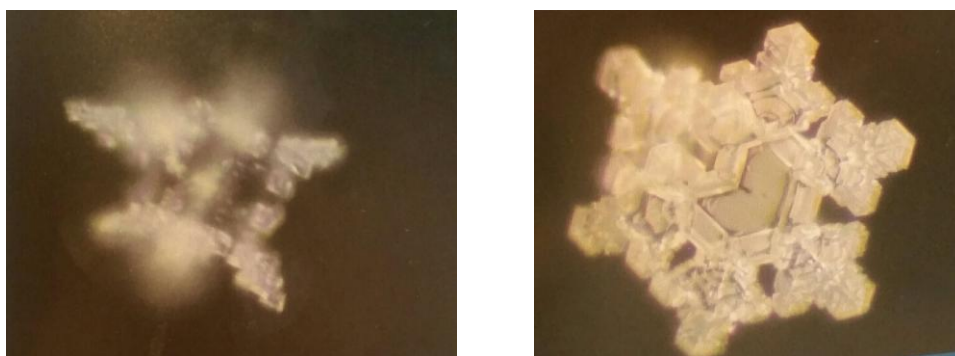


Figure 2.8: The pictures are from Emoto's(2005) flash freeze droplet experiments of water from Lake Lucerne, before praying for the water (left) and after prayer (right).

Topography of tears is a study by Rose Lynn Fisher of tears of various emotional states photographed through an optical microscope, displaying a fascinating array of patterns of these watery excretions (Stromberg, 2013). This study opens the possibility of the effect of emotions on our bodies' watery system and if it is common knowledge that our bodies are of about 70% water, it is not inconceivable to imagine waters influence in the delicate balance of our internal eco-system.

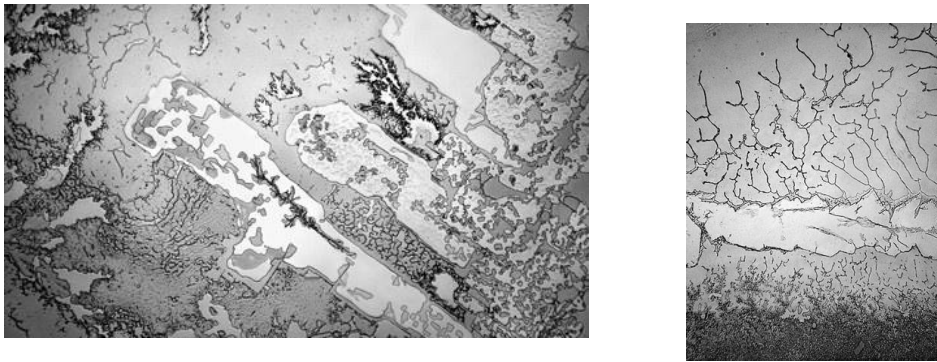


Figure 2.9: Fascinating pictures from Fisher's research. Tears of timeless reunion, left and Basal tears, right (Stromberg, 2013).

In a study by Kokornaczyk, et al. (2014) the droplet evaporation method was applied to access whether it could be used as a tool to test the effectiveness of ultra high dilutions. The experiment tested both the stressed seeds and unstressed seeds with arsenic trioxide 5mM with the droplet evaporation method and in vitro growth. Treatment included either ultra high dilution of the same stressor substance or with water as a control. The results showed greater symmetry exactness values between the ultra diluted samples vs. control in the droplet evaporation method and a stimulating effect of arsenic at ultra high dilution as compared to the water control in the in vitro growth test. This study offered grounds for the use of the droplet evaporation method as a tool in analyzing ultra high dilution effectiveness. An interesting outcome was the droplet evaporation method's positive effect in the in vitro tests which could now offer application as a treatment pre-selection tool using or used to monitor conditions during treatment using biological liquids to gain information on the human or animal's health (Kokornaczyk, et al., 2014).

Prof. Kroplin's work seemed to make it possible to observe changing structural patterns amongst the changing potencies and that could possibly be quantified for the more rational mind.

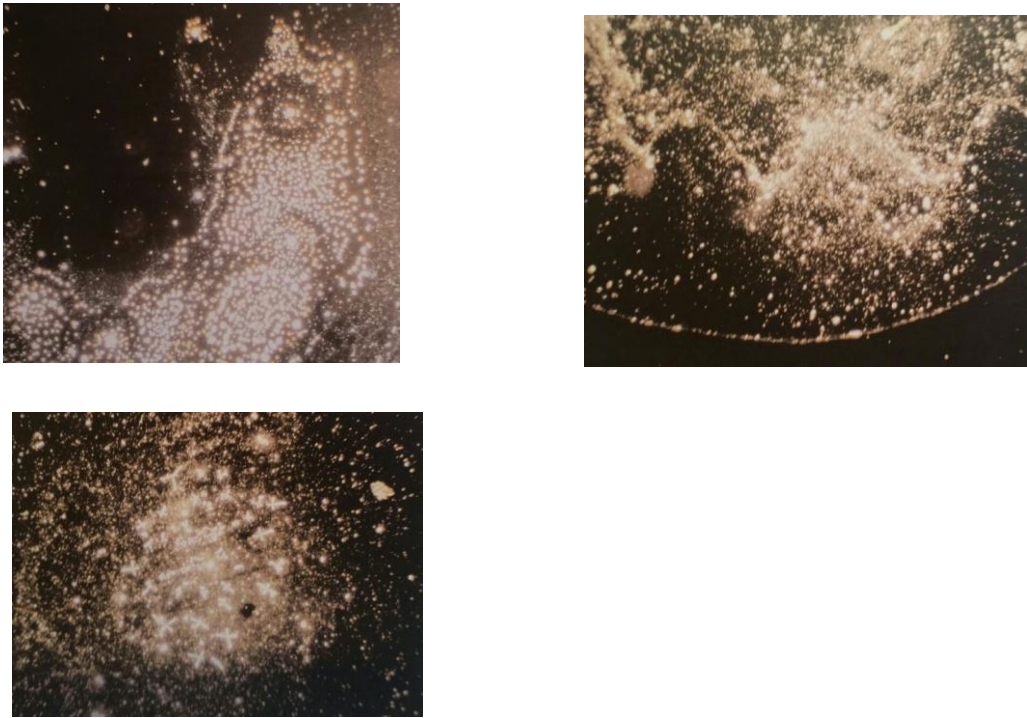


Figure 2.10: Homeopathic potency influence on water.

Images top left, top right and bottom left represent the continuously changing picture patterns of Thuja due to increasing the potency(Kroplin, 2001).

All theories and hypotheses are not facts but offer an idea for experimental tests that could eventually confirm or disprove various specific points but these ideas only serve as a pretext for other experiments that may provide us with new data and as such we strive to get clarity of what may be truth (Bellaviteand Signorini, 2002).

## CHAPTER 3

### RESEARCH METHODOLOGY

#### 3.1. Materials and Method – The Guideline

*“No one person can obtain an adequate grasp of truth, but we cannot all failing the attempt; each thinker makes some statement about the natural world, and as an individual contributes little or nothing to the inquiry; but a combination of all conjectures results in something considerable”*

*-Aristotle 384 BC*

The purpose of this study is to examine the effect that the preparation of a Homeopathic remedy (*Natrum muriaticum*) has on water, as its solvent, using the glass stain analysis as outlined by Kroplin (2001). The possible ability of water to hold and store the memory of its solute, sodium chloride, will be investigated. The researcher aims to evaluate the available theories on the structure and nature of water with reference to the experiment conducted and the understanding of water within the context of Homeopathy in order to provide a critical self-reflective ontological analysis.

The motivation for this analysis lies in the theory proposed by Hahnemann, founder of homeopathy, in his writings on medicinal dosage for cure i.e. The Law of Infinitesimal Dose (O' Reilly, 1996). In chemistry, water is known to be one of the best solvents, capable of holding the information of the solute in solution (Chaplin, 2012), but through the process of dilution the amount of solute decreases until, at the point of Avogadro's constant ( $6.0221412927 \times 10^{23} \text{ mol}^{-1}$ ), none of the crude substance is left.

### Manufacturing process:

In an experimental double blind study, Kroplin's glass stain method was used to analyze the following:

- The mother solution samples,
- The 9CH potency samples (within Avogadro's constant) and
- The 30CH potency samples (past Avogadro's constant),
- As well as the water sample used to make the remedy as the control.

The above four samples was supplied from the following two manufacturers(Appendix 1 outlines the manufacturing method supplied to the laboratories and followed by the researcher):

- Durban University of Technology (DUT) manufactured by the researcher.
- Samples manufactured by one commercial homeo-pharmaceutical company namely, Parceval Pharmaceuticals.

Once all samples were collected, they were randomly labelled 1-8 to prevent bias. The samples werelabelled numerically and randomly by the supervisor, to limit quantum influence of experimenter, which was both the researcher and microbiologist (laboratory technician).

The Kroplin method employs a dark field microscope to analyze glass stains of water droplets, which is then photographed using a reflex camera attached to the microscope for a statistical analysis of the comparisons between the photographs, using Photoshop and Illustrator software programs. The experiment was to be repeated six weeks later.

A soluble substance, sodium chloride, was used as opposed to a non-soluble substance as the non-soluble substance has to undergo trituration and thus that would present with the challenge of memory of sugar of milk which is used in the trituration process.

- Analysis of the water was used as the control before the intervention of the sodium chloride.
- Analysis of the mother solution was used to observe the effect of the crude substance on the water and as such give a reference for the possible picture of *Natrum muriaticum*.
- Analysis of the 9CH was used to observe the effect of dilution while still maintaining the crude substance in solution, i.e. below Avogadro's

constant.

- Analysis of a 30CH, i.e. one in a hundred dilution, potency of *Natrum muriaticum* was used as it is the most commonly used Homeopathic potency and it is a dilution that passes Avogadro's constant.
- Intragroup comparative analysis would investigate possible structural changes as well as the possible congruency to hold a similar picture through the homeo-pharmaceutical process.
- Intergroup comparative analysis would investigate possible congruency between the like samples.

Process of making sample by researcher at the DUT laboratory:

The DUT laboratory was used, (Appendix 2), by the researcher to prepare the according samples.

1,5 litres Distilled laboratory approved water of which 100ml is kept aside as control and the rest of the water is used as solvent to make up the Homeopathic remedy *Natrum muriaticum* 30CH using the German Homeopathic Pharmacopoeia method 5b (outlined in Appendix 1).

Laboratories of the commercial Homeopathic Pharmaceutical company prepared commercial samples and supplied the researcher with a sample of untreated water, mother solution, *Natrum muriaticum* 9CH and final remedy product, *Natrum muriaticum* 30CH, manufactured according to the German Homeopathic Pharmacopoeia method 5b (outlined in Appendix 1). The researcher has included samples from the commercial company to investigate possible congruency between the like samples.

Once samples from each group was acquired they were stored in a cool dark room at temperatures between 10-20 degrees Celsius until use, which must be within week 1 of arrival and maximum 2 weeks after manufacture. The experiment was to be repeated 6 weeks later.

Glass Stain Method, as outlined in Professor Bernd Kroplin book: *The World in a Drop*, (Kroplin, 2005)

Equipment required for the glass stain method:

- Micropipette
- 32 new glass slides
- A dark field microscope with attached reflex camera
- Photoshop and illustrator software



- Samples of the untreated water (from company and DUT)
- Samples of sodium chloride mother solution (from company and DUT)
- Samples of remedy, *Natrum muriaticum* 9CH (from company and DUT)
- Samples remedy, *Natrum muriaticum* 30CH (from company and DUT)
- A dry non fuzzy cloth

This experiment was conducted at UKZN, (appendix 4), by both the laboratory technician (i.e. the microbiologist) and the researcher.

To maintain laboratory sterility during the experiment all appropriate equipment was autoclaved and/or alcohol swabbed before use.

Firstly, the slide was to be rubbed clean from both sides using a dry non-fuzzing cloth, since everything even alcohol leaves traces.

Place the clean glass slide horizontally on an even clean sterile surface.

Using a micropipette slowly draw 20 microliters of the sample being tested to avoid air bubbles from forming. Note, according to Tate's Law, the volume of liquid of approximately 20 microliters water per drop, would result in an approximate 5mm diameter drop on the slide. (Syringe pump accuracy: <http://www.firsttenangstroms.com/faq/SyringePumpAccuracy.html>)

To make one drop, the clean micropipette is held vertically over the glass slide and approximately 20micro litres was dispensed per drop.

The experimenter (microbiologist as well as researcher)were to dispense 8 individual drops of the sample on the slidei.e. one slide per sample.

The slide then is allowed to air dry in a sterile closed laboratory with experimenter present.

Once dried, the slide was to be viewed using a dark field microscope and the hypothetical stains would be photographed with a reflex camera using only slight enlargement (20-200).

Both researcher and the laboratory technician i.e. microbiologist from UKZN, do the above method on the same day to limit environmental variable. The experiment was conducted in a sterile laboratory according to UKZN standards and video recorded as testimonial of limited external variables. The

researcher is a Homeopathic student and although aims to remain neutral she may unconsciously expect a positive outcome therefore an external experimenter was included in this research. The microbiologist has a neutral view towards Homeopathy, thus conscious or unconscious has contributed the least influence toward expectancy of the outcome of the experiment and as such has helped limit observer bias.

The Homeopathic pharmacopoeia proposes a six-week expiration date for a water-based remedy. The researcher will test this theory using the same samples on new slides, by repeating the experiment six weeks later by both experimenter and laboratory technician (Benyunes, 2005).

Thus, this research aims to investigate, using homeo-pharmaceutical principles (dilution and succussion); the structural influence of a solute on water after the solution is diluted beyond Avogadro's constant. Repetition of the experiment in week six aims to investigate the validity of expiry time proposed by the homeopathic pharmacopeia. The investigation will be followed by a critical reflective analysis on the understanding of water within the context of Homeopathy.

Even the most well planned journey is confronted with unforeseen challenges and thus the experience of what actually happened is outlined:

### 3.2. Materials and Method as it Happens

*'If we knew what it was we were doing, it would not be called research'*

–Albert Einstein (Resch&Gutmann, 1987)

Manufacturing process:

In an experimental double blind study, Kroplin's glass stain method was used to analyze the following:

- The mother solution samples,
- The 9CH potency samples (within Avogadro's constant) and
- The 30CH potency samples (past Avogadro's constant),
- As well as the water sample used to make the remedy as the control.

The above four samples were supplied from the following two manufacturers:

- Durban University of Technology (DUT) manufactured by the researcher.
- As well as samples manufactured by one commercial homeo-pharmaceutical company namely, Parceval Pharmaceuticals(Appendix 1 outlines the manufacturing method supplied to the laboratories and were followed by the researcher).

A soluble substance, sodium chloride, was used as opposed to a non-soluble substance as the non-soluble substance has to undergo trituration and thus that would present with the challenge of memory of sugar of milk which is used in the trituration process.

- Analysis of the water has been used as the control before the intervention of the sodium chloride.
- Analysis of the mother solution has been used to observe the effect of the crude substance on water and as such give a reference for the possible picture of *Natrum muriaticum*.
- Analysis of the 9CH has been used to observe the effect of dilution while still maintaining the crude substance in solution, i.e. below Avogadro's constant.
- Analysis of a 30CH, i.e. one in a hundred dilution, potency of *Natrum muriaticum* has been used as it is the most commonly used Homeopathic potency and it is a dilution that passes Avogadro's constant.
- Intragroup comparative analysis investigates possible structural

changes as well as the possible congruency to hold a similar picture through the homeo-pharmaceutical process.

- Intergroup comparative analysis investigates possible congruency between the like samples.

Process of making sample by researcher at the DUT laboratory:

The DUT laboratory was used, (appendix 2), by the researcher to prepare the according samples.

1,5 litres Distilled laboratory approved water of which 100ml is kept aside as control and the rest of the water was used as solvent to make up the Homeopathic remedy *Natrum muriaticum* 30CH using the German Homeopathic Pharmacopoeia method 5b (outlined in Appendix 1). The researcher used 250ml clear borate glass to manufacture and store final remedy samples as well as the untreated water used as control.

The laboratory of the commercial Homeopathic Pharmaceutical Company prepared commercial samples and supplied the researcher with a sample of:

- Mother solution,
- *Natrum muriaticum* 9CH,
- Final remedy product, *Natrum muriaticum* 30CH and
- Untreated water

The commercial company supplied all remedies as well as the untreated water in 100ml amber glass bottles. All remedies were manufactured according to the German Homeopathic Pharmacopoeia method 5b. The researcher has included samples from the commercial company to investigate possible congruency between the like samples.

Once samples from each group were acquired, they were stored in a cool dark room at temperatures between 10-20 degrees Celsius until use, which was approximately 2 weeks after manufacture. Before use all samples were decanted into 100ml amber bottles for uniformity and were randomly labelled 1-8 to prevent bias. The samples were labelled numerically and randomly by the supervisor to limit quantum influence of the experimenters, which were both the researcher and microbiologist (laboratory technician).

The Kroplin method employs a dark field microscope to analyze glass stains of water droplets. The stains were then photographed using a reflex camera

attached to the microscope for a statistical analysis of the comparisons between the photographs.

- DUT samples were manufactured on the 20 February 2015.
- Parceval samples were prepared on 18 February 2015
- Experiment 1 was conducted on the 10 March 2015.

The experiment was to be repeated 6 weeks after manufacture but due to unforeseen circumstances was only repeated approximately 7 weeks later.

- Experiment 2 was conducted on the 16 and 17 April 2015.

Glass Stain Method, as outlined in Professor Bernd Kroplin book: *The World in a Drop*, 2005

Equipment required for the glass stain method:

- Micropipette
- 32 new glass slides
- A dark field microscope with attached reflex camera
- Photoshop and illustrator software
- Samples of the untreated water (from company and DUT)
- Samples of sodium chloride mother solution (from company and DUT)
- Samples of remedy, *Natrum muriaticum* 9CH (from company and DUT)
- Samples remedy, *Natrum muriaticum* 30CH (from company and DUT)
- A dry non fuzzy cloth

This experiment was conducted at UKZN, (appendix 4), by both the laboratory technician (i.e. the microbiologist) and the researcher.

Experiment 1: 10<sup>th</sup> March 2015

To maintain laboratory sterility during the experiment all appropriate equipment were autoclaved and/or alcohol swabbed before use.

- Firstly, the slide was rubbed clean from both sides using a new dry non-fuzzing cloth, since everything even alcohol leaves traces.
- The clean glass slide was placed horizontally on a piece of clean laboratory tissue paper that was placed over an even clean sterile table.

- Using a micropipette 20 microliters of the sample being tested was drawn avoiding air bubbles. Note, according to Tate's Law, the volume of liquid of approximately 20 microliters water per drop, would result in an approximate 5mm diameter drop on the slide. (Syringe pump accuracy:  
<http://www.firsttenangstroms.com/faq/SyringePumpAccuracy.html>)
- To make one drop, the clean micropipette was held vertically over the glass slide and approximately 20microlitre was dispensed per drop.
- The experimenters (microbiologist as well as researcher) were to dispense 8 individual drops of the sample on the slide but only three drops per slide were made. (i.e. one slide per sample)

The slide was then allowed to air dry in the sterile closed laboratory with researcher present. The microbiologist had other engagements and was unable to remain present during the drying time. The experiment was conducted in a sterile laboratory according to UKZN standards.

- Slide preparation took approximately 20minutes (10 minutes to rub clean the slides and 10 minutes to dispense 3 drops per slide)
- Each slide dried at different speeds. Total slide drying time took approximately 4 and half hours.



Figure 3.1: Slide dryings in UKZN Laboratory room.

Both researcher and the laboratory technician i.e. microbiologist from UKZN, prepared the respective slides on the same day to limit environmental variable but the slides of each person were viewed on two separate days. The drying time was unexpectedly long and thus decreased time available for use of the microscope. The researcher was able to view slides on the same

day of slide preparation, i.e. 10<sup>th</sup> March 2015 while the microbiologist prepared his slide on this day but due to unforeseen circumstances only viewed his slides on the 12 May 2015.

Once the first slide dried the researcher began slide viewing using a dark field microscope and the stains were photographed with a reflex camera using 2x and 4x magnification specification. Photo contrast and brightness was adjusted differently for each slide for maximum visibility.

- Slide viewing took a total approximate time of 2 hours per person.



Figure 3.2: Dark field Microscope used at UKZN.

The researcher is a Homeopathic student and although aims to remain neutral she may unconsciously expect a positive outcome therefore an external experimenter was included in this research. The microbiologist has a neutral view towards Homeopathy, thus conscious or unconscious has contributed the least influence toward expectancy of the outcome of the experiment and as such helps limit observer bias.

The Homeopathic pharmacopoeia proposes a six-week expiration date for a water-based remedy (Benyunes, 2005). The researcher aimed to test this theory by using the same samples on new slides. Though the experiment should have been repeated six weeks later by both experimenter and laboratory technician, due to unforeseen circumstances the second experiment was only conducted approximately 7 weeks from date of manufacture. Though more than 6 weeks, this still allows hypothetical visible expiration changes.

Thus, this research aims to investigate, using homeo-pharmaceutical principles (dilution and succussion); the structural influence of a solute on water after the solution is diluted beyond Avogadro's constant. Repetition of the experiment in week seven aims to investigate the validity of expiry time proposed by the homeopathic pharmacopeia. The investigation will be followed by a critical reflective analysis on the understanding of water within the context of Homeopathy.

#### Experiment 2: 16<sup>th</sup> and 17<sup>th</sup> April 2015

To maintain laboratory sterility during the experiment all appropriate equipment were autoclaved and/or alcohol swabbed before use.

- The slides were new from the box but they were dusty and although each slide was cleaned using the non-fuzzy cloth, slide viewing in the first experiment suggested the dust may have remained. Thus, for the second experiment, both sides of the slide were swabbed using an alcohol swab then each slide was rinsed and dried using a dry non-fuzzing cloth. Finally to ensure maximum cleanness each slide was re-wiped using a new dry non-fuzzing cloth, since everything even alcohol leaves traces.
- The clean glass slide was placed horizontally on a piece of clean laboratory tissue paper that was placed over an even clean sterile table.
- Using a micropipette 20 microliters of the sample being tested was drawn avoiding air bubbles. Note, according to Tate's Law, the volume of liquid of approximately 20 microliters water per drop, would result in an approximate 5mm diameter drop on the slide. (Syringe pump accuracy:  
<http://www.firsttenangstroms.com/faq/SyringePumpAccuracy.html>)
- To make one drop, the clean micropipette was held vertically over the glass slide and approximately 20micro litres was dispensed per drop.
- The experimenters (microbiologist as well as researcher) dispensed three individual drops of each sample (i.e. one slide per sample).

The slide was then allowed to air dry in the sterile closed laboratory with researcher present.



Again the microbiologist had other engagements and was unable to remain present during the drying time. The experiment was conducted in a sterile laboratory according to UKZN standards.

- Slide preparation took approximately 30minutes (20 minutes to swab, rinse and rub clean the slides / 10 minutes to dispense 3 drops per slide)
- Each slide dried at different speeds. Total slide drying time took approximately 4 and half hours.

Both researcher and the laboratory technician i.e. microbiologist from UKZN, prepared the respective slides on the same day, i.e. 16<sup>th</sup> April 2015, to limit environmental variable.

Once all slides were dried they were carefully stored in a clean sterile microscope slide storage case.



Figure 3.3: Slide storage in UKZN Microscope Slide Case, for Use in Experiment 2.

The slides were viewed the next day, i.e. 17<sup>th</sup> April 2015 due to time constraints as well as microscope availability.

The microbiologist began slide viewing, followed by researcher. Both used a dark field microscope and photographed the stains with a reflex camera using 2x and 4x magnification specification. Photo contrast and brightness was adjusted differently for each slide for maximum visibility.

- Slide viewing took a total approximate time of 2 hours per person.

All data was collected blinded and the samples remained unknown for the first analysis done after which samples were named and thus analyzed once more (blinded and un-blinded analysis) in Chapter 4.

## CHAPTER 4

### DATA ANALYSIS

#### 4.1 Data Analysis – Blinded:

##### 4.1.1 Experiment 1:

[A] Researcher's slides:

Slide 1:

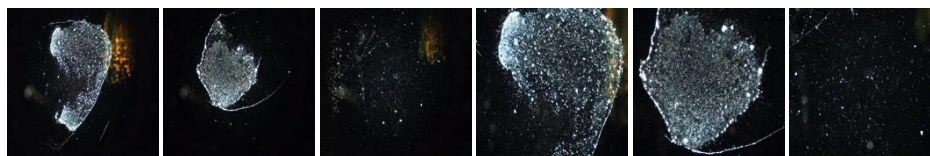


Figure 4.1: Researcher: Slide 1: Three drops (1a), (1b), (1c) at magnification 2X left above and at magnification 4X right.

Slide 1 shows distinct compacted staining suggesting changes have taken place in the water

Slide 2:

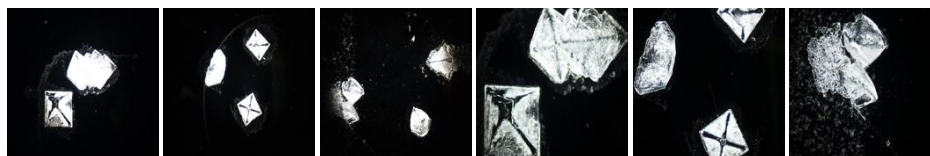


Figure 4.2: Researcher: Slide 2: Three drops (2a), (2b), (2c) at magnification 2X left above and at magnification 4X right.

Slide 2 displays characteristic pyramid-like structures.

Slide 3:



Figure 4.3: Researcher: Slide 3: Three drops (3a), (3b), (3c) at magnification 2X left above and at magnification 4X right.

Slide 3 displays compacted staining with thread-like patterns in some.

Slide 4:

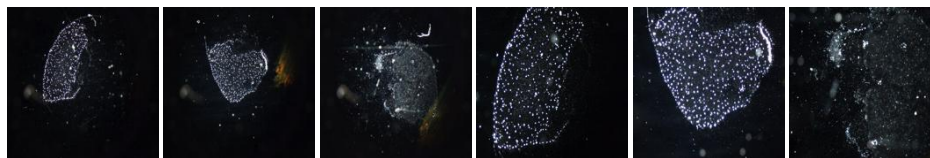


Figure 4.4: Researcher: Slide 4: Three drops (4a), (4b), (4c) at magnification 2X left above and at magnification 4X right.

Slide 4 shows lighter staining but still containing particle patterns within the stains, like a starry night.

Slide 5:



Figure 4.5: Researcher: Slide 5: Three drops (5a), (5b), (5c) at magnification 2X left above and at magnification 4X right.

Slide 5 displays almost indistinguishable staining but some particle patterns are visible.

Slide 6:



Figure 4.6: Researcher: Slide 6: Three drops (6a), (6b), (6c) at magnification 2X left above and at magnification 4X right.

Slide 6 is similar to slide 2, showing distinct pyramid-like patterns.

Slide 7:

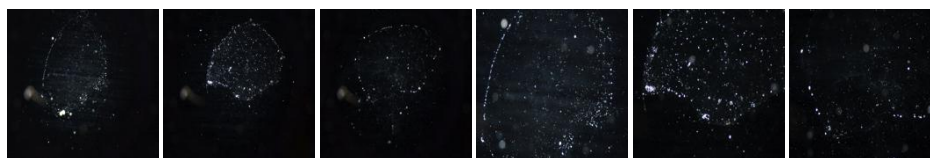


Figure 4.7: Researcher: Slide 7: Three drops (7a), (7b), (7c) at magnification 2X left above and at magnification 4X right.

Slide 7 displays almost non-visible staining.

Slide 8:

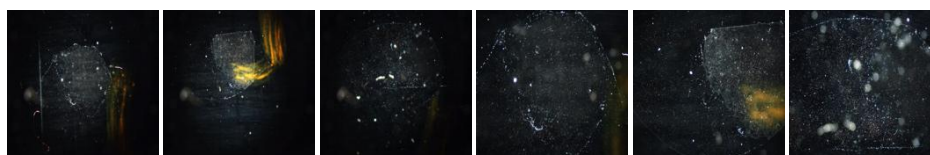


Figure 4.8: Researcher: Slide 8: Three drops (8a), (8b), (8c) at magnification 2X left above and at magnification 4X right.

Slide 8 appears almost contaminated by dust but shows little staining patterns.

#### [B] Microbiologist's Slides:

Slide 1:

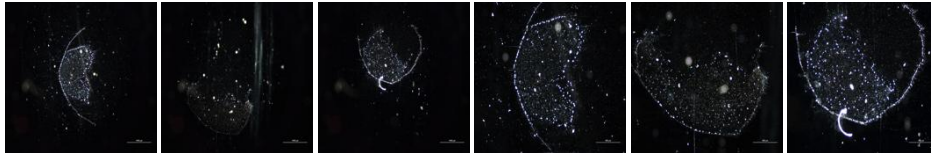


Figure 4.9: Microbiologist: Slide 1: Three drops (1a), (1b), (1c) at magnification 2X left above and at magnification 4X right.

Slide 1 displays little visible staining.

Slide 2:

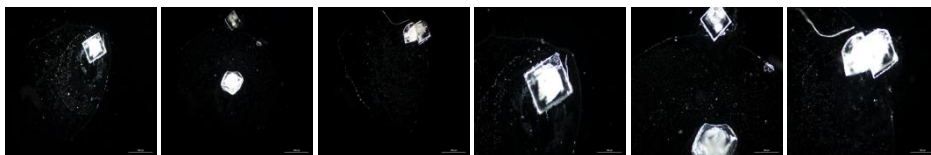


Figure 4.10: Microbiologist: Slide 2: Three drops (2a), (2b), (2c) at magnification 2X left above and at magnification 4X right.

Slide 2 displays characteristic pyramid-like patterns.

Slide 3:

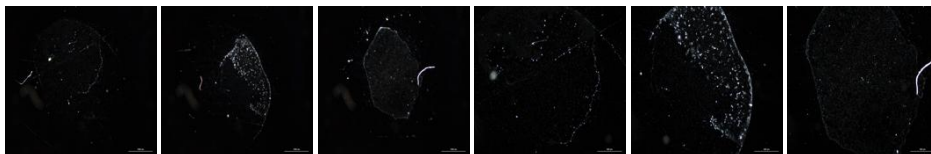


Figure 4.11: Microbiologist: Slide 3: Three drops (3a), (3b), (3c) at magnification 2X left above and at magnification 4X right.

Slide 3 shows low visible staining.

Slide 4:

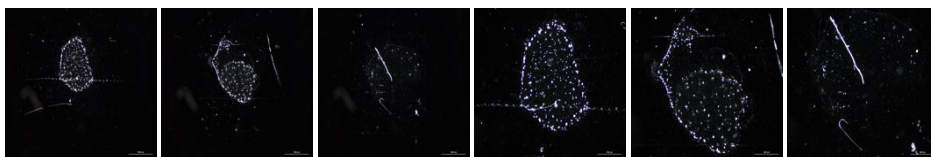


Figure 4.12: Microbiologist: Slide 4: Three drops (4a), (4b), (4c) at magnification 2X left above and at magnification 4X right.

Slide 4 displays light staining of particle patterns within the stains.

Slide 5:

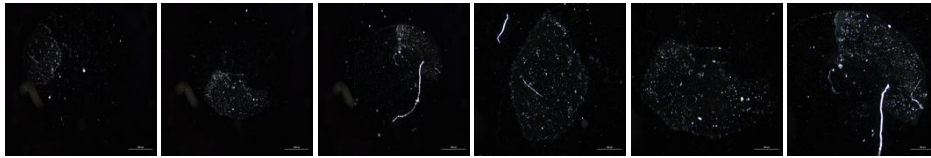


Figure 4.13: Microbiologist: Slide 5: Three drops (5a), (5b), (5c) at magnification 2X left above and at magnification 4X right.

Slide 5 shows an almost non visible staining.

Slide 6:

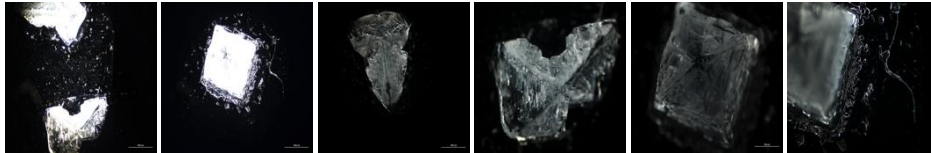


Figure 4.14: Microbiologist: Slide 6: Three drops (6a), (6b), (6c) at magnification 2X left above and at magnification 4X right.

Slide 6 displays characteristic pyramid-like patterns.

Slide 7:

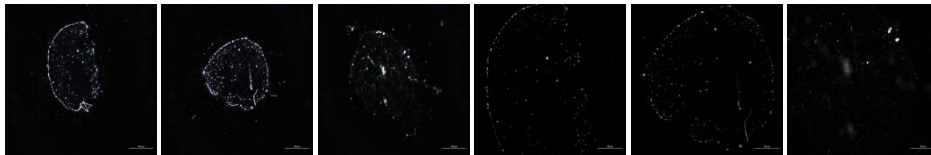


Figure 4.15: Microbiologist: Slide 7: Three drops (7a), (7b), (7c) at magnification 2X left above and at magnification 4X right.

Slide 7 shows an almost non-visible staining.

Slide 8:

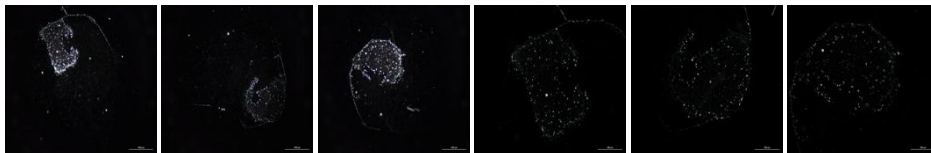


Figure 4.16: Microbiologist: Slide 8: Three drops (8a), (8b), (8c) at magnification 2X left above and at magnification 4X right.

Slide 8 shows slight staining containing particles.



#### 4.1.1 Experiment 1:

##### [C] Researcher's Slides vs. Microbiologist Slides

Slide 1:

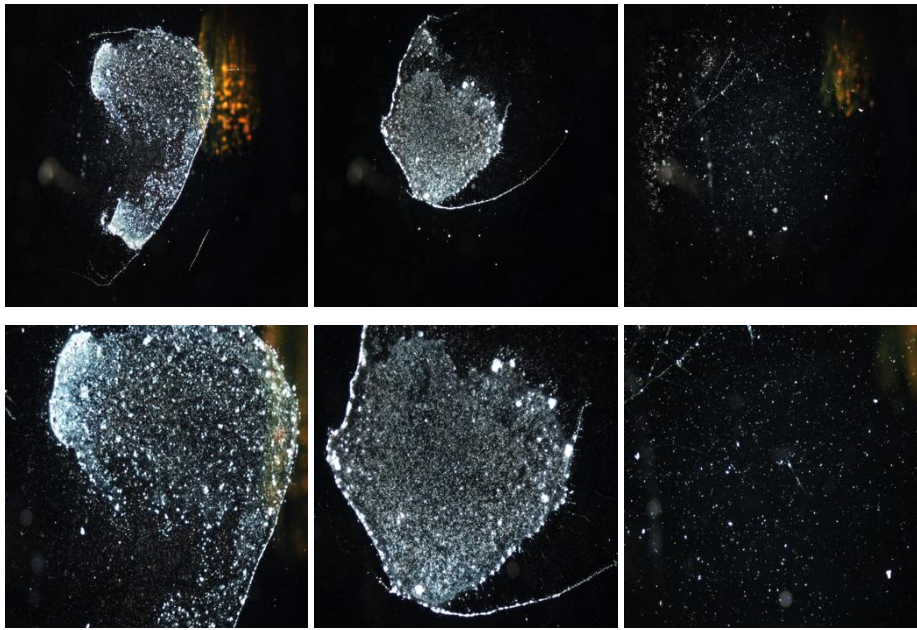
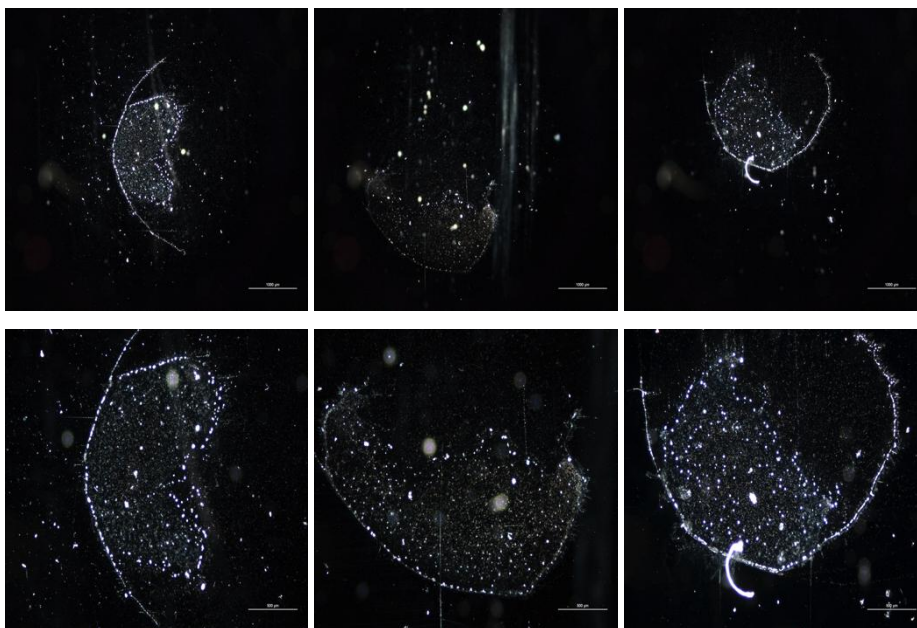


Figure 4.17: Slide 1: Three drops (1a), (1b), (1c) at magnification 2x and at magnification 4x: researcher above and microbiologist below.



Due to the water stains being so transparent the researcher used a marker at the bottom of the slide to identify the border of the drops. The ink is visible as the golden yellow stains. Both slides exhibit distinct compacted staining although the microbiologist's slides appear lighter which could be due to his delay in viewing time. The researcher's slides 1(a) and 1(b) present an almost organic profile pattern. Perhaps it is the bias of knowing the remedy personality that the researcher feels an emotion of deep sadness as a Nat mur remedy achtype would feel.

Slide 2:

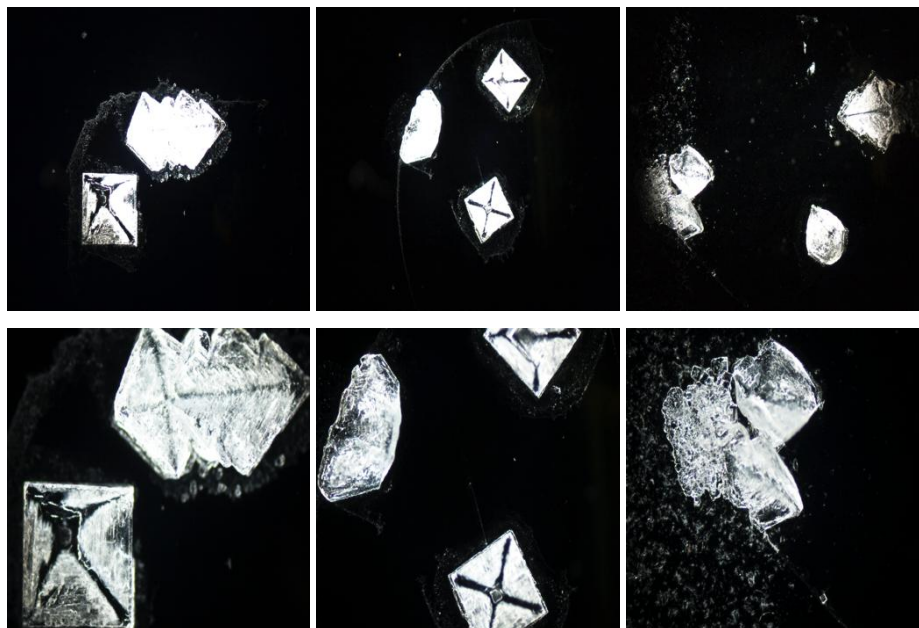
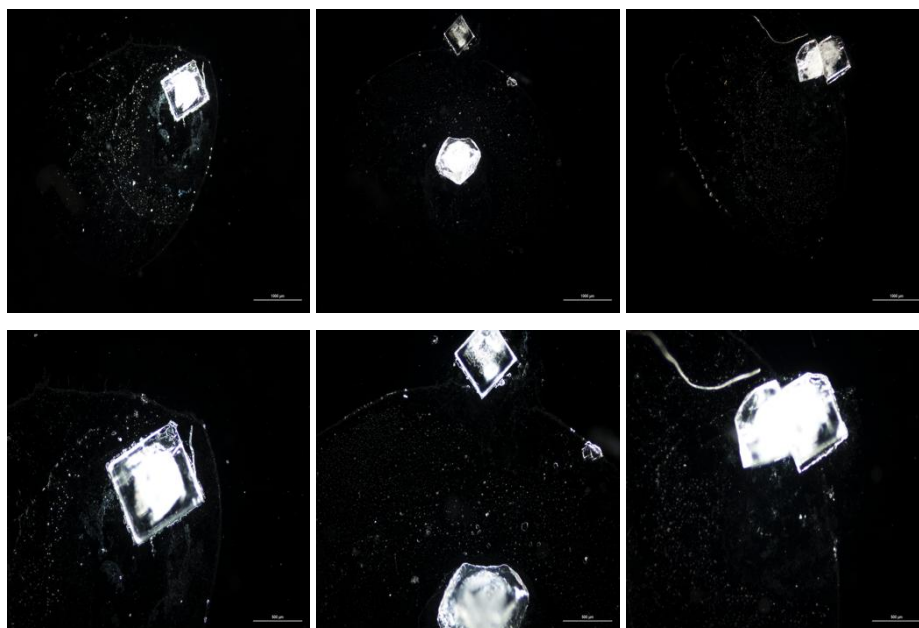


Figure 4.18: Slide 2: Three drops (2a), (2b), (2c) at magnification 2x and magnification 4x: researcher's slides above and microbiologist below.



In slide 2 distinct salt-like crystals are seen in both experimenters. The microbiologist's slide appears less distinct. The researcher's slide shows well formed pyramid-like structures with (2c) displaying a break in structure and a spilling of contents that holds a similar appearance to some of the other slide stains. In a C4 trituration of Natmur by Ehrler, 2001, is described as: "I see a gigantic pillar of salt translucent, cubic. Above it, the sun sends its rays into the huge crystal. It begins to light up from the inside. It is standing in the middle of a lake – above it the heat of the sun, the fire, below the water that is slowly dissolving it and at the same time slowly building it up again with its own salt contents. You get the bright shining aspect at the top and the



alteration of dissolution and formation of the crystal at the bottom. I approach the pillar of salt and dive into it.”

In this research the idea of a pyramid is seen clearly in what the researcher assumes to be the mother solution, where the dissolution begins.

Slide 3:

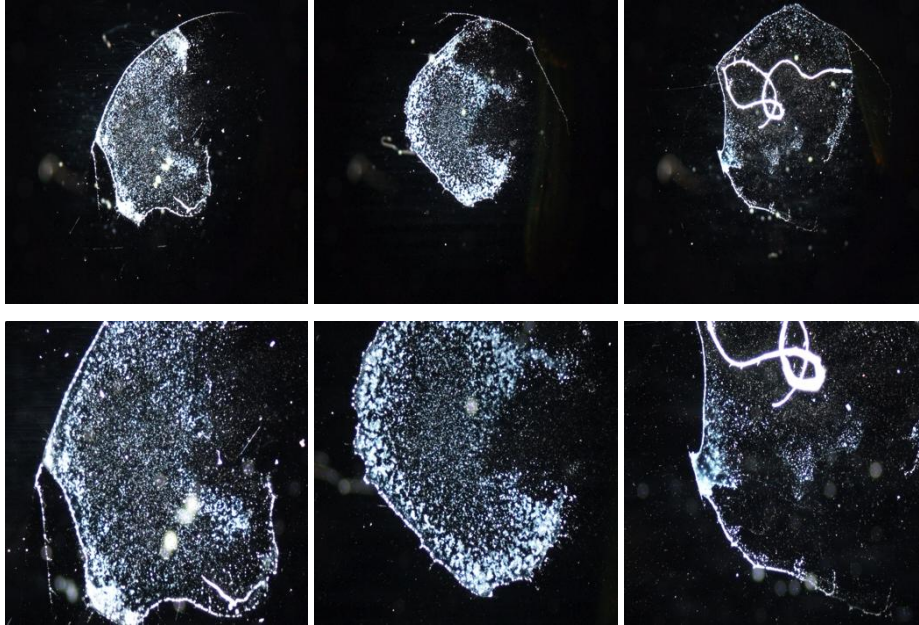
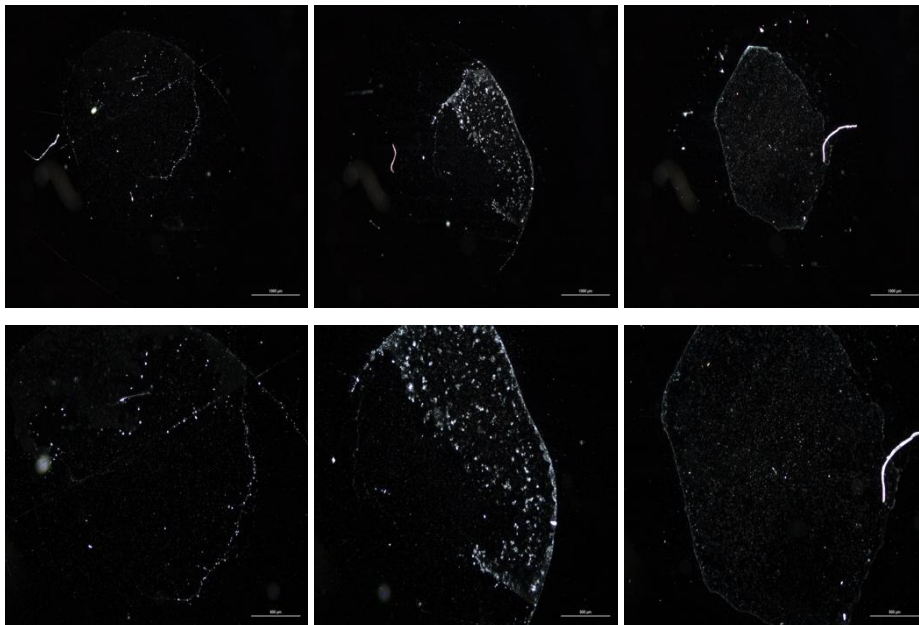


Figure 4.19: Slide 3: Three drops (3a), (3b), (3c) at magnification 2x and magnification 4x: researcher's slide above and microbiologist below.



Interestingly, here in slide 3 there appears to be a marked difference between the researcher's slide and that of the microbiologist. The researcher's stains are highly visible while the microbiologist's stains are indistinct and seemingly nonexistent. This could be attributed to differences in brightness and or contrast adjustments.

In researchers slide 3(c) a ribbon like pattern is seen which could be filamentous bacteria or fungi from the water or inorganic strand-like dust particles. Here composition of contents being analyzed would help determine the visual pattern. In the unblinded analysis the help of a microbiologist will be used to give possible answers.

The Researcher's slide 1 and 3 show similar staining. Just like slide 1 the pictures of slide 3 display an almost organic pattern.

Slide 4:

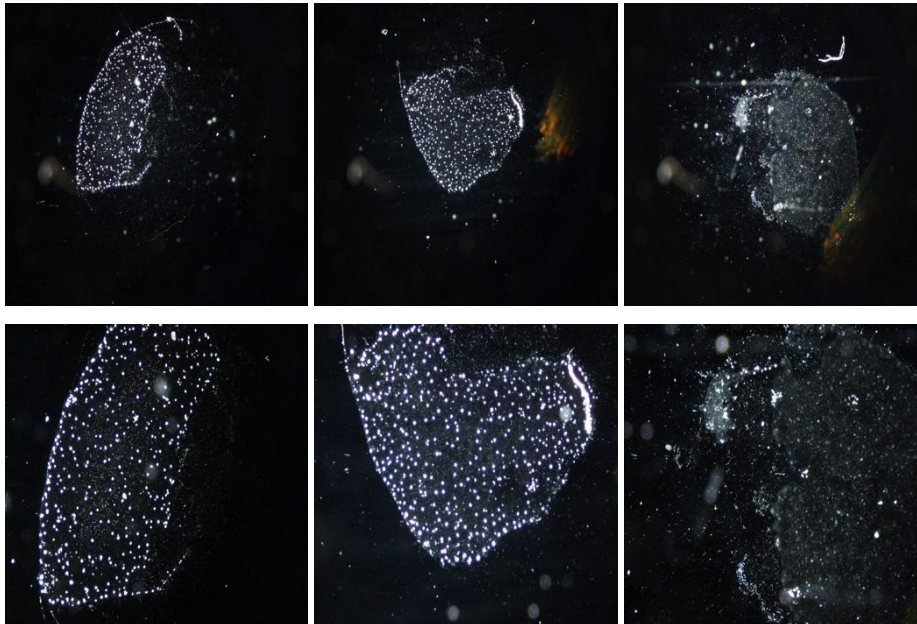
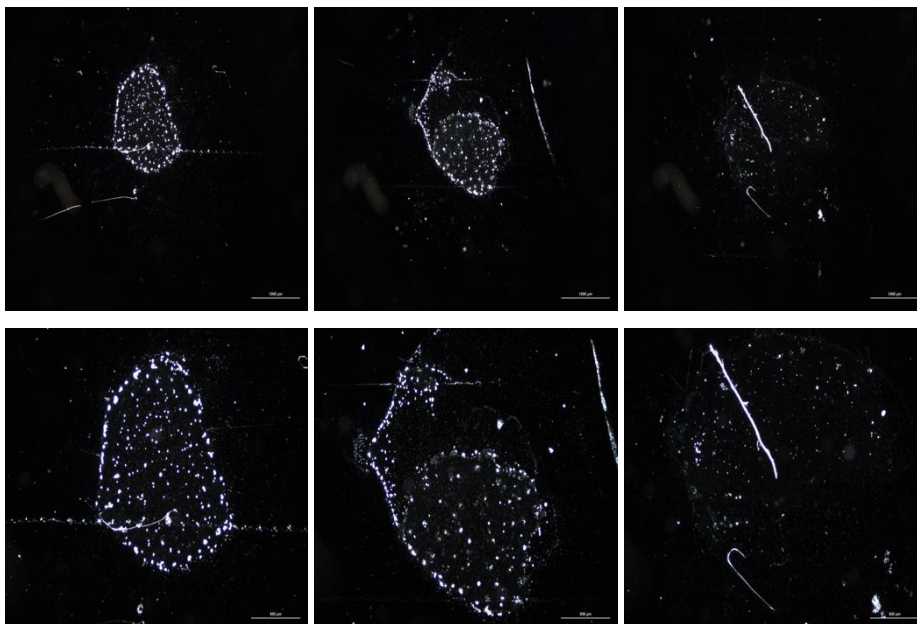


Figure 4.20: Slide 4: Three drops (4a), (4b), (4c) at magnification 2x and magnification 4x: researcher above and microbiologist below.



Here in Slide 4 both the researcher's and microbiologist's slides show similar staining patterns. A starry night. Like stars in the dark nights sky the

contents within the drops illuminate. In microbiologist slide 4(c) and researchers 4(b), and 4(c) also displays a ribbon like pattern.

Slide 5:

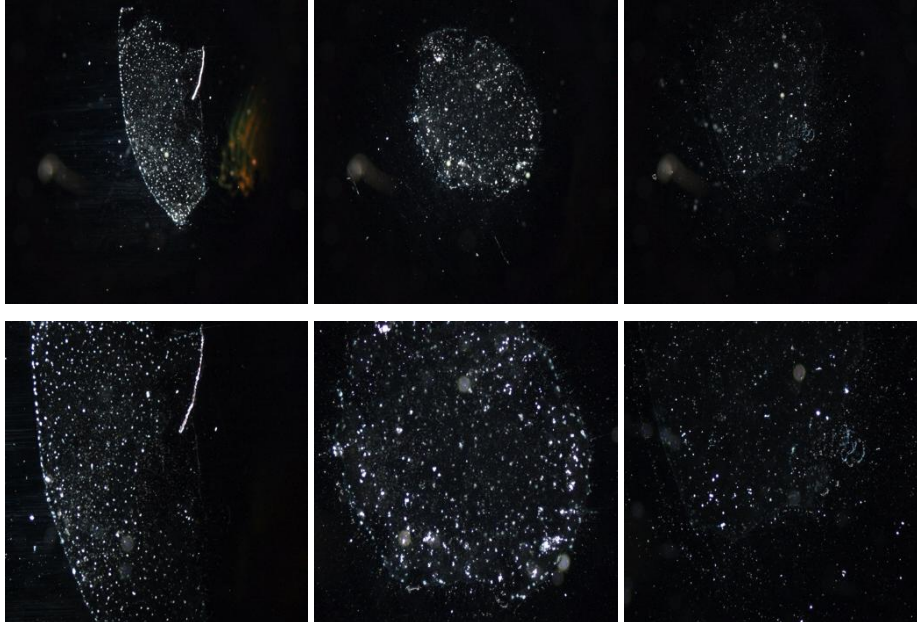
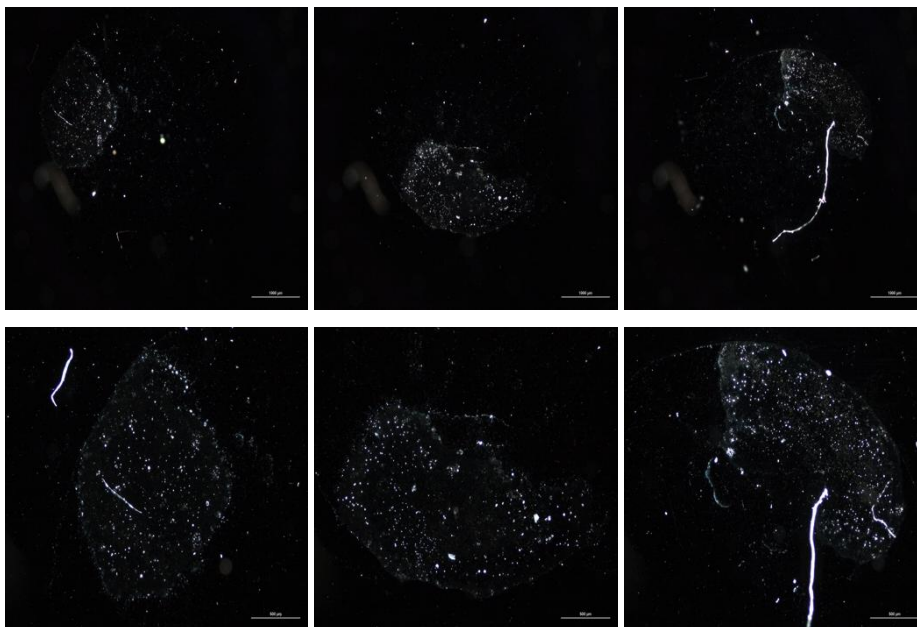


Figure 4.21: Slide 5: Three drops (5a), (5b), (5c) at magnification 2x and magnification 4x: researcher's slides above and microbiologist below.



In both researcher's and microbiologist's Slide 5 it seems to show less staining and is similar to slide 4 starry night. Again, researchers slide 5(a) and microbiologist 5(a) and 5(c) displays a ribbon like pattern.



Slide 6:

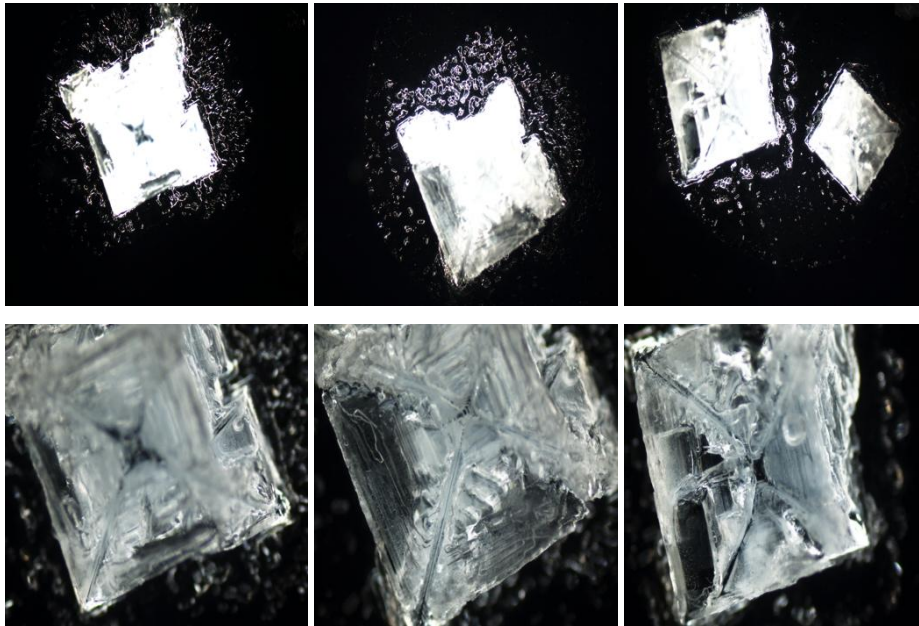
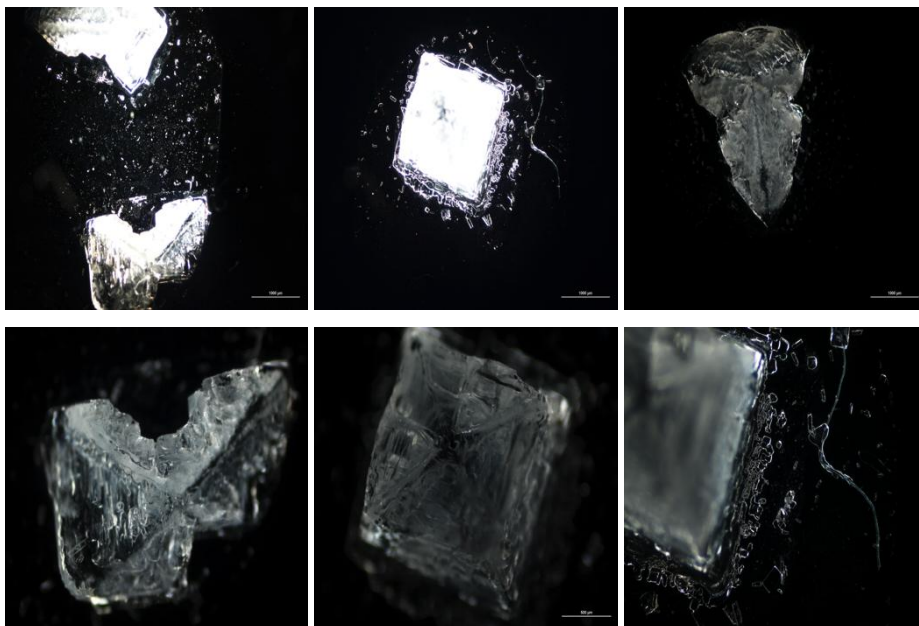


Figure 4.22: Slide 6: Three drops (6a), (6b), (6c) at magnification 2x and magnification 4x: researcher's slides above and microbiologist below.



In both the researcher's and microbiologist's slide 6 exhibit distinct pyramid salt-like crystals similar to slide 2. It should be noted that again the researcher's crystal-like structures seem more defined. This could be the consequence of the delay in viewing time by the microbiologist.

Slide 7:

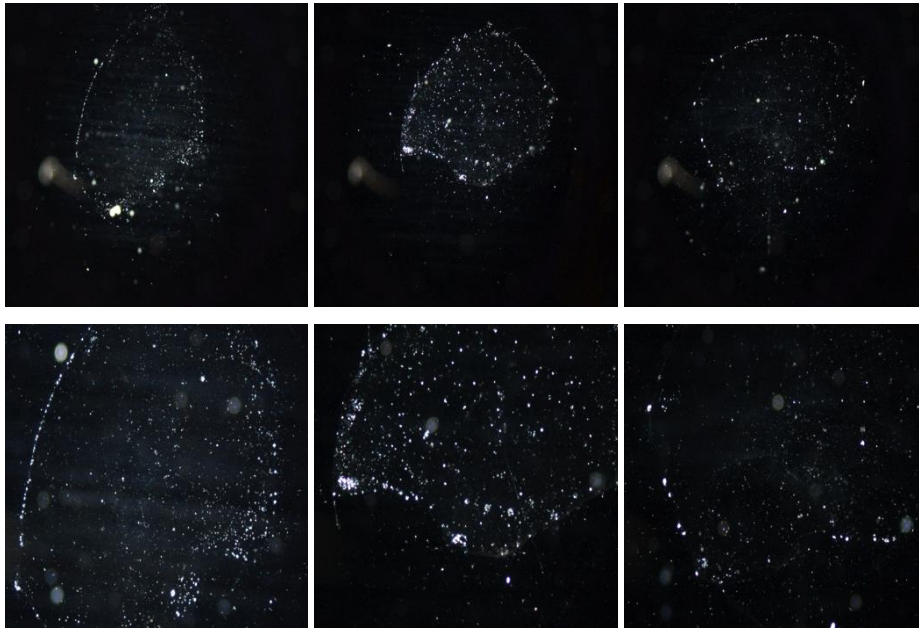
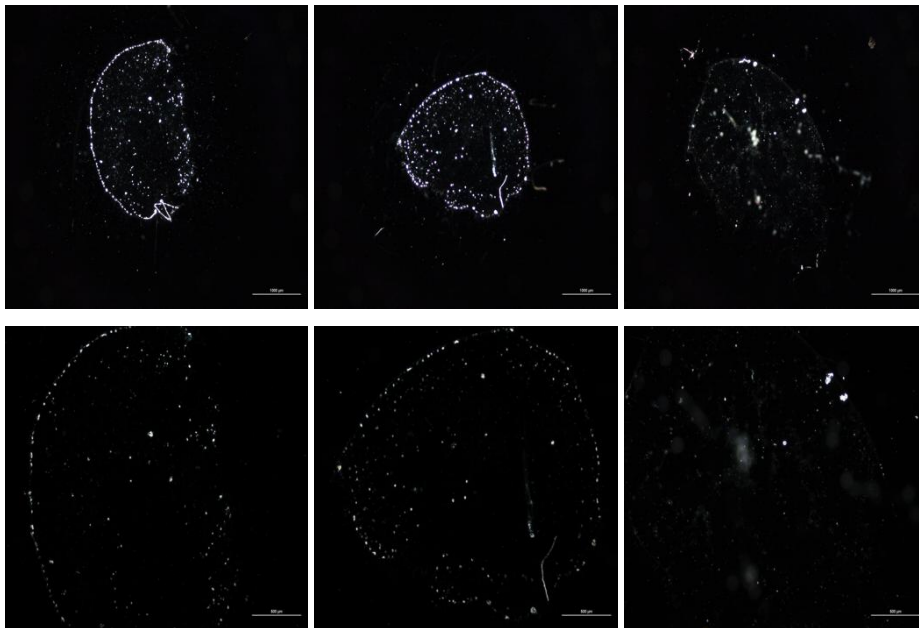


Figure 4.23: Slide 7: Three drops (7a), (7b), (7c) at magnification 2x and magnification 4x: researcher's slides above and microbiologist below.



Slide 7 of both researcher and microbiologist exhibit similar characteristics. Each slide has very little visible content.

Slide 8:

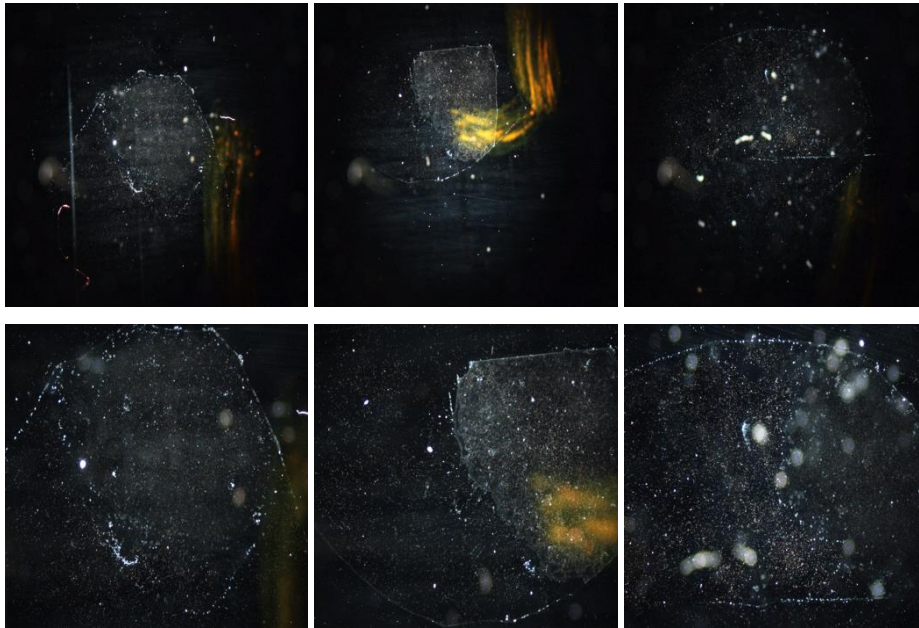
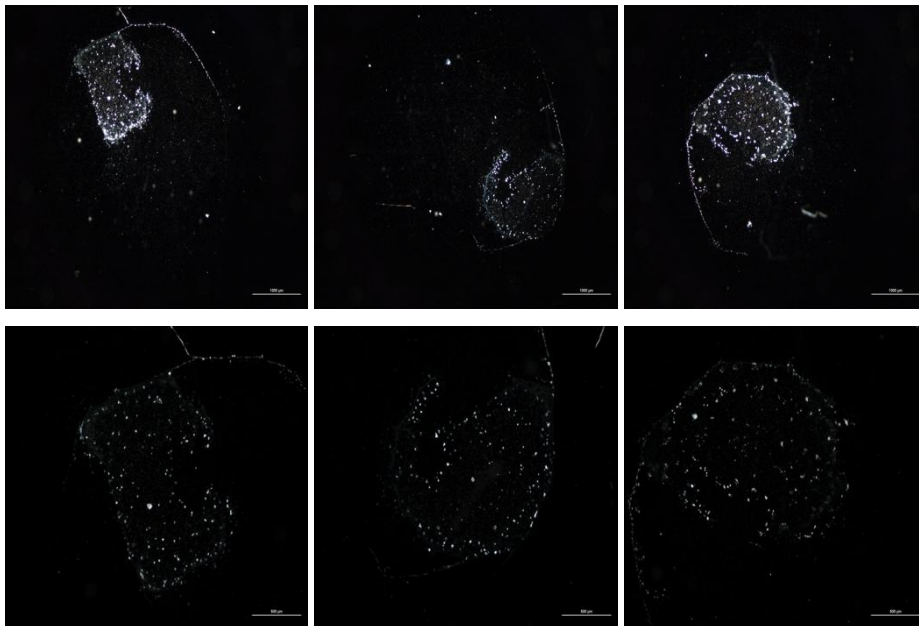


Figure 4.24: Slide 8: Three drops (8a), (8b), (8c) at magnification 2x and magnification 4x: researcher's slides above and microbiologist below.



It must be noted that the researcher's slide 8 has possibly more dust left behind after the cleaning step and therefore appears more dense in particles. Also, differences in specifications in brightness and contrast used by the researcher appear more pronounced. But the actual particles distinct in other slides seem to be few and therefore Slide 8 shows some resemblance to slide 7.

#### 4.1.2. Experiment 2:

##### [A] Researcher's Slides

###### Slide 1:

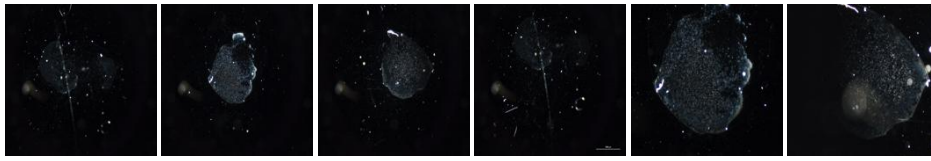


Figure 4.25: Researcher: Slide 1: Three drops (1a), (1b), (1c) at magnification 2x left and magnification 4x right.

Slide 1 shows minimal staining.

###### Slide 2:

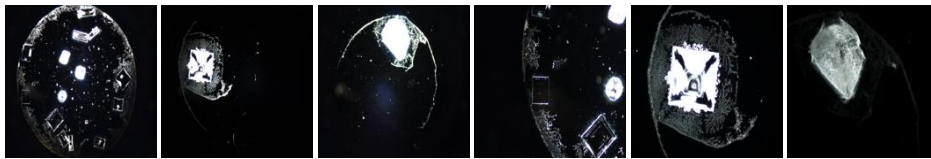


Figure 4.26: Researcher: Slide 2: Three drops (2a), (2b), (2c) at magnification 2x left and magnification 4x right.

Slide 2 displays pyrimad-like patterns.

###### Slide 3:

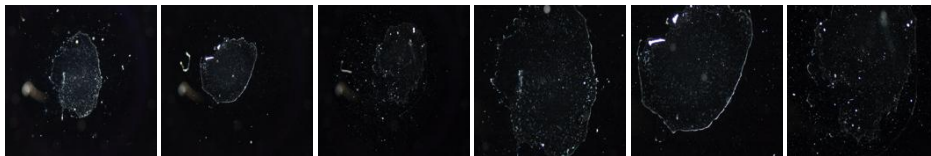


Figure 4.27: Researcher: Slide 3: Three drops (3a), (3b), (3c) at magnification 2x left and magnification 4x right.

Slide 3 shows minimal staining.

###### Slide 4:

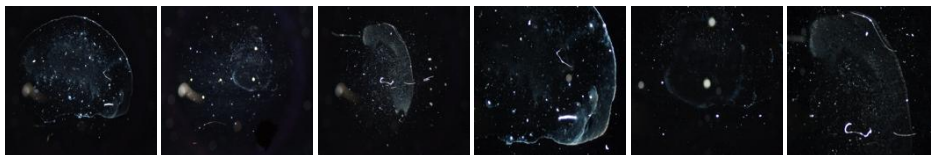


Figure 4.28: Researcher: Slide 4: Three drops (4a), (4b), (4c) at magnification 2x left and magnification 4x right.

Slide 4 show a smudge-like staining but with minimal particles within.

###### Slide 5:

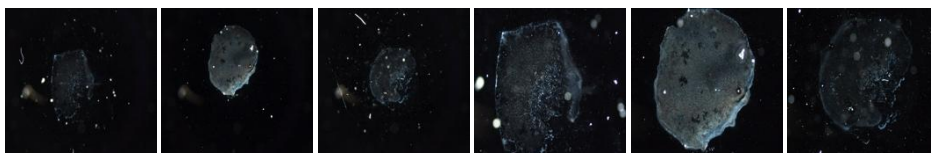




Figure 4.29: Researcher: Slide 5: Three drops (5a), (5b), (5c) at magnification 2x left and magnification 4x right.

Slide 5 displays smudge-like staining with minimal particles.

Slide 6:

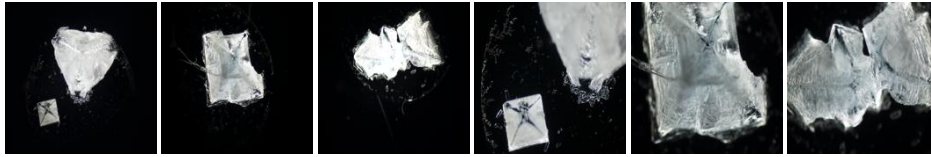


Figure 4.30: Researcher: Slide 6: Three drops (6a), (6b), (6c) at magnification 2x left and magnification 4x right.

Slide 6 shows degradation of pyramid-like patterns.

Slide 7:

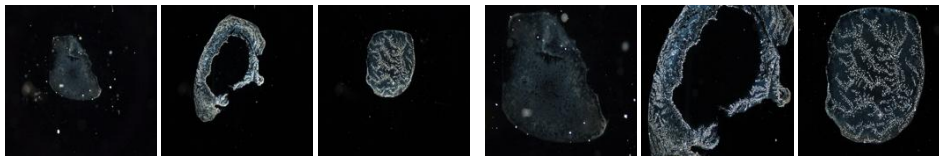


Figure 4.31: Researcher: Slide 7: Three drops (7a), (7b), (7c) at magnification 2x left and magnification 4x right.

Slide 7 displays smudge-like staining with clumping of particles.

Slide 8:

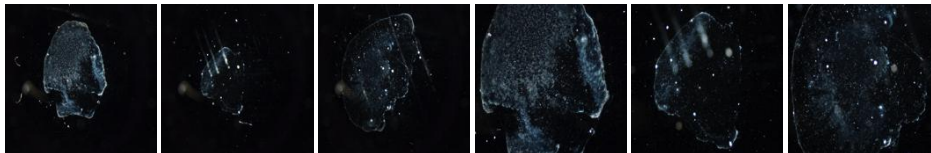


Figure 4.32: Researcher: Slide 8: Three drops (8a), (8b), (8c) at magnification 2x left and magnification 4x right.

Slide 8 shows smudge-like staining.

[B] Microbiologist Slides:

Slide 1:

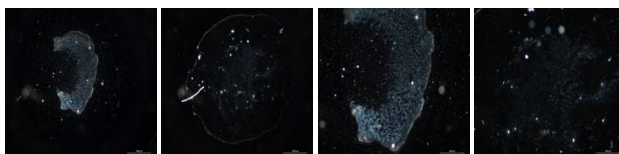


Figure 4.33: Microbiologist: Slide 1: Two drops (1a), (1b) at magnification 2x left and magnification 4x right.

Slide 1 shows slight smudge-like staining with minimal particles.



Slide 2:

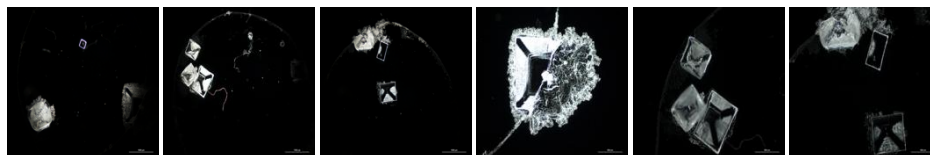


Figure 4.34: Microbiologist: Slide 2: Three drops (2a), (2b), (2c) at magnification 2x left and magnification 4x right.

Slide 2 shows degrading pyramid-like patterns.

Slide 3:

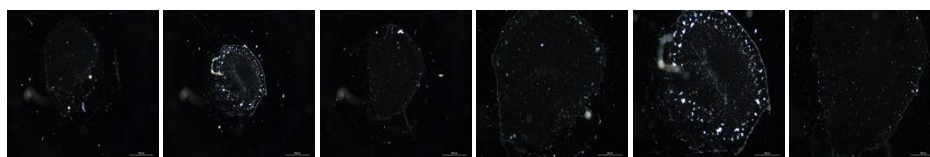


Figure 4.35: Microbiologist: Slide 3: Three drops (3a), (3b), (3c) at magnification 2x left and magnification 4x right.

Slide 3 shows minimal particle pattern staining.

Slide 4:

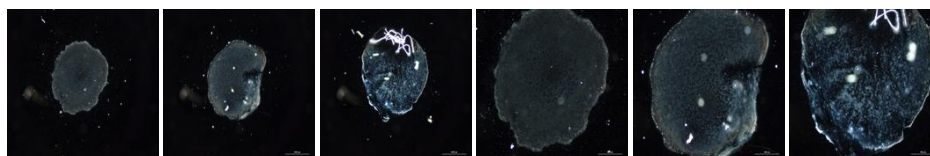


Figure 4.36: Microbiologist: Slide 4: Three drops (4a), (4b), (4c) at magnification 2x left and magnification 4x right.

Slide 4 shows smudge-like staining with clumping of particles.

Slide 5:

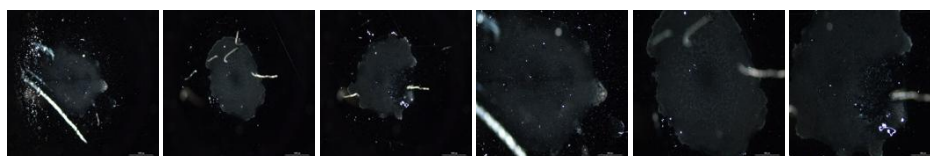


Figure 4.37: Microbiologist: Slide 5: Three drops (5a), (5b), (5c) at magnification 2x left and magnification 4x right.

Slide 5 shows a smudge-like staining.

Slide 6:

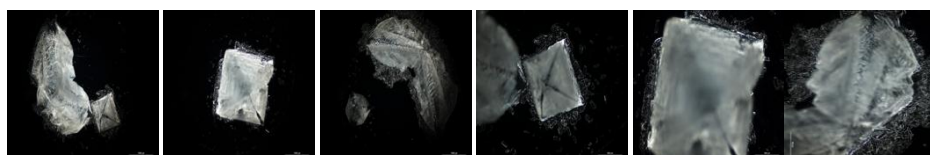


Figure 4.38: Microbiologist: Slide 6: Three drops (6a), (6b), (6c) at magnification 2x left and magnification 4x right.

Slide 6 displays degrading pyramid-like patterns.

Slide 7:

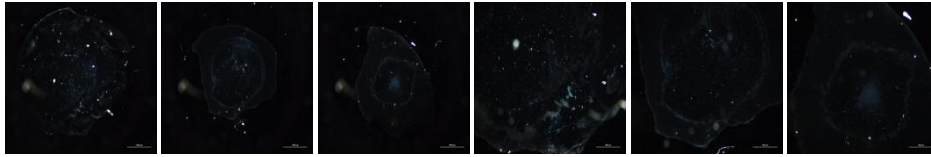


Figure 4.39: Microbiologist: Slide 7: Three drops (7a), (7b), (7c) at magnification 2x left and magnification 4x right.

Slide 7 shows minimal particle pattern staining.

Slide 8:

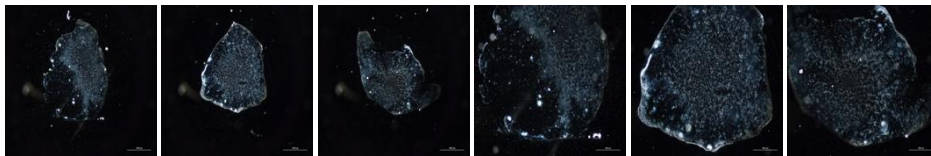


Figure 4.40: Microbiologist: Slide 8: Three drops (8a), (8b), (8c) at magnification 2x left and magnification 4x right.

Slide 8 shows smudge-like staining with larger particle patterns.

[C] Researcher's Slides vs. Microbiologist Slides:

Slide 1:

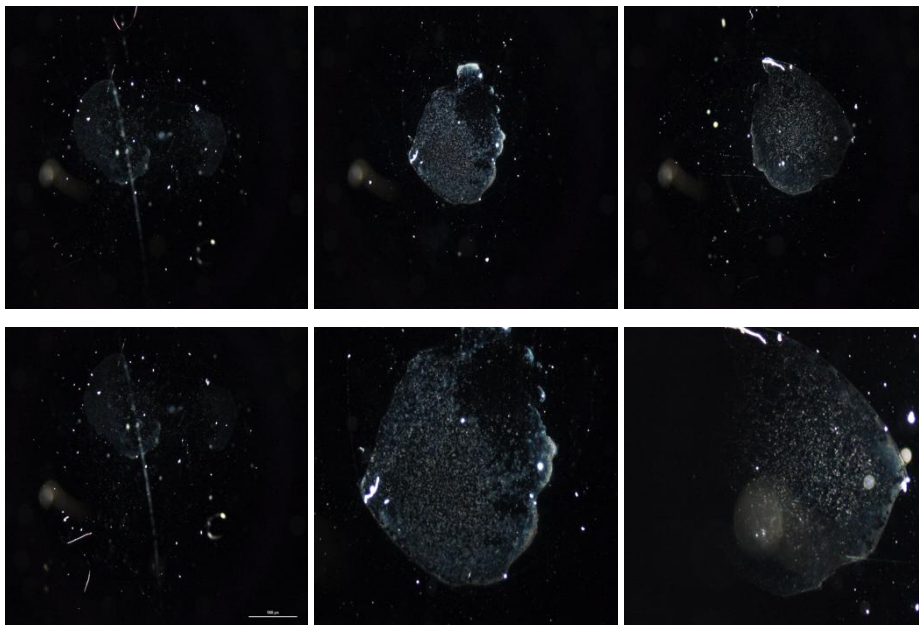
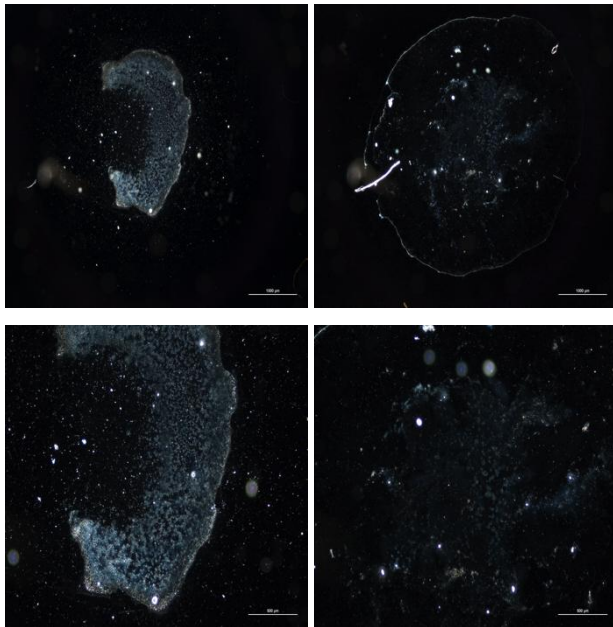


Figure 4.41: Slide 1: Three drops (1a), (1b), (1c) at magnification 2x and magnification 4x: researcher's slides above and microbiologist below.



Again like in experiment 1 both experimenters slides show compacted smudge-like staining but definite decrease in mass and the actual particles that were visible as stars in the nights sky in experiment 1. The microbiologist slide 1(b) shows the thread like pattern.

Slide 2:

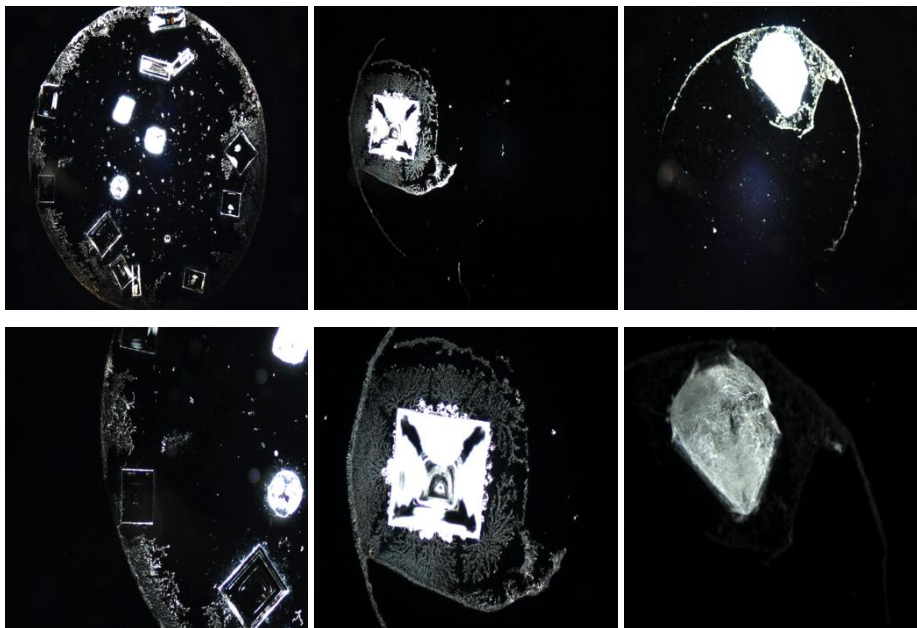
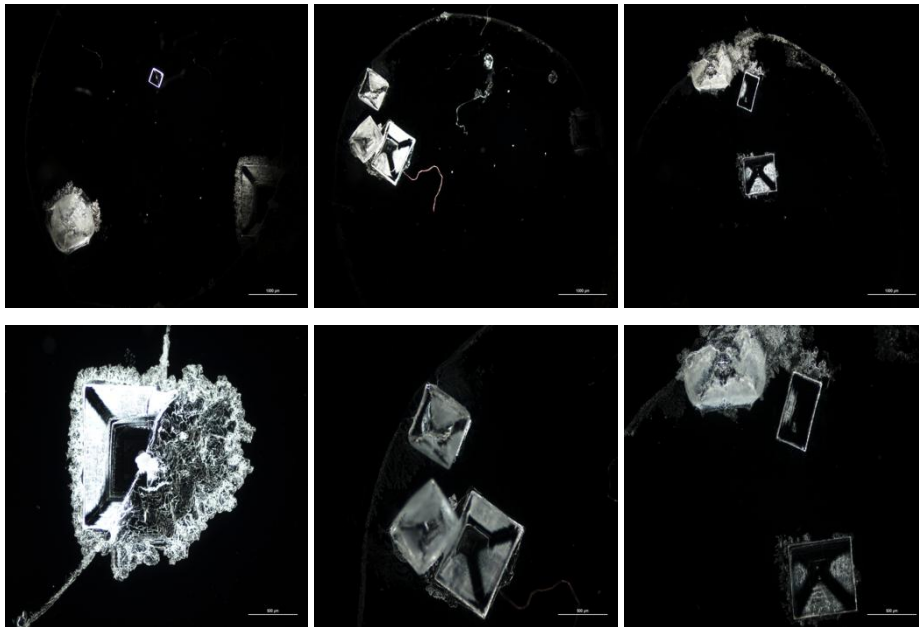


Figure 4.42: Slide 2: Three drops (2a), (2b), (2c) at magnification 2x and magnification 4x: researcher's slides above and microbiologist below.



Again distinct pyrimad-like structures are seen in both experiments but with more breaking and spilling of contents in the latter. More dissolution of form is most likely due to the time in solution.

Slide 3:

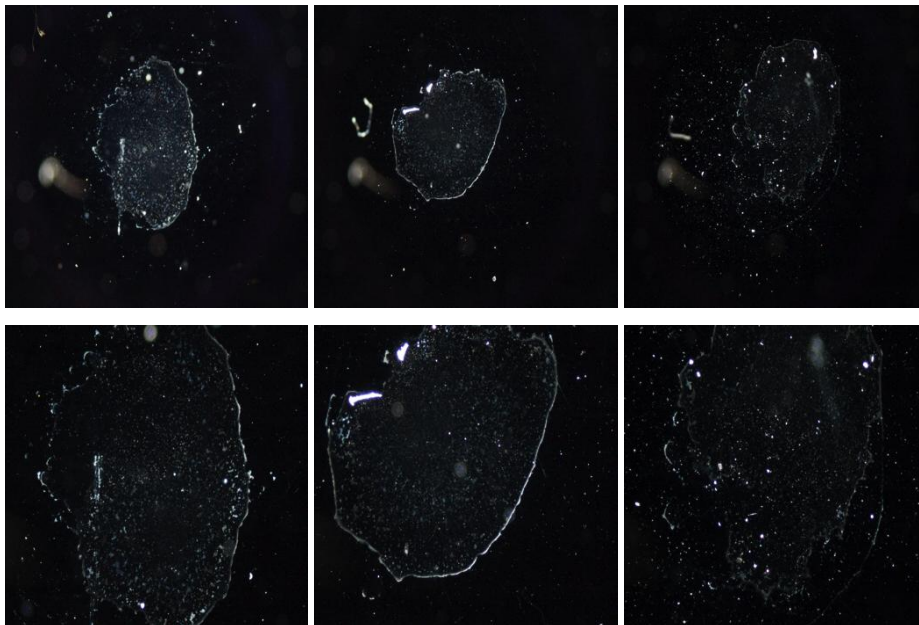
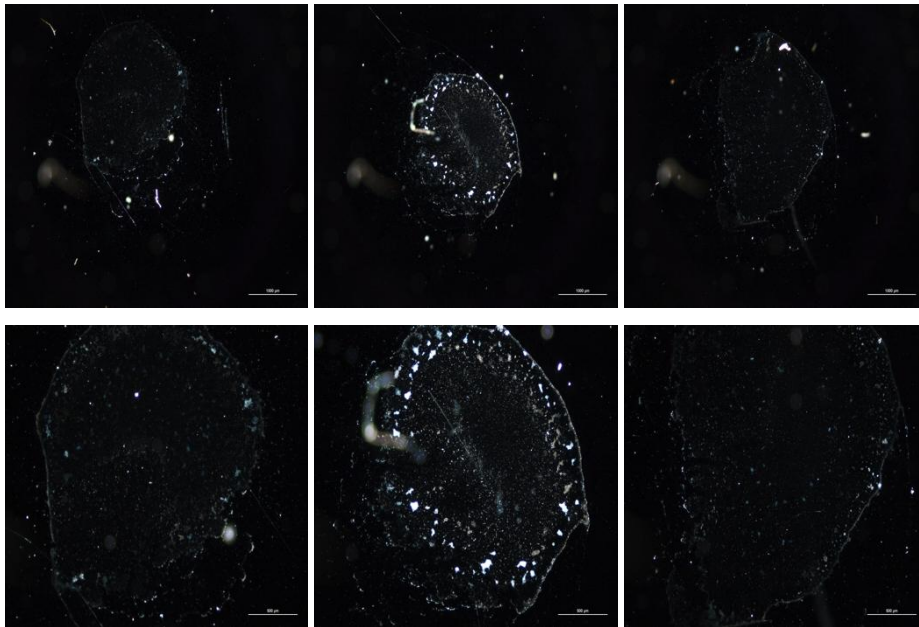


Figure 4.43: Slide 3: Three drops (3a), (3b), (3c) at magnification 2x and magnification 4x: researcher's slides above and microbiologist below.





Like slide 1, slide 3 shows similar staining which are similar to slides 1 and 3 of experiment 1 but there is less particles seen in experiment 2.

Slide 4:

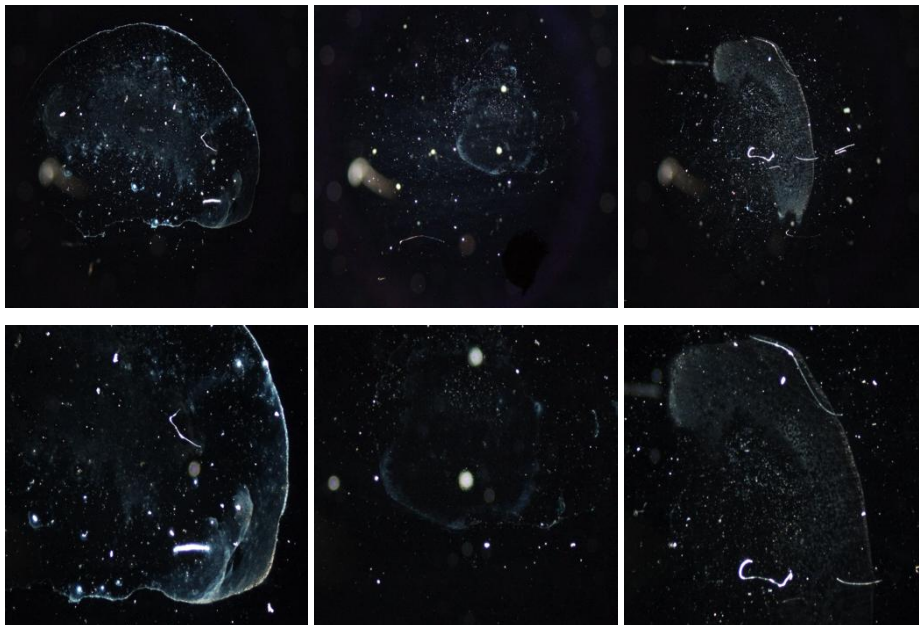
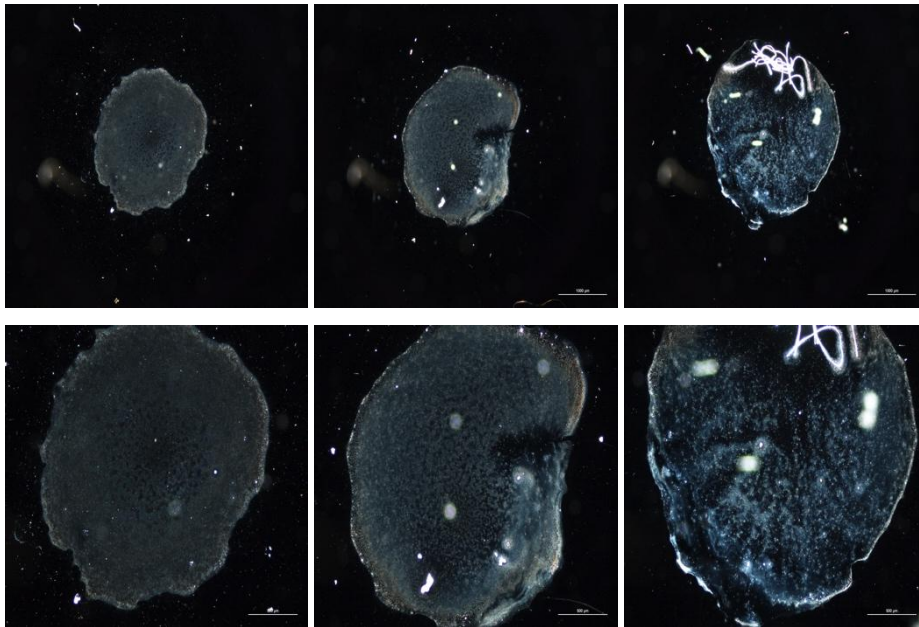


Figure 4.44: Slide 4: Three drops (4a), (4b), (4c) at magnification 2x and magnification 4x: researcher's slides above and microbiologist below.



Researcher's and microbiologist's slides show similarity, a smudge like staining with very little starry particles, less compacted then experiment 1 suggesting time degradation. There appears bigger particle patterns in slide 4 experiment 1 which also has more thread-like particles.

Slide 5:

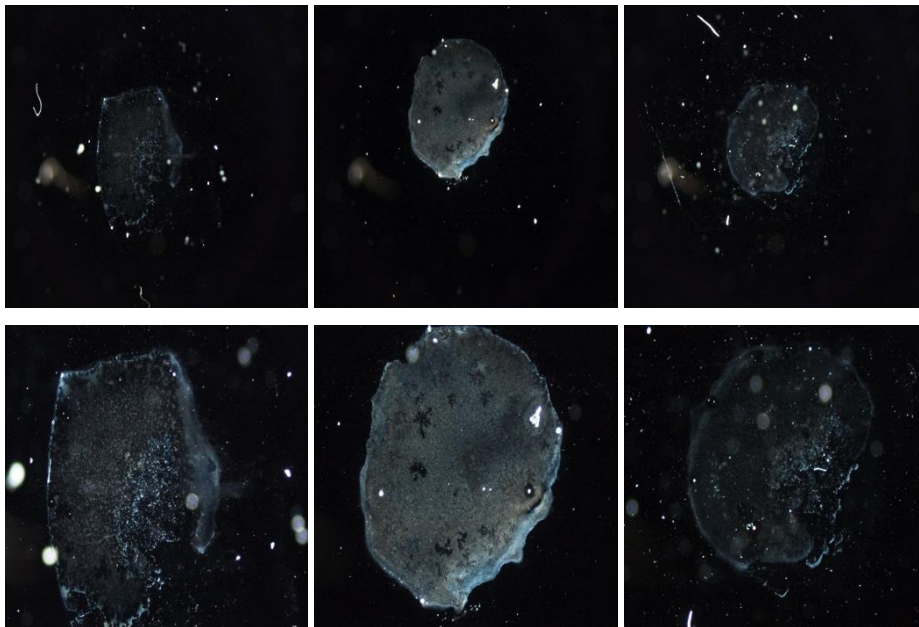
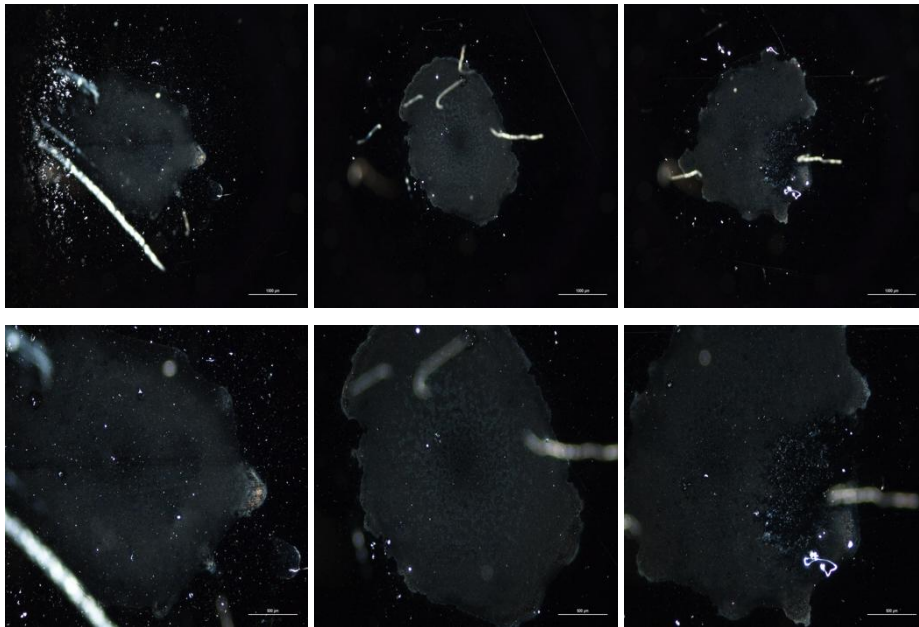


Figure 4.45: Slide 5: Three drops (5a), (5b), (5c) at magnification 2x and magnification 4x: researcher's slides above and microbiologist below.



Researcher's and microbiologist slides show similarity.

In both Researcher and the Microbiologist Slide 5's it seems to show a smudge staining which is similar to slide 4. Also seen are more thread-like particles. This cannot be dust accumulation as the slides were better cleaned in experiment 2 than 1. Slide 4 and slide 5 look different in experiments 1 and 2. The staining patterns of experiment 2 are more smudge like while experiment 1 has more starry particles.

Slide 6:

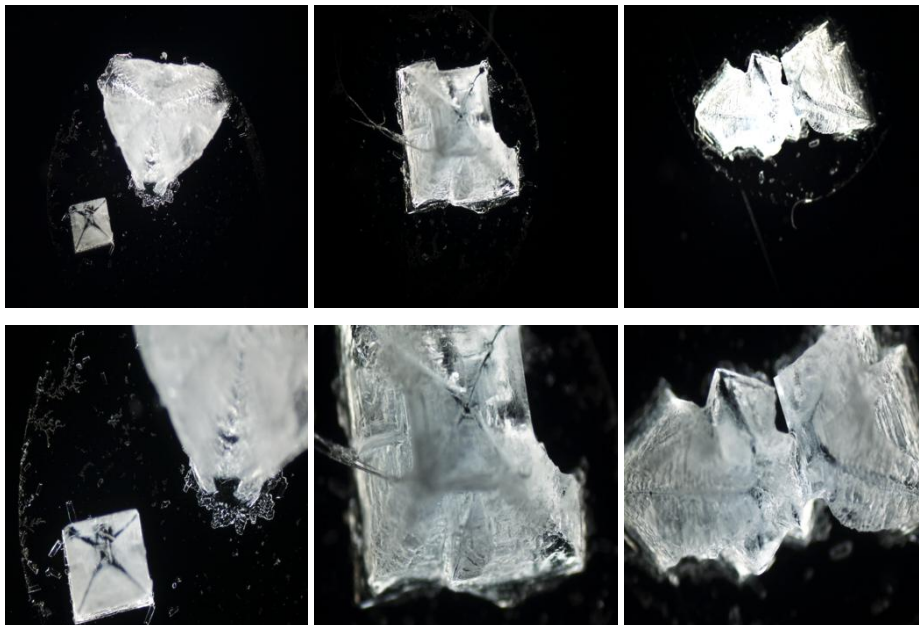
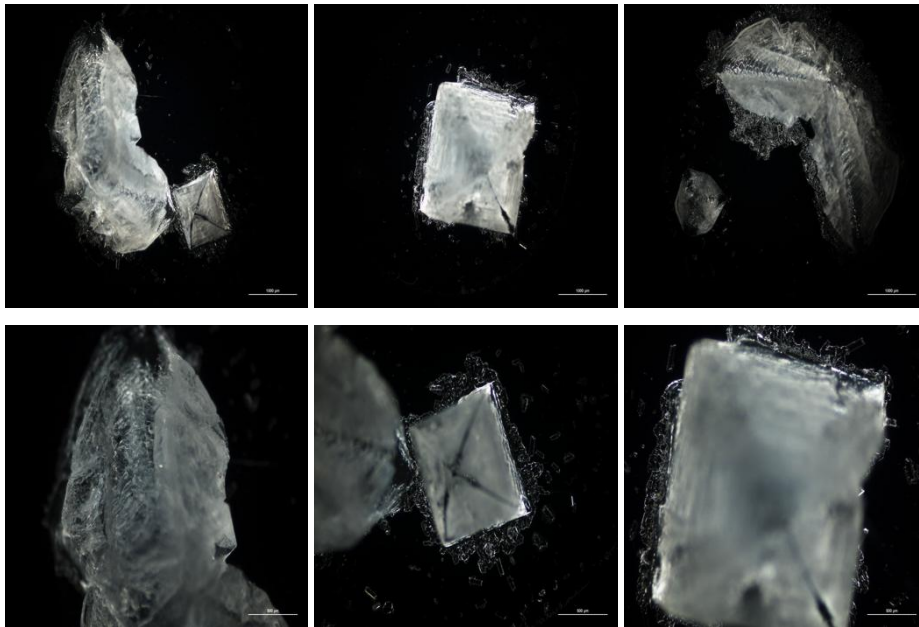


Figure 4.46: Slide 6: Three drops (6a), (6b), (6c) at magnification 2x and magnification 4x: researcher's slides above and microbiologist below.





Pyramid-like structures in both experimenters slides. Slides 2 and 6 hold similar pyramid like patterns. Both researcher's and microbiologist's slide 6 here show a marked degree of degradation of the distinct and better defined pyramid structures seen in experiment 1.

Slide 7:

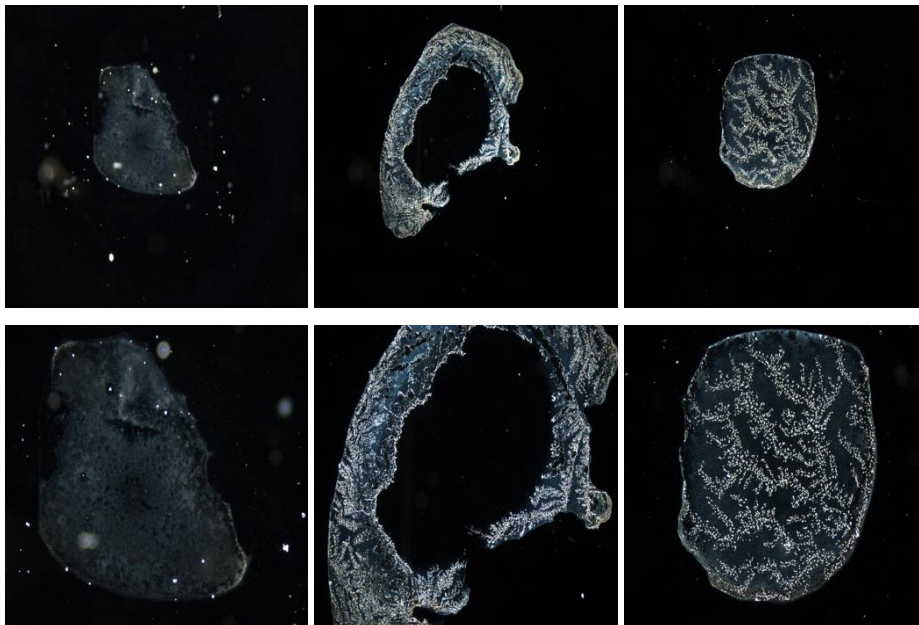
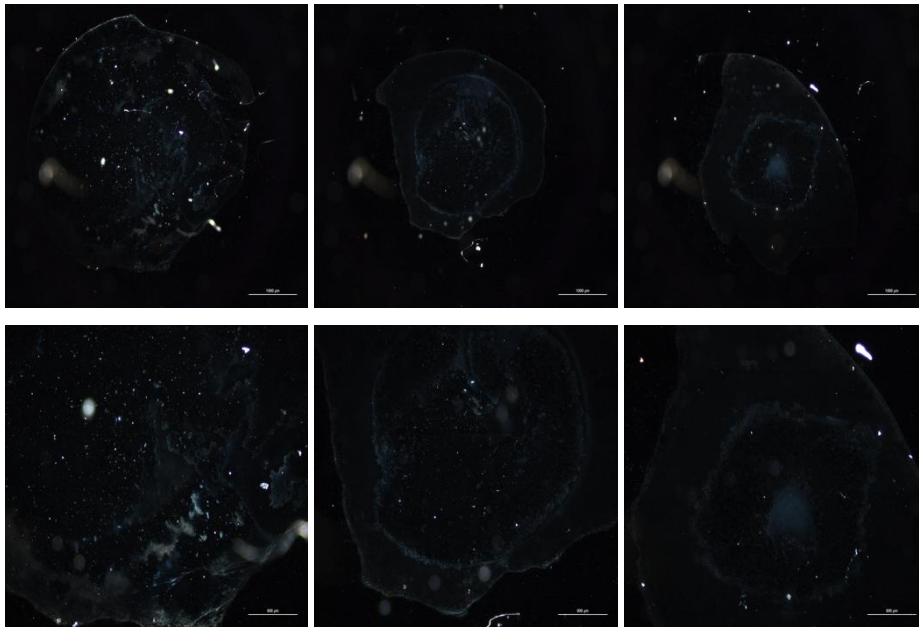


Figure 4.47: Slide 7: Three drops (7a), (7b), (7c) at magnification 2x and magnification 4x: researcher's slides above and microbiologist below.





Greater visibility of staining patterns in the researcher's slide 7 and faint patterns seen in the microbiologist's slide 7. The researcher's slide 7 has a smudge-like staining as well as clumping of the starry particles. Experiment 1 and 2 slide 7 of both experimenters hold different characteristics in that experiment 1 holds more of a starry night appearance then experiment 2 this is most likely due to the time degradation.

Slide 8:

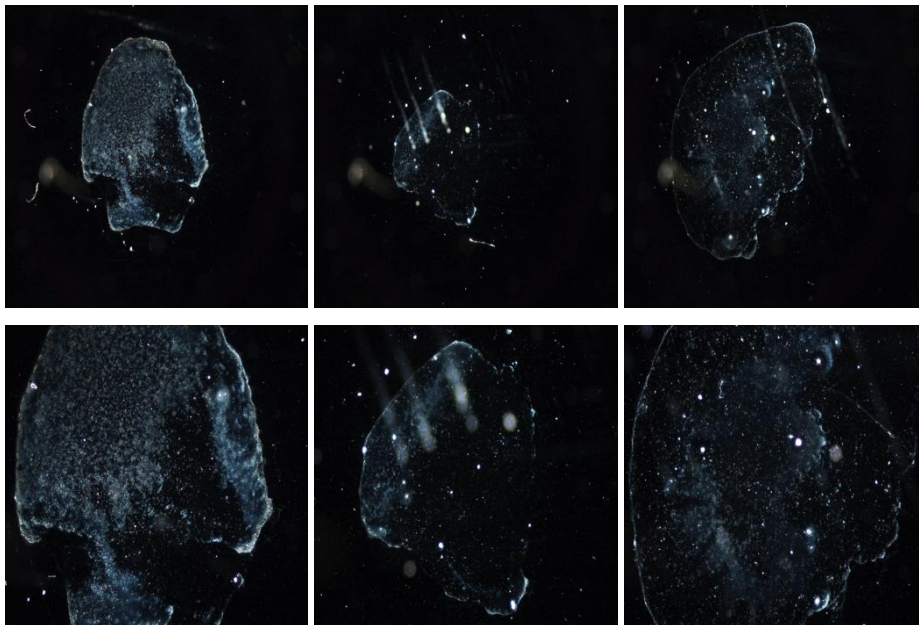
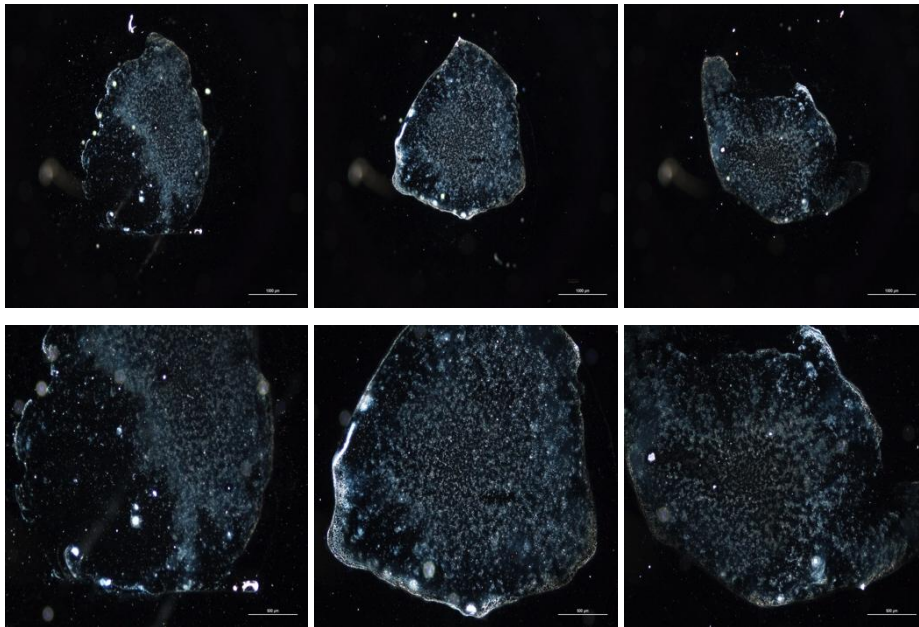


Figure 4.48: Slide 8: Three drops (8a), (8b), (8c) at magnification 2x and magnification 4x: researcher's slides above and microbiologist below.



Researcher's and microbiologist slide 8 show similar staining patterns. Smudge like staining as well as bigger particles. Experiment 1 slide 8 shows some characteristics to slide 8 of experiment 2, smudge-like staining and bigger particles.

## 4.2. Data Analysis Un-blinded

### 4.2.1. Experiment 1

[A] Researcher's slides:

i. Intra-group Analysis- (a) Parceval:

Slide 7: Parceval-Aqua Distillata

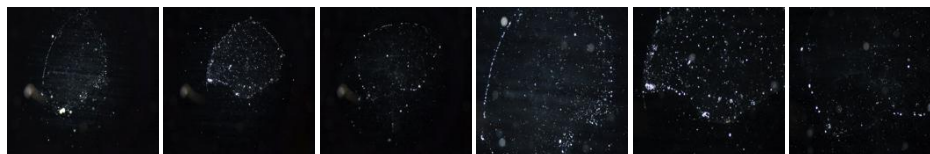


Figure 4.49: Parceval aqua distillata

Slide 7 displays no strikingly visible staining patterns, keeping within the constraints of an un-influencing control.

Slide 2: Parceval-*Natrum muriaticum* Mother solution

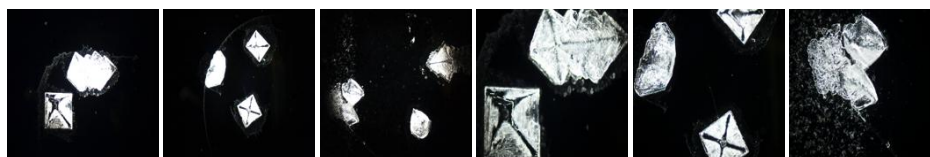


Figure 4.50: Parceval mother solution

Slide 2 shows distinct salt crystal patterns.

Slide 5: Parceval- *Natrum muriaticum* 9CH

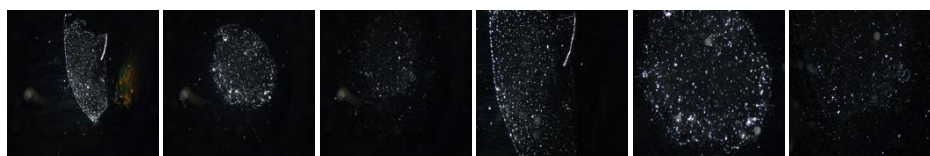


Figure 4.51: Parceval *Natrum muriaticum* 9CH

Slide 5 starts to display pattern changes suggesting the salt solute is influencing the water vehicle solvent.

Slide 4: Parceval- *Natrum muriaticum* 30CH

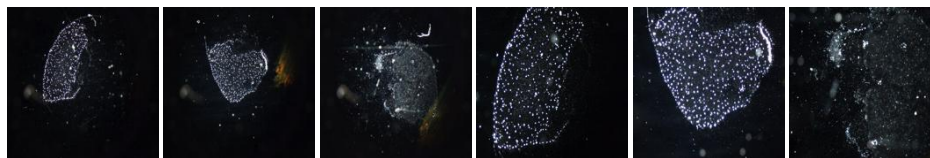


Figure 4.52:Parceval*Natrum muriaticum* 30CH

Slide 4 clearly displays a greater degree of staining suggesting that the water has been remarkably influenced even after dilution passes Avogadro's constant.

Parceval's Intra-group Analysis:

1. Parceval's samples appear to lie within the confines of the researcher's hypothesis of the water control showing a different staining pattern to that of:
  - The mother solution.
  - The *Natrum muriaticum* 9CH
  - The *Natrum muriaticum* 30CH
2. There also appears increased staining with the increasing potency from 9CH to 30CH.

[A] Researcher's slides:

i. Intra-group Analysis- (b) Durban University of Technology:

Slide 3: Durban University of Technology(DUT)-Aqua Distillata



Figure 4.53: The DUT Aqua Distillata

Slide 3 shows staining which could be due to the researcher adjusting contrast during photo taking or the fact that DUT Distillata water is kept amongst many remedies in the dispensary.

Slide 6: DUT- *Natrum muriaticum* mother solution

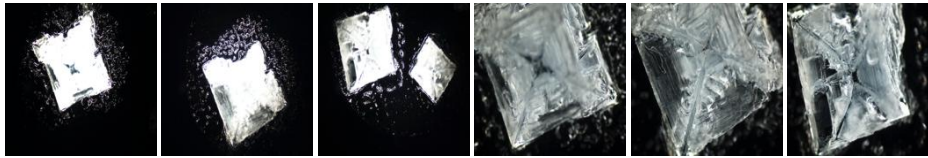


Figure 4.54: The DUT *Natrum muriaticum* mother solution

Slide 6 shows distinct salt crystal staining of a pyramidal-like structure.

Slide 8: DUT- *Natrum muriaticum* 9CH

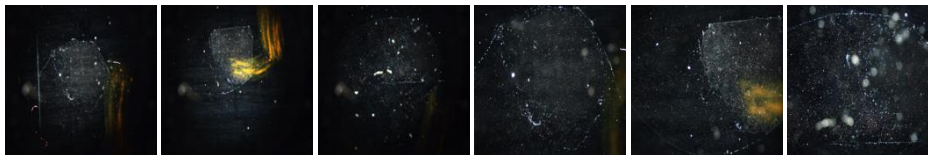


Figure 4.55: DUT *Natrum muriaticum* 9CH

Slide 8 displays less staining than its water sample.

Slide 1: DUT- *Natrum muriaticum* 30CH

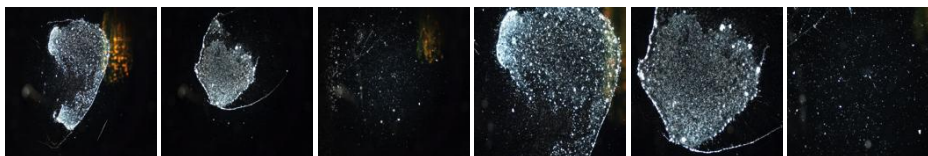


Figure 4.56: DUT *Natrum muriaticum* 30CH

Slide 1 at 30CH potency, a dilution pass Avogadro's constant is also showing distinct staining more than its 9CH.

#### DUT's Intra-group Analysis:

3. DUT's samples do not completely support the researcher's hypothesis. The water control appears to keep within the constraints of the researcher's hypothesis, showing a different staining to that of:
  - The mother solution
  - The *Natrum muriaticum* 9CH.
  - But the water control shows a staining pattern similarity to the *Natrum muriaticum* 30CH.
4. However, DUT's sample does display an increased staining with the increasing potency from 9CH to 30CH.

Possible reasons for DUT water control sample appearing against the researcher's hypothesis:

- Contaminated water sample.



- Contaminated water sample as the DUT Distillata water that was provided as a control was stored in a room containing many different highly energetic Homeopathic remedies. Since there is no direct contact between remedies and the Distillata water, the water contamination route of mode of transference comes to question.
- Possible use of a dirty slide.
- Researcher's lack in skill in using a dark field microscope.
- Researcher adjusting computer contrast and brightness before taking the picture.

ii. Inter-group Analysis: Parceval vs. Durban University of Technology (Researcher)


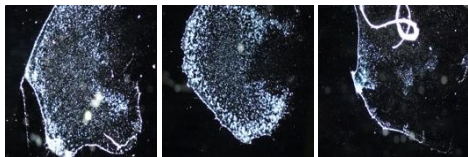
Parceval:	Durban University of technology:
Slide 7: Aqua Distillata 	Slide 3: Aqua Distillata 

Table 4.1. -Researcher's inter-group analysis of Aqua Distillata

Parceval's aqua Distillata displays minimal visual staining suggesting an un-influenced vehicle / solvent but DUT on the another hand is showing bright heavy staining suggesting contamination. This could be due to either the Distillata water being kept amongst various remedies at DUT (it is unknown if Parceval does the same) or due to the researcher's lack of skill in using a darkfield microscope.

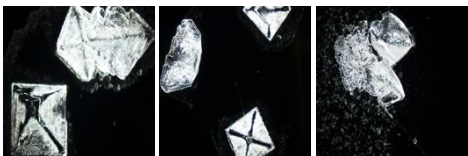
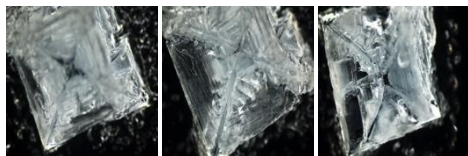
Slide 2: Mother Solution 	Slide 6: Mother Solution 
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Table 4.2. -Researcher's inter-group analysis of *Natrum muriaticum* Mother Solution.

The mother solution of both sources, Parceval and DUT, hold a similar picture of pyramidal-like crystals.

These slides suggest the mother solution of both sources have homologous structural features.

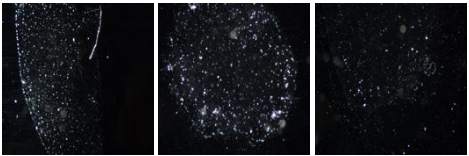
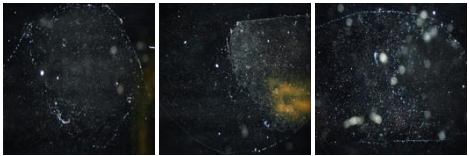
Slide 5: <i>Natrum muriaticum</i> 9CH	Slide 8: <i>Natrum muriaticum</i> 9CH
	

Table 4.3. - Researcher's inter-group analysis of *Natrum muriaticum* 9CH.

At 9CH Parcevals staining is slightly more than their water control and shows resemblance to DUT 9CH. Interestingly, DUT 9CH shows less staining than their water control. This could be due to the salt as solute changing the water structure. These slides suggest 9CH of both sources have homologous structural features.

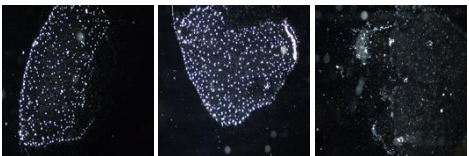
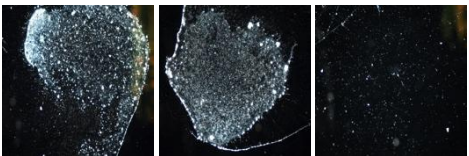
Parceval:	Durban University of technology:
Slide 4: <i>Natrum muriaticum</i> 30CH	Slide 1: <i>Natrum muriaticum</i> 30CH
	

Table 4.4. - Researcher's inter-group analysis of *Natrum muriaticum* 30CH.

The pictures of both sources resemble similar staining. Both Parceval and DUT have a more compacted smudge-like staining. These slides suggest the *Natrum muriaticum* 30CH of both sources have homologous structural features.

Conclusion: The Inter-group Analysis between Parceval and DUT slides produced by the researcher suggest that the water which was used before the manufacture of the Homeopathic remedy *Natrum muriaticum* may be staining different to each other but the water after holds homologous structural features i.e.:

- Parceval mother solution is similar to DUT's
- Parceval *Natrum muriaticum* 9CH is similar to DUT's
- Parceval *Natrum muriaticum* 30CH is similar to DUT's

## 4.2. Data Analysis Un-blinded

### 4.2.1. Experiment 1:

[B] Microbiologist Slides:

#### iii. Intra-group Analysis (a) Parceval

##### Slide 7: Parceval Aqua Distillata

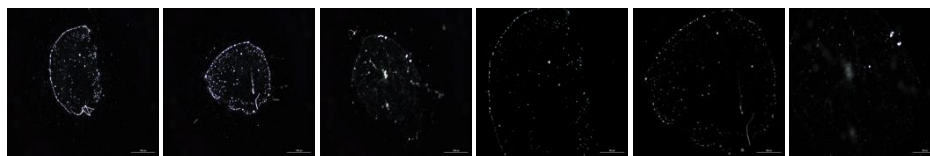


Figure 4.57:Parceval's Aqua Distillata

Slide 7 displays no strikingly visible staining patterns, keeping within the constraints of an un-influencing control.

##### Slide 2: Parceval Mother Solution

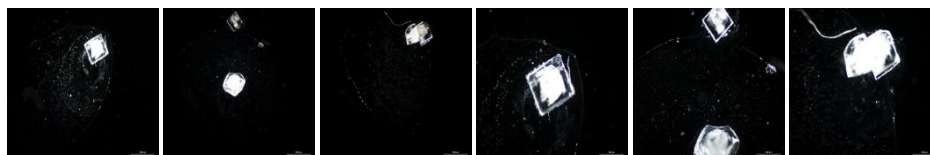


Figure 4.58: Parceval's *Natrum muriaticum* Mother Solution

Slide 2 shows distinct salt crystal patterns of a pyramidal-like structure.

##### Slide 4: Parceval *Natrum muriaticum* 9CH

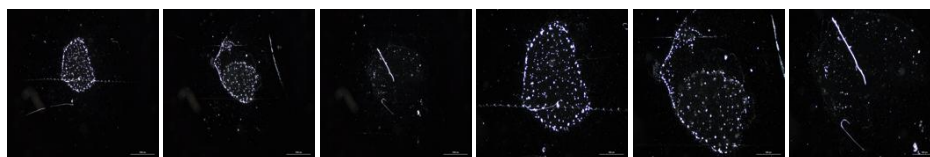


Figure 4.59: Parceval's *Natrum muriaticum* 9CH

Slide 4 starts to display pattern changes suggesting the salt solute is influencing the water vehicle solvent.



Slide 5: Parceval *Natrum muriaticum* 30CH

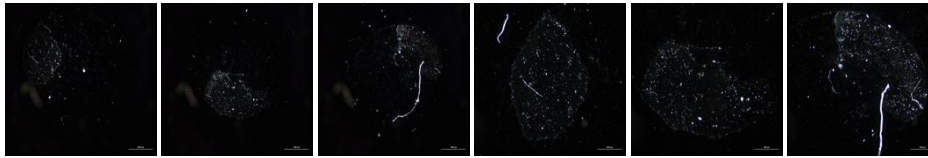


Figure 4.60: Parceval's *Natrum muriaticum* 30CH

Slide 5 shows no obvious staining patterns.

Parceval's Intra-group Analysis:

5. Parceval's samples appear to lie within the confines of the researcher's hypothesis of the water control being uninfluenced because it shows no visible staining and shows a different staining pattern to that of:
  - The mother solution.
  - The *Natrum muriaticum* 9CH
  - But the water control sample holds a similarity to the *Natrum muriaticum* 30CH of no visible staining patterns suggesting the *Natrum muriaticum* 30CH sample has not been influenced through the homeopathic process of dilution and succussion.
6. There appears decreased staining with the increasing potency from 9CH to 30CH suggesting that pass Avogadro's constant the water remains uninfluenced as water only.

Possible reasons for Parceval's *Natrum muriaticum* 30CH sample appearing against the researcher's hypothesis:

- Decomposition. Microbiologist viewed and photographed his, experiment 1: slides much later after actually making them.
- Microbiologist adjusting computer contrast and brightness before taking the picture.

[B] Microbiologist Slides:

iii. Intra-group Analysis (b) Durban University of Technology:

Slide 3: DUT Aqua Distillata

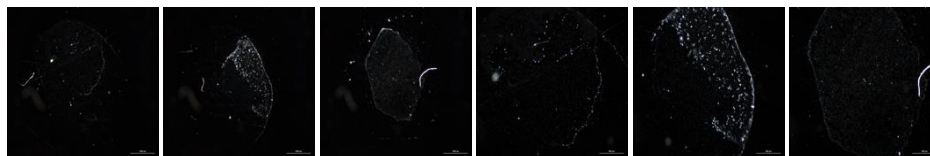


Figure 4.61: The DUT Aqua Distillata

Slide 3 displays no strikingly visible staining patterns, keeping within the constraints of an un-influencing control.

Slide 6: DUT *Natrum muriaticum* Mother Solution

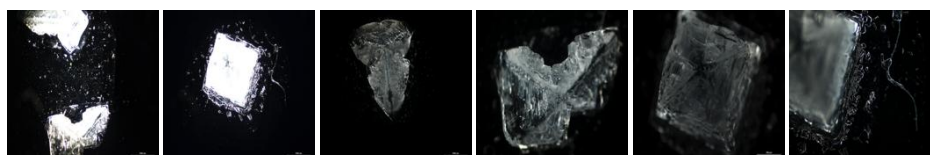


Figure 4.62: The DUT *Natrum muriaticum* Mother Solution

Slide 6 shows distinct salt crystal staining of a pyramidal-like structure.

Slide 8: DUT *Natrum muriaticum* 9CH

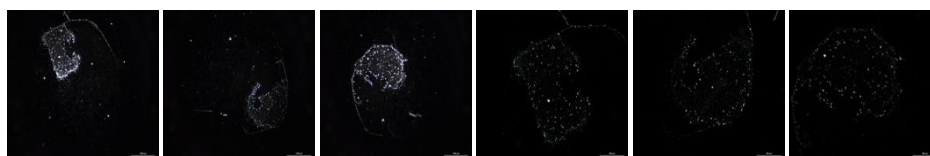


Figure 4.63: The DUT *Natrum muriaticum* 9CH

Slide 8 starts to display pattern changes suggesting the salt solute is influencing the water vehicle solvent.

Slide 1: DUT *Natrum muriaticum* 30CH

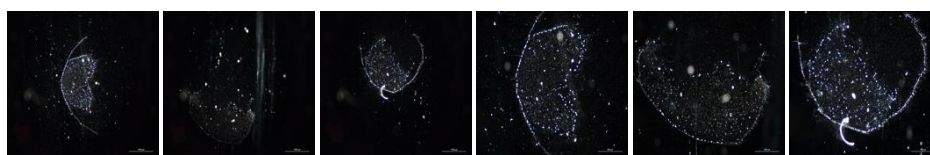


Figure 4.64: The DUT *Natrum muriaticum* 30CH

Slide 1 displays a greater degree of staining suggesting that the water has been influenced even after dilution past Avogadro's constant.

#### DUT's Intra-group Analysis:

7. DUT's samples appears to keep within the constraints of the researcher's hypothesis, showing a different staining to that of:
  - The mother solution
  - The *Natrum muriaticum* 9CH.
  - *Natrum muriaticum* 30CH.
8. DUT's sample does display an increased staining with the increasing potency from 9CH to 30CH.

iv. Inter-group Analysis: Parceval vs. Durban University of Technology:  
(Microbiologist)

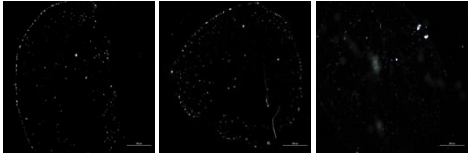
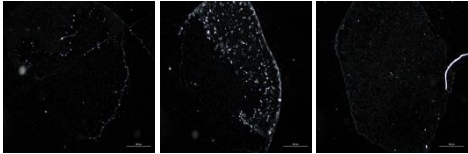
Parceval:	Durban University of Technology:
Slide 7: Aqua Distillata 	Slide 3: Aqua Distillata 

Table 4.5. - Microbiologist inter-group analysis of Aqua Distillata.

Although the staining from DUT aqua Distillata shows slightly more activity in one picture, overall both Parceval and DUT slides display no strikingly evident staining suggesting an uninfluenced sample control.

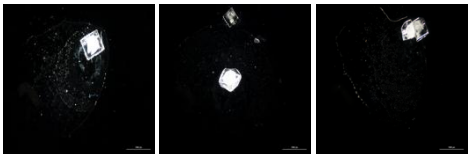
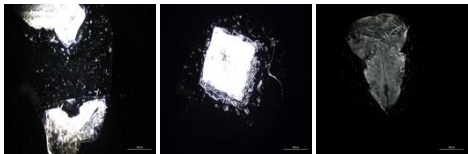
Slide 2: Mother Solution 	Slide 6: Mother Solution 
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Table 4.6. - Microbiologist inter-group analysis of *Natrum muriaticum* Mother Solution.

The mother solution of both sources, Parceval and DUT, hold a similar picture of pyramidal-like crystals. These slides suggest both the mother solution have homologous structural features.

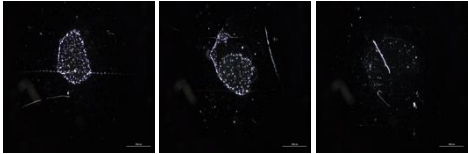
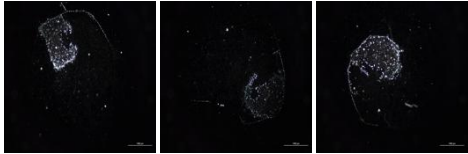
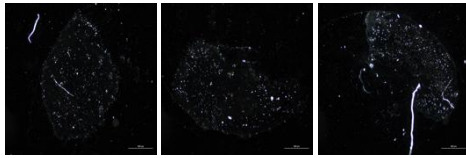
Slide 4: <i>Natrum muriaticum</i> 9CH 	Slide 8: <i>Natrum muriaticum</i> 9CH 
--	---

Table 4.7. - Microbiologist inter-group analysis of *Natrum muriaticum* 9CH.

At 9CH Parcevals and DUT staining is slightly more than their water control and shows a similarity to each other. These slides suggest the 9CH of both sources have homologous structural features.

Slide 5: *Natrum muriaticum* 30CH



Slide 1: *Natrum muriaticum* 30CH

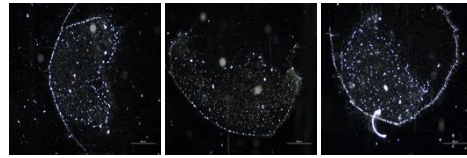


Table 4.8. - Microbiologist inter-group analysis of *Natrum muriaticum* 30CH.

There appears to be more staining activity in the DUT *Natrum muriaticum* 30CH which also appears to have increased staining with potency from DUT 9CH to 30CH.

Parceval's *Natrum muriaticum* 30CH appears to have no visible staining and displays similarity to the water control sample.

Conclusion: The Inter-group Analysis between Parceval and DUT slides produced by the microbiologist suggest the water that is used before the manufacture of the Homeopathic remedy *Natrum muriaticum* has similar staining to each other and the water after holds homologous structural features i.e.:

- Parceval mother solution is similar to DUT
- Parceval *Natrum muriaticum* 9CH is similar to DUT
- But Parceval *Natrum muriaticum* 30CH is different to DUT, showing no visible staining suggesting no water structural stain change past Avogadro's constant.

[C] Experiment 1: Intra-group Analysis- Researcher vs. Microbiologist:


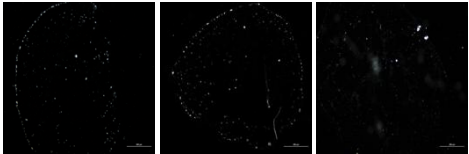
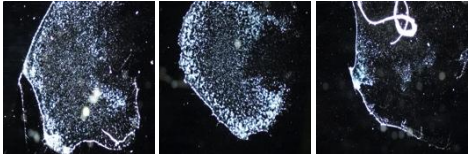
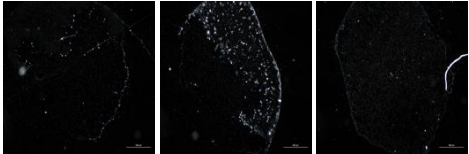
Researcher:	Microbiologist:
<p>Slide 7: Parceval Aqua Distillata</p> 	<p>Slide 7: Parceval Aqua Distillata</p> 
<p>Slide 3: DUT Aqua Distillata</p> 	<p>Slide 3: DUT Aqua Distillata</p> 

Table 4.9. - Researcher vs. Microbiologist intra-group analysis of Aqua Distillata.

Both Parceval's aqua Distillata displays minimal visual staining suggesting an un-influenced vehicle / solvent but only the microbiologist's DUT slide is consistent with both Parceval slides. On the another hand the researcher's DUT slide is showing bright heavy staining suggesting contamination.

Overall there is more similarity between slides showing congruency of a neutral control.


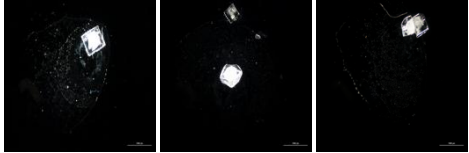
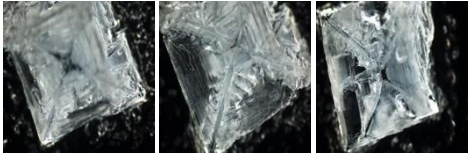
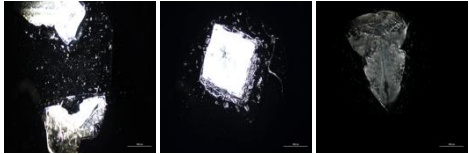
<p>Slide 2: Parceval Mother Solution</p> 	<p>Slide 2: Parceval Mother Solution</p> 
<p>Slide 6: DUT Mother Solution</p> 	<p>Slide 6: DUT Mother Solution</p> 

Table 4.10. - Researcher vs. Microbiologist intra-group analysis of *Natrum muriaticum* Mother Solution.

The mother solution of Parceval and DUT of both experimenters, are consistent with a staining picture similar to pyramidal-like crystals.

These slides suggest that the mother solution samples of Parceval and DUT of both experimenters have homologous structural features.



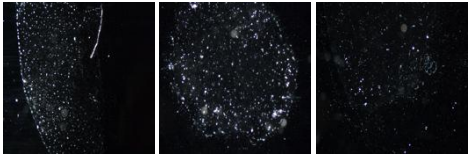
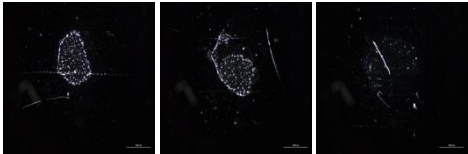
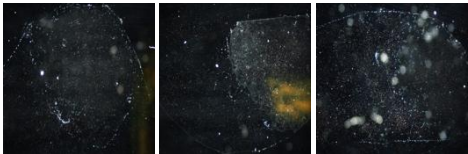
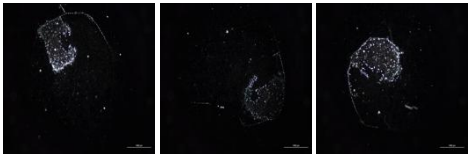
<p>Slide 5: Parceval <i>Natrum muriaticum</i> 9CH</p> 	<p>Slide 4: Parceval <i>Natrum muriaticum</i> 9CH</p> 
<p>Slide 8: DUT <i>Natrum muriaticum</i> 9CH</p> 	<p>Slide 8: DUT <i>Natrum muriaticum</i> 9CH</p> 

Table 4.11. - Researcher vs. Microbiologist intra-group analysis of *Natrum muriaticum* 9CH.

The *Natrum muriaticum* 9CH from Parceval and DUT of both experimenters have consistently similar staining patterns suggesting congruency between all the 9CH solutions.


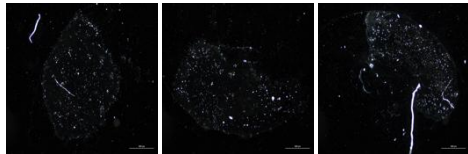
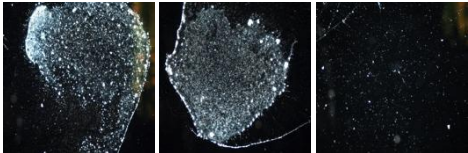
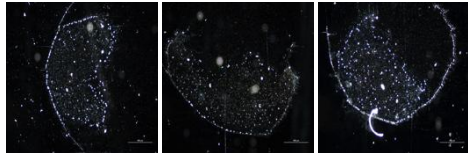
<p>Slide 4: Parceval <i>Natrum muriaticum</i> 30CH</p> 	<p>Slide 5: Parceval <i>Natrum muriaticum</i> 30CH</p> 
<p>Slide 1: DUT <i>Natrum muriaticum</i> 30CH</p> 	<p>Slide 1: DUT <i>Natrum muriaticum</i> 30CH</p> 

Table 4.12. - Researcher vs. Microbiologist intra-group analysis of *Natrum muriaticum* 30CH.

There is a significant increase in staining brightness within the researcher's *Natrum muriaticum* 30CH in comparison to the microbiologist 30CH slide samples. Overall the *Natrum muriaticum* 30CH slides show a consistently increasing staining with the increase in potency from 9CH to 30CH.

Conclusion: The inter-group analysis between Researcher and Microbiologist slides suggest that the water that was used before the manufacture of the Homeopathic remedy *Natrum muriaticum* may be staining different to each other but the water after holds homologous structural features i.e.:

- Parceval mother solution is similar to DUT

- Parceval *Natrum muriaticum* 9CH is similar to DUT

But Parceval *Natrum muriaticum* 30CH is different to DUT in brightness of stains but the 30CH stains are significantly increasing after the 9CH displaying the possible increase in potency.

## 4.2. Data Analysis Un-blinded

### 4.2.2. Experiment 2:

[A] Researcher's Slides:

v. Intra-group Analysis: (a) Parceval:

Slide 7: Parceval-Aqua Distillata

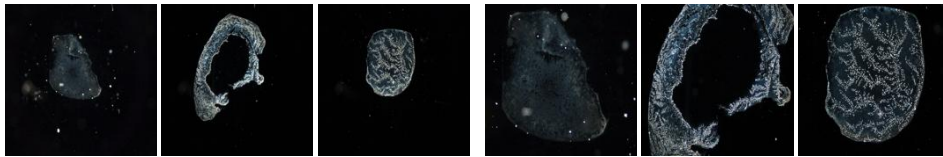


Figure 4.65: Parceval's Aqua Distillata

Slide 7 displays visible staining of branch-like particle patterns, suggesting a non-neutral control or possible contamination.

Slide 2: Parceval- *Natrum muriaticum* Mother Solution

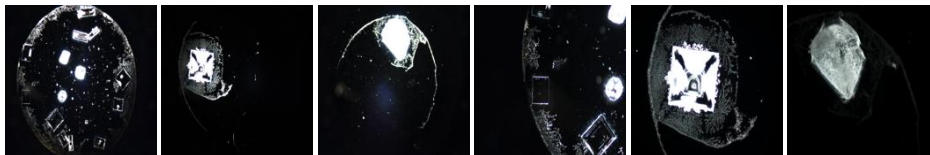


Figure 4.66: Parceval's *Natrum muriaticum* Mother Solution

Slide 2 shows distinct salt crystal patterns with pyramidal-like structure.

Slide 5: Parceval- *Natrum muriaticum* 9CH

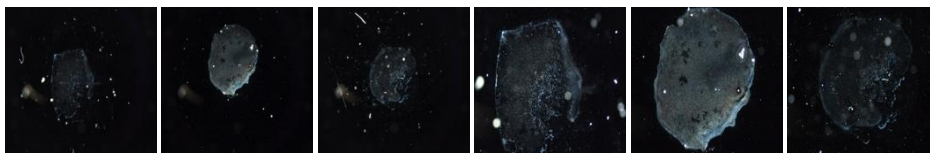


Figure 4.67: Parceval's *Natrum muriaticum* 9CH

Slide 5 displays smudge-like staining with little to no particles within.



Slide 4: Parceval- *Natrum muriaticum* 30CH

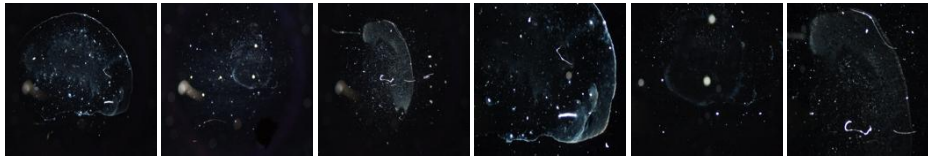


Figure 4.68: Parceval *Natrum muriaticum* 30CH

Slide 4 displays some smudge-like staining but again little to no actual particles within the smudge.

Parceval's Intra-group Analysis:

1. Parceval's water control sample stains show a difference in staining pattern to that of:
  - The mother solution.But the water control staining is similar to:
  - The *Natrum muriaticum*9CH
  - The *Natrum muriaticum*30CH
2. In keeping with remedy expiry hypothesis, there appears decreased staining with the increasing potency from 9CH to 30CH.
3. The mother solution shows some degradation of form.
4. Parceval's water control sample staining appears busier than DUT water control stains suggesting some sort of contamination or researcher error.

Possible reasons for Parceval's water control sample appearing more active:

- Contaminated water sample.
- Contaminated water sample as the water sample that was provided as control was stored after experiment 1 in a fridge at UKZN containing the other highly energetic Homeopathic samples. Since there is no direct contact between remedies and the Distillata water, the water contamination route of mode of transference comes into question.
- Researcher's lack in skill in using a dark field microscope.
- Researcher adjusting computer contrast and brightness before taking the picture.

[A] Researcher's Slides:

v. Intra-group Analysis:

(b) Durban University of Technology:

Slide 3: DUT-Aqua Distillata

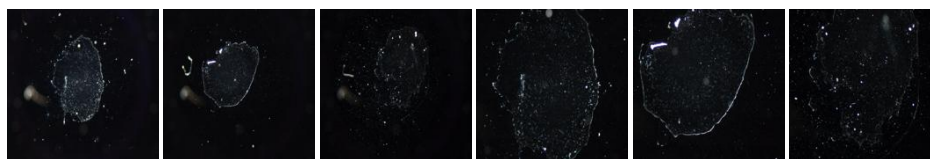


Figure 4.69: The DUT Aqua Distillata

Slide 3 shows some smudge staining with no patterns like Parceval but has some particles within.

Slide 6: DUT- *Natrum muriaticum* Mother Solution

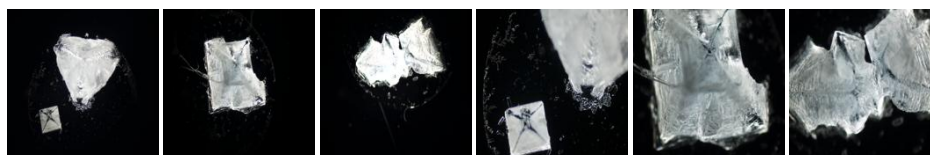


Figure 4.70: The DUT *Natrum muriaticum* mother solution

Slide 6 shows distinct degrading salt crystal staining of a breaking down pyramidal-like structure.

Slide 8: DUT- *Natrum muriaticum* 9CH

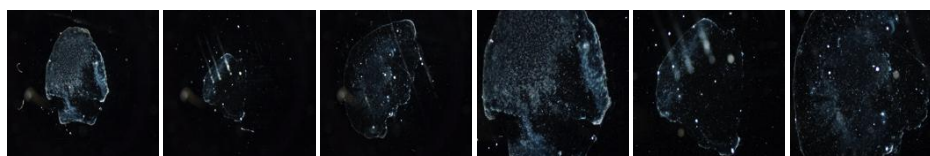


Figure 4.71: DUT *Natrum muriaticum* 9CH

Slide 8 displays more staining than its water sample and the staining is smudge-like with some particles within. Interestingly, the first picture on the left appears like the side view of a skeletal head.

Slide 1: DUT- *Natrum muriaticum* 30CH

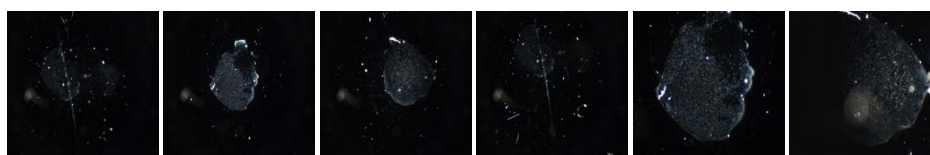


Figure 4.72: DUT *Natrum muriaticum* 30CH

Slide 1 at potency 30CH, a dilution past Avogadro's constant is showing some staining with much less particles than the 9CH.

#### DUT's Intra-group Analysis:

1. DUT's samples appear to lie within the confines of the researcher's hypothesis of the water control showing a different staining pattern to that of :
  - The mother solution
  - The *Natrum muriaticum* 9CH
  - The *Natrum muriaticum* 30CH
2. In keeping with remedy expiry, there appears decreased staining with the increasing potency from 9CH to 30CH.
3. The mother solution shows some degradation of form.

vi. Inter-group Analysis: Parceval vs. Durban University of Technology (Researcher):

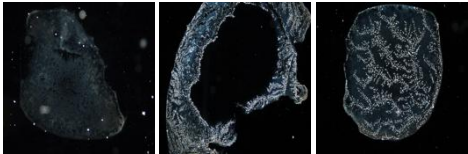
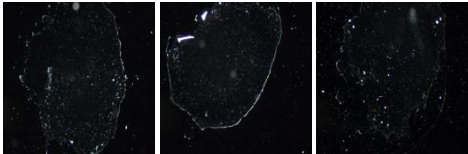
Parceval:	Durban University of Technology:
Slide 7:Aqua Distillata 	Slide 3:Aqua Distillata 

Table 4.13. - Researcher's inter-group analysis of Aqua Distillata.

Parceval's Aqua Distillata displays more visual staining suggesting an influenced vehicle / solvent but DUT on the another hand is showing less brightly stained. This could be due to either the Distillata water being kept amongst the other remedy samples at UKZN or due to the researcher's lack of skill in using a darkfield microscope.

Both are of a smudge-like staining but Parceval's stains are significantly more busy.



Slide 2: Mother Solution 	Slide 6: Mother Solution 
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Table 4.14. - Researcher's inter-group analysis of *Natrum muriaticum* Mother Solution.

The mother solution of both sources, Parceval and DUT, hold a similar picture of pyramidal-like crystals but with breakage of form. The degradation of form suggests the effect of time on the mother solution.

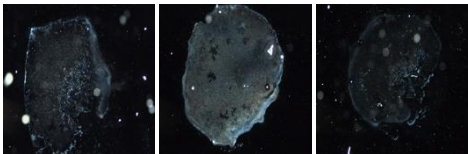
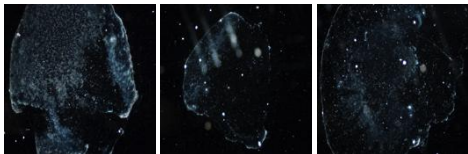
Slide 5: <i>Natrum muriaticum</i> 9CH 	Slide 8: <i>Natrum muriaticum</i> 9CH 
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Table 4.15. - Researcher's inter-group analysis of *Natrum muriaticum* 9CH.

At 9CH Parceval's staining is slightly more visible then DUT 9CH.

But both show some resemblance to each other in its smudge –like staining.

Parceval 9CH and DUT 9CH is similar to their own water control stains suggesting the event of remedy expiration.


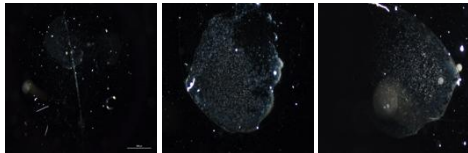
Parceval:	Durban University of Technology:
Slide 4: <i>Natrum muriaticum</i> 30CH 	Slide 1: <i>Natrum muriaticum</i> 30CH 

Table 4.16. - Researcher's inter-group analysis of *Natrum muriaticum* 30CH.

The pictures of both sources resemble similar staining. Both Parceval and DUT have a more compacted smudge-like staining. Parceval 30CH and DUT 30CH are similar in staining to their water control stains suggesting the event of expiration.

#### Conclusion:

The Inter-group Analysis between Parceval and DUT slides produced by the researcher's slides suggest :

- Parceval's water control slide appears different to DUT water control slides
- Parceval mother solution is similar to DUT mother solution.
- The mother solution of both sources retains its difference to all other samples.
- Parceval *Natrum muriaticum* 9CH is similar to DUT 9CH.
- Parceval *Natrum muriaticum* 30CH is similar to DUT 30CH.
- DUT *Natrum muriaticum* 30CH is similar to its water control sample suggesting the 30CH water returns to its original energetically uninfluenced form.
- There is a significant decrease in activity within the 9CH and 30CH of both Parceval and DUT suggesting remedy expiration.

## 4.2. Data Analysis Un-blinded

### 4.2.2. Experiment 2:

[B] Microbiologist Slides:

vii. Intra-group Analysis: (a) Parceval

Slide 7: Parceval Aqua Distillata

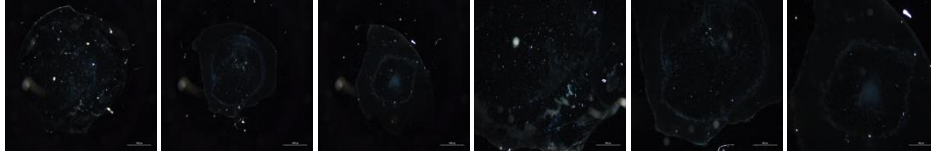


Figure 4.73: Parceval's Aqua Distillata

Slide 7 displays an almost non-visible smudge-like staining.

Slide 3: Parceval Mother Solution

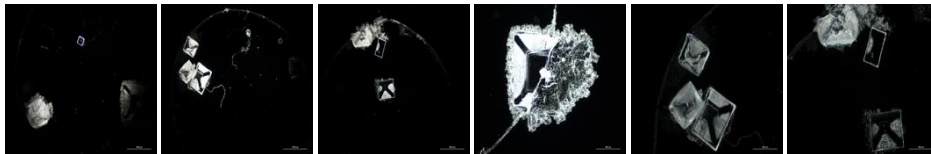


Figure 4.74: Parceval's *Natrum muriaticum* Mother Solution

Slide 3 shows distinct salt crystal patterns of a breaking down pyramidal-like structure.

Slide 4: Parceval *Natrum muriaticum* 9CH

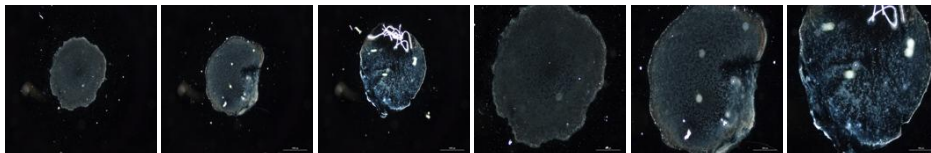


Figure 4.75: Parceval's *Natrum muriaticum* 9CH

Slide 4 displays a smudge-like staining with some thread-like particles within.

Slide 5: Parceval *Natrum muriaticum* 30CH

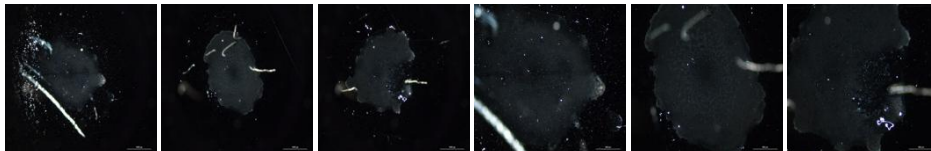


Figure 4.76: Parceval's *Natrum muriaticum* 30CH

Slide 5 displays an almost non-visible smudge like staining.

Parceval's Intra-group Analysis:

1. Parceval's samples appear to lie within the confines of the researcher's hypothesis of the water control being uninfluenced



because it shows no visible staining and shows a different staining pattern to that of:

- The mother solution.
  - The *Natrum muriaticum* 9CH
  - The water control sample holds a similarity to the *Natrum muriaticum* 30CH of minimal visible staining patterns suggesting the *Natrum muriaticum* 30CH sample has possibly expired.
2. There appears less activity in the 9CH and 30CH and a decrease in staining with the increasing potency from 9CH to 30CH suggesting that some sort of expiration of remedies has occurred.

[B] Microbiologist Slides:

vii. Intra-group Analysis: (b) Durban University of Technology:

Slide 3: DUT Aqua Distillata

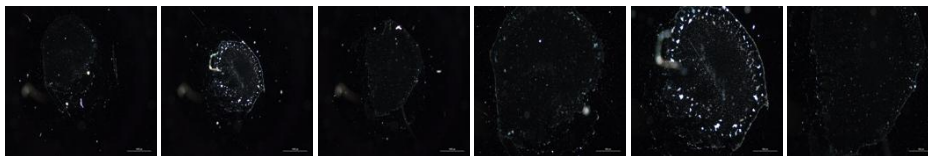


Figure 4.77: The DUT Aqua Distillata

Slide 3 displays an almost non-visible smudge-like staining with some particle patterns that appear mostly around the boarder of the droplet stain.

Slide 6: DUT Mother Solution

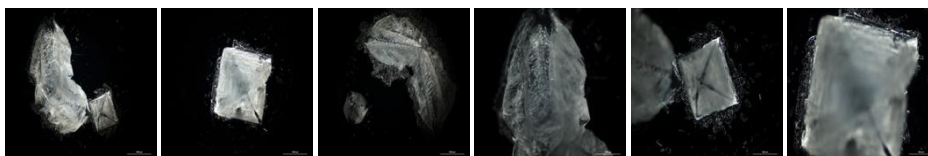


Figure 4.78: The DUT *Natrum muriaticum* Mother Solution

Slide 6 shows salt crystal staining of a pyramidal-like structure.

Slide 8: DUT *Natrum muriaticum* 9CH

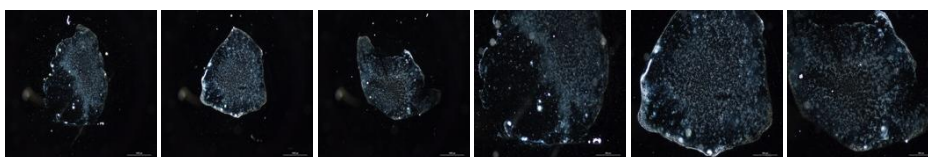


Figure 4.79: The DUT *Natrum muriaticum* 9CH

Slide 8 displays smudge-like staining with some particles within that appear to locate around the border.

Slide 1: DUT 30CH

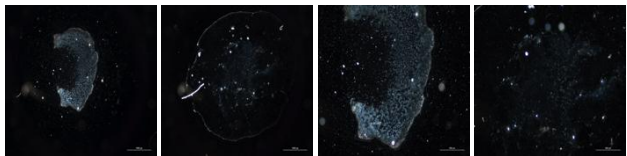


Figure 4.80: The DUT *Natrum muriaticum*30CH

Slide 1 displays a smudge-like staining that also holds some particles that appear to locate more toward the borders.

DUT's Intra-group Analysis:

3. DUT's samples appears to keep within the constraints of the researcher's hypothesis, showing a different staining to that of:
  - The mother solution
  - The *Natrum muriaticum* 9CH.
  - The *Natrum muriaticum* 30CH.
4. DUT's sample does display decreased activity and staining with the increasing potency from 9CH to 30CH suggesting some sort of remedy expiration has occurred.

viii. Inter-group Analysis: Parceval vs. DUT (Microbiologist)

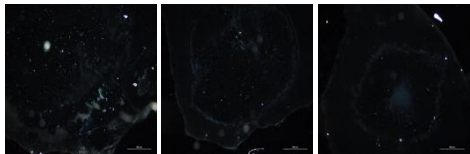
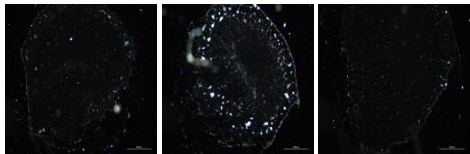
Parceval:	Durban University of Technology:
Slide 7: Aqua Distillata 	Slide 3: Aqua Distillata 

Table 4.17. - Microbiologist's inter-group analysis of Aqua Distillata.

Both Parceval and DUT water control slides display no strikingly evident staining suggesting an uninfluenced sample control.


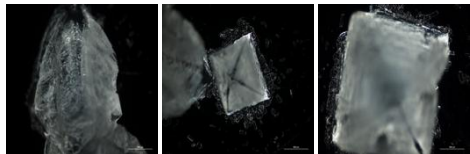
Slide 2: Mother Solution 	Slide 6: Mother Solution 
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Table 4.18. - Microbiologist's inter-group analysis of *Natrum muriaticum* Mother Solution.

The mother solution of both sources, Parceval and DUT, hold a similar picture of pyramidal-like structures with breakage of form and spilling of contents.



These slides suggest both the mother solution have homologous structural features.

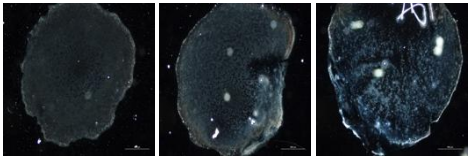
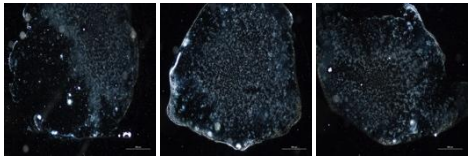
Slide 4: <i>Natrum muriaticum</i> 9CH	Slide 8: <i>Natrum muriaticum</i> 9CH
	

Table 4.19. - Microbiologist's inter-group analysis of *Natrum muriaticum* 9CH.

At 9CH Parcevals and DUT staining is slightly more then their water control and both 9CH shows a similarity to each other.

Parceval's 9CH slide shows a thread-like structure within the stain that could be water structuring itself due to as Lower (2014) states when a molecular backbone is added water could take on this form. Or it could be dust particles, bacterial contaminated water. These slides suggest the 9CH of both sources have homologous structural features.

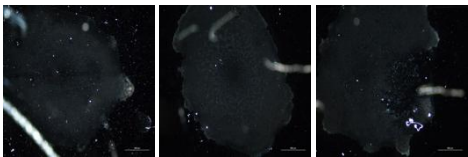
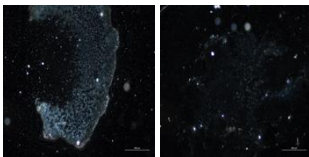
Parceval:	Durban University of Technology:
Slide 5: <i>Natrum muriaticum</i> 30CH	Slide 1: <i>Natrum muriaticum</i> 30CH
	

Table 4.20. - Microbiologist's inter-group analysis of *Natrum muriaticum* 9CH.

There appears to be more staining activity in the DUT *Natrum muriaticum*30CH which also appears to have increased staining with potency from DUT 9CH to 30CH.Parceval's *Natrum muriaticum*30CH appears to have no visible staining and displays similarity to its water control sample.

Conclusion: The Inter-group Analysis between Parceval and DUT slides produced by the microbiologist suggest:

- Parceval mother solution is similar to DUT mother solution.
- The mother solution of both sources retains its difference to all other samples.
- Parceval *Natrum muriaticum* 9CH is similar to DUT 9CH.
- Parceval *Natrum muriaticum* 30CH is similar to DUT 30CH.
- DUT *Natrum muriaticum* 30CH is similar to its water control sample suggesting the 30CH water returns to its original energetically uninfluenced form.

- There is a significant decrease in activity within the 9CH and 30CH of both Parceval and DUT suggesting remedy expiration.
- The above analysis suggest that the energetic influence created by the homeopathic remedy preparation (succussion and dilution) on water based remedies is not a lasting one and does appear less influenced as time passes. Since the second experiment was conducted more then 6 weeks after manufacture of water based remedy the exact time of degradation
- Parceval water control sample is simliar to DUT water control sample.

[C] Experiment 2: Intra-group Analysis- Researcher vs. Microbiologist:

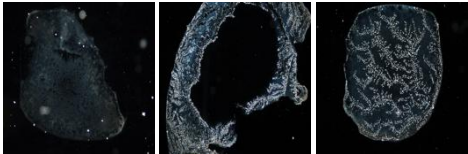
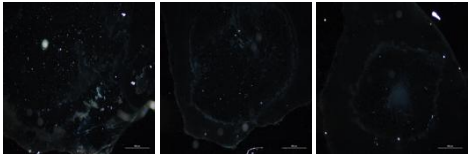
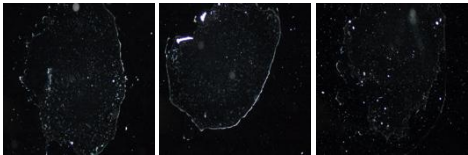
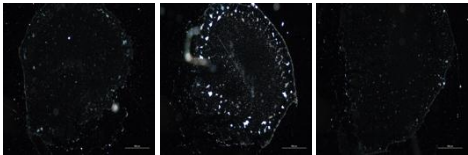
Researcher:	Microbiologist:
<p>Slide 7: Parceval Aqua Distillata</p> 	<p>Slide 7: Parceval Aqua Distillata</p> 
<p>Slide 3: DUT Aqua Distillata</p> 	<p>Slide 3: DUT Aqua Distillata</p> 

Table 4.21. - Researcher vs. Microbiologist intra-group analysis of Aqua Distillata.

Both Parceval's and DUT's aqua Distillata displays minimal visual staining suggesting an un-influenced vehicle / solvent but only the researcher's DUT slide is consistent with both microbiologist slides. On the another hand the researcher's Parceval slide is showing bright heavy staining suggesting contamination or more likely researcher's lack in skill at using a darkfield microscope.

Overall there is more similarity between slides showing congruency of a neutral control.




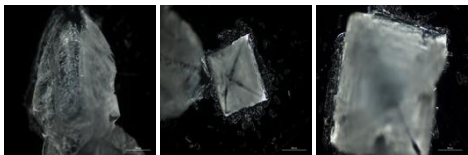
<p>Slide 2: Parceval Mother Solution</p> 	<p>Slide 2: Parceval Mother Solution</p> 
<p>Slide 6: DUT Mother Solution</p> 	<p>Slide 6: DUT Mother Solution</p> 

Table 4.22. - Researcher vs. Microbiologist intra-group analysis of *Natrum muriaticum* Mother Solution.

The mother solution of Parceval and DUT of both experimenters, are consistent with a staining picture similar to degrading pyramidal-like structures. Spilling of contents is clearly seen in some slides.

These slides suggest the mother solution samples of Parceval and DUT have homologous structural features.

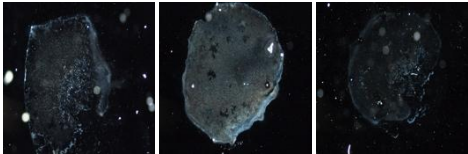
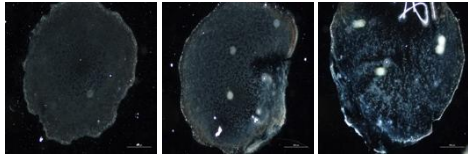
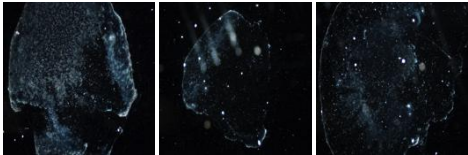
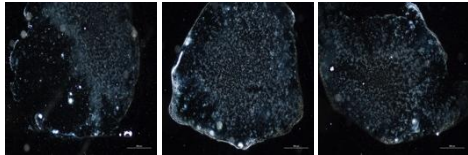
Researcher:	Microbiologist
Slide 5: Parceval <i>Natrum muriaticum</i> 9CH 	Slide 4: Parceval <i>Natrum muriaticum</i> 9CH 
Slide 8: DUT <i>Natrum muriaticum</i> 9CH 	Slide 8: DUT <i>Natrum muriaticum</i> 9CH 

Table 4.23. - Researcher vs. Microbiologist intra-group analysis of *Natrum muriaticum* 9CH.

The *Natrum muriaticum* 9CH from Parceval and DUT of both experimenters have consistently similar staining patterns suggesting congruency between all the 9CH solutions.

These slides suggest the 9CH of both sources have homologous structural features.


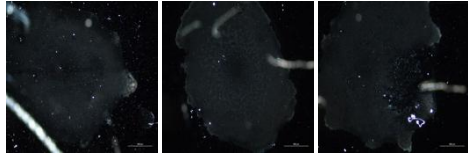
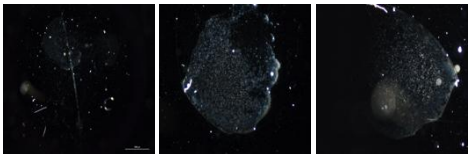
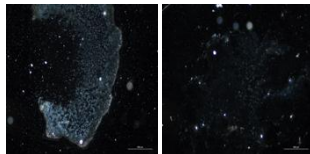
Slide 4: Parceval <i>Natrum muriaticum</i> 30CH 	Slide 5: Parceval <i>Natrum muriaticum</i> 30CH 
Slide 1: DUT <i>Natrum muriaticum</i> 30CH 	Slide 1: DUT <i>Natrum muriaticum</i> 30CH 

Table 4.24. - Researcher vs. Microbiologist intra-group analysis of *Natrum muriaticum* 30CH.

The *Natrum muriaticum* 30CH slides of both experimenter's show a consistently decreasing staining with the increase in potency from 9CH to 30CH suggesting some form of remedy expiration.

Conclusion: The inter-group analysis between Researcher and Microbiologist slides suggest:

- Congruency between water control samples as an uninfluencing neutral.
- Researcher's mother solution is similar to microbiologist's mother solution.
- Researcher's *Natrum muriaticum* 9CH is similar to microbiologist 9CH.
- Researcher's *Natrum muriaticum* 30CH is similar to microbiologist 30CH
- Potentised samples (Nat mur 9CH and 30CH) of both experimenters significantly decrease in activity and stain with increasing potency displaying the possible expiration of remedies.

[D] Intra-Group Analysis- Experiment 1 vs. Experiment 2:

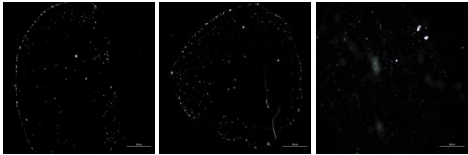
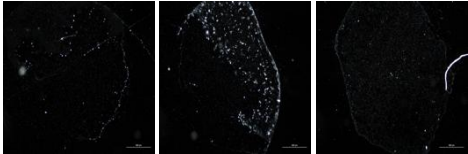
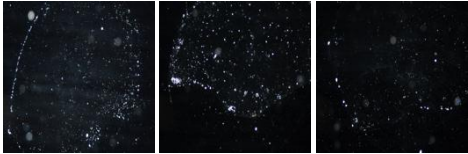
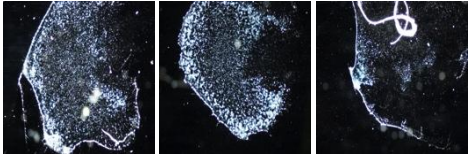
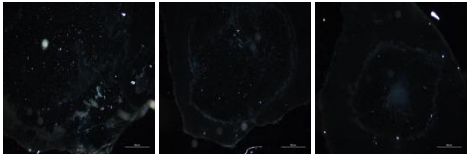
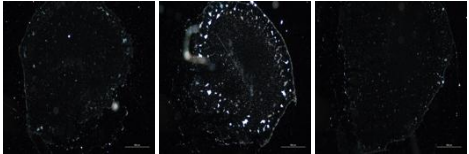
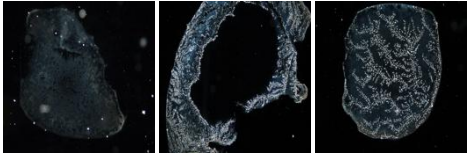
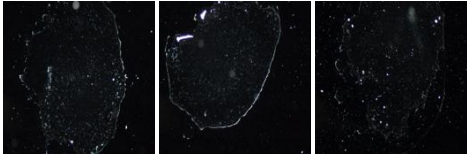
Experiment 1:	Experiment 2:
<p>Microbiologist</p> <p>Slide 7: Parceval - Aqua Distillata</p>  <p>Slide 3: DUT - Aqua Distillata</p>  <p>Researcher</p> <p>Slide 7: Parceval - Aqua Distillata</p>  <p>Slide 3: DUT- Aqua Distillata</p> 	<p>Microbiologist</p> <p>Slide 7: Parceval - Aqua Distillata</p>  <p>Slide 3: DUT - Aqua Distillata</p>  <p>Researcher</p> <p>Slide 7: Parceval - Aqua Distillata</p>  <p>Slide 3: DUT - Aqua Distillata</p> 

Table 4.25. - Experiment 1 vs. Experiment 2: Intra-group analysis of Aqua Distillata

There is clear uniformity in the microbiologist water control stains of both experiment 1 and 2 displaying barely visible staining which suggests an uninfluenced control. The researcher's water control slides are inconsistent of an uninfluenced control showing visible stains in Durban Institute of Technology slide 3 of experiment 1 and Parceval slide 7 of experiment 2. This is odd as slide 7 (Parceval) appears uninfluenced in experiment 1 becomes influenced in experiment 2 and slide 3 (DUT) appears influenced in experiment 1 appears uninfluenced in experiment 2. This most likely suggests a lack of skill in researcher's staining as well as ability to use the darkfield microscope. Overall showing congruency of neutral control.



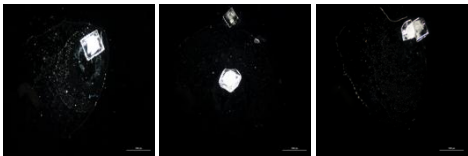
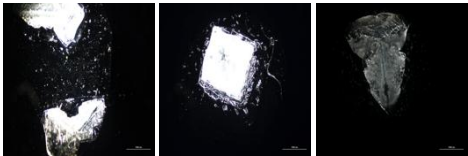

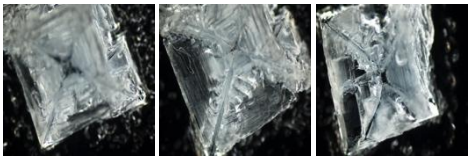

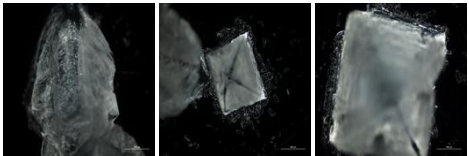
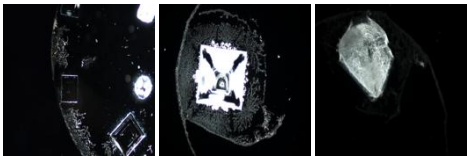

Experiment 1:	Experiment 2:
<p>Microbiologist</p> <p>Slide 2: ParcevalMother Solution</p>  <p>Slide 6: Durban Institute of Technology Mother Solution</p>  <p>Researcher</p> <p>Slide 2: Parceval Mother Solution</p>  <p>Slide 6: Durban Institute of Technology Mother Solution</p> 	<p>Microbiologist</p> <p>Slide 2: ParcevalMother Solution</p>  <p>Slide 6: Durban Institute of Technology Mother Solution</p>  <p>Researcher</p> <p>Slide 2: Parceval Mother Solution</p>  <p>Slide 6: Durban Institute of Technology Mother Solution</p> 

Table 4.26. - Experiment 1 vs. Experiment 2: Intra-group analysis of *Natrum muriaticum* Mother Solution.

The mother solution of Experiment 1 and Experiment 2 of both experimenters, are consistent with a staining picture similar to pyramidal-like structures.

These slides suggest the mother solution samples of Parceval and Durban Institute of Technology of both experimenters have homologous structural features.

Experiment 2 shows slightly more degrading of form which is consistent with the effects of time.

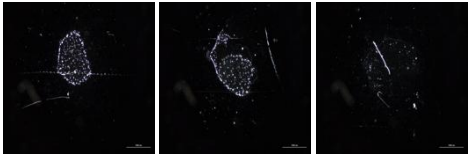
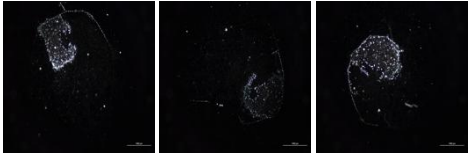
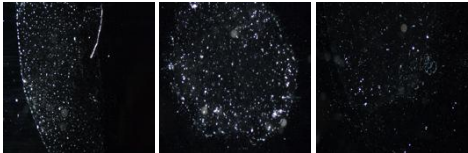
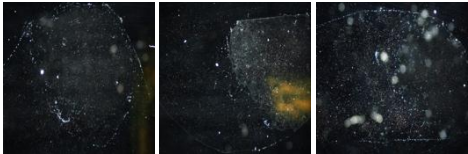
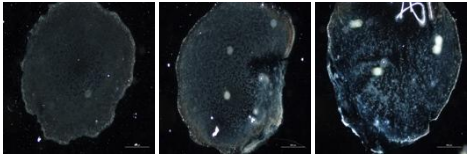
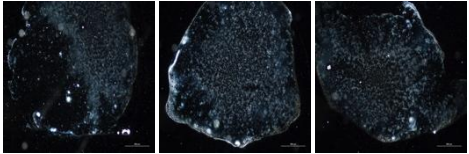
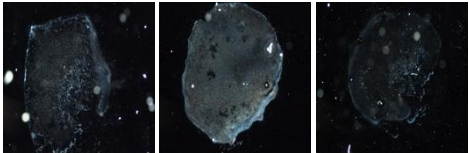
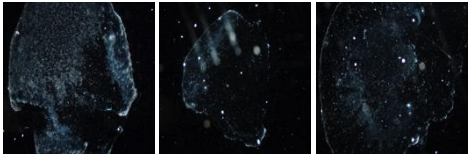
Experiment 1:	Experiment 2:
<p>Microbiologist</p> <p>Slide 5: Parceval</p> <p><i>Natrum muriaticum</i>9CH</p>  <p>Slide 8: Durban Institute of Technology - <i>Natrum muriaticum</i>9CH</p>  <p>Researcher</p> <p>Slide 5: Parceval</p> <p><i>Natrum muriaticum</i>9CH</p>  <p>Slide 8: Durban Institute of Technology- <i>Natrum muriaticum</i> 9CH</p> 	<p>Microbiologist</p> <p>Slide 5: Parceval</p> <p><i>Natrum muriaticum</i>9CH</p>  <p>Slide 8: Durban Institute of Technology - <i>Natrum muriaticum</i>9CH</p>  <p>Researcher</p> <p>Slide 5: Parceval</p> <p><i>Natrum muriaticum</i>9CH</p>  <p>Slide 8: Durban Institute of Technology- <i>Natrum muriaticum</i> 9CH</p> 

Table 4.27. - Experiment 1 vs. Experiment 2: Intra-group analysis of *Natrum muriaticum* 9CH.

The *Natrum muriaticum* 9CH from Experiment 1 of both experimenters have different staining patterns to Experiment 2 of both experimenters with experiment 2 appearing to have less particles within the stains suggesting possible expiration of remedy in experiment 2.

The 9CH slides of experiment 1 and 2 show distinctly more staining then the overall water control picture suggesting a change in the water structure has occurred after the salt was added and diluted / succussed to a 9CH potency.



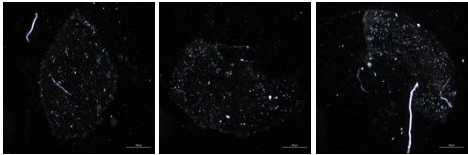
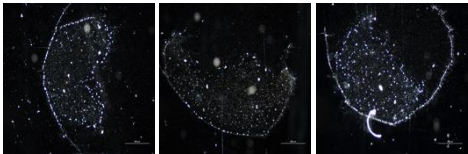
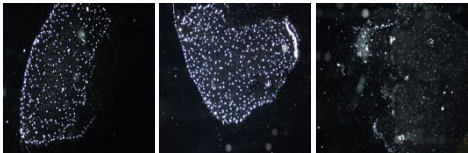
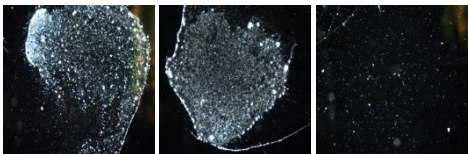
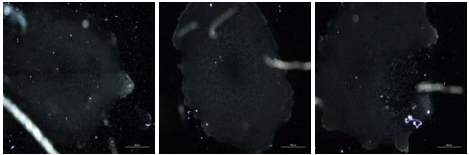
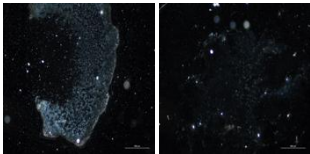

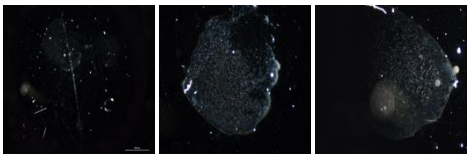
Experiment 1:	Experiment 2:
<p>Microbiologist</p> <p>Slide 4: Parceval</p> <p><i>Natrum muriaticum</i>30CH</p>  <p>Slide 1: DUT</p> <p><i>Natrum muriaticum</i>30CH</p>  <p>Researcher</p> <p>Slide 4: Parceval</p> <p><i>Natrum muriaticum</i>30CH</p>  <p>Slide 1: DUT</p> <p><i>Natrum muriaticum</i> 30CH</p> 	<p>Microbiologist</p> <p>Slide 4: Parceval</p> <p><i>Natrum muriaticum</i>30CH</p>  <p>Slide 1: DUT</p> <p><i>Natrum muriaticum</i>30CH</p>  <p>Researcher</p> <p>Slide 4: Parceval</p> <p><i>Natrum muriaticum</i>30CH</p>  <p>Slide 1: DUT</p> <p><i>Natrum muriaticum</i> 30CH</p> 

Table 4.28. - Experiment 1 vs. Experiment 2: Intra-group analysis of *Natrum muriaticum* 30CH.

There is a significant increase in staining brightness within the researcher's *Natrum muriaticum* 30CH in experiment 1 in comparison to all other 30CH from both experiments (1 and 2)

Overall the *Natrum muriaticum* 30CH slides show a consistently similar staining picture but there is a decrease in particle activity (that gives appearance of a starry night) in Experiment 2 suggesting some degradation of form over time showing possible evidence of some sort of remedy expiration.

The 30CH slides of experiment 1 and 2 show distinctly more staining then the overall water control picture suggesting a change in the water structure has occurred after the salt was added and diluted / succussed to a 30CH potency.

## CONCLUSION:

The intra-group analysis between Experiment 1 and Experiment 2 slides suggest:

- The overall water control droplet stained picture is different to
  - All mother solution pictures
  - All *Natrum muriaticum* 9CH pictures
  - All *Natrum muriaticum* 30CH pictures
- The *Natrum muriaticum* 9CH appears different in staining pattern to:
  - All mother solution pictures
- The *Natrum muriaticum* 9CH appears to contain less stained particles in Experiment 2 than 1.
- The *Natrum muriaticum* 9CH of Experiment 1 appears similar in staining patterns to:
  - The *Natrum muriaticum* 30CH of Experiment 1 stained picture.
- The *Natrum muriaticum* 3CH of Experiment 2 appears similar in staining patterns to:
  - The *Natrum muriaticum* 9CH of Experiment 2 stained picture.

The inter-group analysis between Experiment 1 and Experiment 2 slides suggest:

- The overall picture of the water control shows minimal staining suggestive of an uninfluenced water control. (The ones that don't may be researcher's skill error).
- All mother solutions (experiment 1 and 2) present a similar staining picture.
- *Natrum muriaticum* 9CH shows more particles (appearing like a starry night) in Experiment 1 then in Experiment 2 suggesting possible loss of form due to remedy expiration.
- *Natrum muriaticum* 30CH shows more particles (appearing like a starry night) in Experiment 1 then in Experiment 2 suggesting possible loss of form due to remedy expiration.

The above analysis suggest that the energetic influence created by the homeopathic remedy manufacture is not a lasting one and does appear less influenced as time passes in water based remedies. Since the second experiment was conducted more then 6 weeks after manufacture of water based remedy the exact time of degradation can still be tested.

### DATA ANALYSIS CONCLUSION

#### 5.1. Discussion:

*“An unseen universe is necessary in order to explain the seen... Some readers of this essay will live to see a new picture of the unseen; they are to be envied.” – Lancelot Law Whyte (Resch & Gutmann, 1987).*

It was the researcher's aim to provide a quantitative analysis, using Adobe Photoshop® version and/ or Adobe illustrator® version software programmes, of the pictures taken, but the actual outcome resulted in unique pictures that could only be interpreted qualitatively. Just as the remedies themselves elude scientific cognition, their images, too, seem to want to express uniqueness to the open mind.

Observation of a system is dependent on its ability to react to changes in the environment without losing its characteristic properties, collectively responding both actively and passively to changes for optimum preservation of its form. In considering the continuum it is noted that although all there can be no break in the connection to all parts, it would be impossible that all parts serve the same purpose (Resch & Gutmann, 1987). As such it has been the researcher's aim to give an un-bias interpretation of the data results.

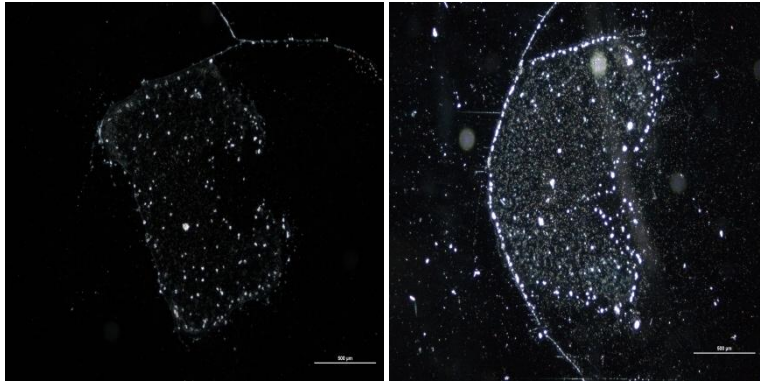
*“Measure whatever can be measured and render measurable what cannot yet be measured.” - Galileo Galilei (Resch & Gutmann, 1987).*

Although, more measureable results were expected it is seen that pictures depicted in Kroplin (2001) of potentised remedies (a) hold some resemblance to the pictures of this research (b).

1. It was found that there were differences in potentised water and control showing that homeopathic medicine manufacture method of succussion and dilution may indeed be affecting the structure of water.
2. Homeopathic remedy manufacture method using succussion and dilution may be able to effectively alter the water through waters own thermodynamic anomaly properties.

3. There was a consistent increase with increasing potency of particles that resembled a starry night within the stains as can be seen clearly below with the Durban Institute of Technology microbiologist's slides 8 and 1.

Figure 5.1: Slide 8: *Natrum muriaticum* 9CH, left and Slide 1: *Natrum muriaticum* 30CH, right.



4. Potentised remedies may hold similarity. The pictures below are of two different remedies shows that potentised remedies may hold similarity.

Figure 5.2: Potentised *Thuja* or *Aloe*, left and *Natrum muriaticum* 30CH, right.



5. These particles hold a resemblance to the spilling contents of the pyramidal-like structures seen in the mother solution.



Figure 5.3: Natrum muriaticum Mother Solution

7. These particles could possibly be a reflection of the water re-structuring itself as:
  - a. Clathrates- Water clusters of a salt informed grid-like cavities (Bellavite and Betti, 2012).
    - i. Water cages with content (mother solution 7 or 9CH)
    - ii. Water cages without content (30CH)
  - b. Nanostructures- nano bubbles created through succussion stabilized by the ionic salt solute and seen repeatedly (Barrett, 2002).
  - c. Salt information carrying pattern in isotropic lattices. Re-organization of the water from succussion and kept relatively stable by water's polarization effects (Bellavite and Betti, 2012).

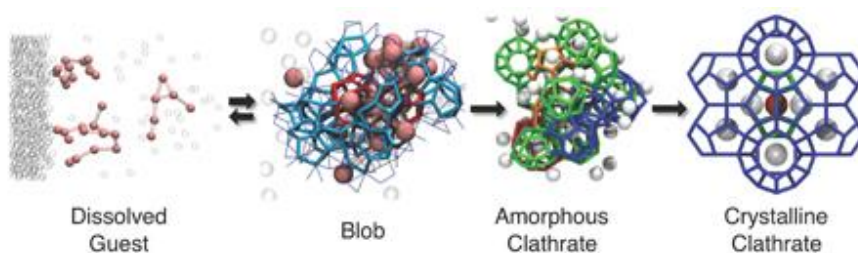


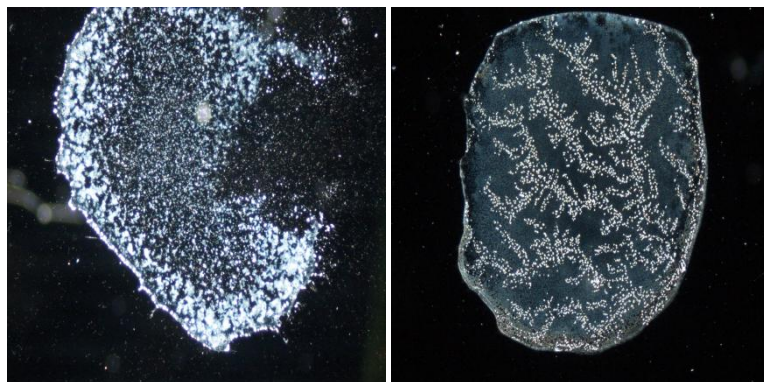
Figure 5.4: Depicts the clathrate formation (Eyring, 2015)

- d. Epitaxial transference can also be considered in the possible information transference that occurred.
9. Keeping all the samples in the same vicinity after experiment 1, Super radiance could explain the researcher's active water control (a) results. Water-mediated long-range interactions that make it possible for a molecule to transmit information independently of direct contact with the other molecule (Bellavite and Signorini,

2002), but one must consider the samples were sealed in glass bottles.

10. The samples were stored in a fridge at UKZN after experiment 1 and the lower temperature may have played a role in retaining some of the particles seen in the 'expired sample stains'.
11. The researcher's water control stains from Parceval appeared active only in experiment 2 and not 1.
12. The researcher's water control stains from DUT only appeared active in experiment 1 and not 2.

Figure 5.5: Researcher's Aqua Distillata control stains, DUT experiment 1 on the left and Parceval experiment 2 on right.



13. Thread-like structures were seen in some of the stains (e). As suggested by Lower (2013) a suitable molecular backbone could cause water molecules to form a thread-like pattern. Could salt and or the homeopathic remedy manufacture process prompt this thread-like pattern to form?



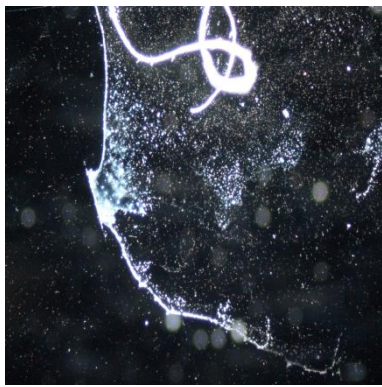


Figure 5.6: Researcher's slide 3 of experiment 1.

The pattern staining took on a consistent form of a starry night and the 'stars' seemed to increase with potentization suggesting that the homeopathic remedy manufacture process effects the outcome of the water's form.

But it must be noted that being a foundational study there were many unforeseen glitches:

- Unexpectedly longer slide drying time resulted in:
  - More time exposed to environmental variables (dried in open UKZN laboratory).
  - Was stored in old boxes prevent possible dust particles to collect and alter results.
  - Viewing time was inevitably extended (microbiologist and researcher viewed slides on different days allowing some slides to be more degraded then others).
- The second experiment was carried out after the expiry time of 6 weeks from manufacture as proposed by the homeopathic Pharmacopoeia. Although the samples showed degradation in experiment 2 the exact time of expiration cannot be confirmed.
- Researcher's lack of skill in using the dark field microscope may have resulted in some slides being represented incorrectly.
- The microbiologist and researcher both adjusted brightness and contrast to gain image visual which could have altered results.

## 5.2. Obstacles For Further Investigation:

1. Slides could be better cleaned.
2. Another method of drying should be considered.
3. Slides should be viewed as soon as dried to eliminate external variable.
4. The dark field microscope should be set at a constant brightness and contrast to eliminate any technical inconsistency.
5. 2X and 4X magnification on a dark field microscope was used showing differences in staining patterns but perhaps a higher magnification would show a clearer picture. Higher magnification could be considered as the particles seen as 'stars' could hold more information as to the possible re-structuring of the water.

Overall the data analysis reveals conclusive results in showing notable differences in water control and potentised water samples and offers enough evidence for further investigations.

*“Whatever appears in the world must divide if it is to appear at all. What has divided seeks itself again, can return to itself and reunite... in the reunion of the intensified halves it will produce a third thing, something new, higher, unexpected.” –Goethe (Buhner, 2004).*



*“When geometric diagrams and digits  
Are no longer the key to living things,  
When people who go about singing and kissing  
Know deeper things than the great scholars,  
When society is returned once more  
To un-imprisoned life, and to the universe,  
And when light and darkness mate  
Once more & make something entirely transparent,  
And people see in poems and fairytales  
The true history of the world,  
Then our entire twisted nature will turn  
And run when a single secret word is spoken...”*

*-Novalis (Buhner,2004)*

## CHAPTER 6

### CONCLUSION

This watery planet consists of approximately seventy-one (71%) percent water on its surface and the oceans hold about ninety-six point five (96,5%) percent of all of earth's water. Water exists in the air as water vapour, in rivers and lakes, in icecaps and glaciers, in the ground as soil moisture and in aquifers, and even in humans, animals and plants (Periman, 2015). The complex human body system comprises of a large percentage of water, which assists in its function, maintenance and survival (Ball, 2000).

The study by Davidson et al (2013) outlined in chapter 2, attributed disruption of the biological water structure in extracellular and intracellular cell space to the manifestation of many disease conditions. If interfacial water stress is indeed the root cause of man's suffering, it is then plausible that water is communicating and as such it becomes paramount to understand how water is able to encode, store and retrieve. Does water have memory?

Classical physics relies on determinism but quantum physics holds probability as fundamental. The Copenhagen interpretation in the 1920's was the first theory to attempt understanding the atomic world in quantum mechanics, which violates some of the fundamental principles of classical physics, like the principle of locality (an object is only directly influenced by its immediate surroundings) (Baker, 2013). Perhaps like the thought justification of a patient needing the crude medicinal substance to heal?

This research achieved much similarity between observers offering stability to the homeopathic *Natrum muriaticum* medicinal wave-function collapse. Observation in the quantum world is not as straightforward as direct observation and should be considered under the following influential variables; interaction, experimental design, directs observation and consciousness.

- Interaction: The researcher's lack in dark field microscopy skills and computer adjustments prior to picture taking influenced outcome..
- Experimental design: External environmental like the open space in the laboratory for slide drying could cause contamination.

- Direct observation: The researcher's water control inconsistent results may be the influence of an aware observer, similar to the thought influence experiments of Emoto (2005, 2007) and Lyn Fisher's Topography of Tears (Stromberg, 2013). The microbiologist had no background in Homeopathy or the understanding thereof and as such could not influence the water control.
- Consciousness: The interdependent nature of reality would suggest like Schrodinger's cat the outcome of the homeopathic water samples is independent of observer bias, as if the homeopathic manufacture process of succussion and dilution (perhaps through super radiance- the theory of water-mediated long-range interactions that make it possible for a molecule to transmit information independently of direct contact with the other molecule.) decreased probable outcomes sustaining the pattern stain consistency with every potency but the water control was left in the higher probability superposition and therefore more open to influence

Measurements and observation are used to make sense of what we perceive creating the Euclidean outline of the continuum.

This research may not have offered quantitative measurements but it is clearly apparent that there is a change in the water structure before to after the manufacture of the homeopathic remedy Natrum muriaticum 30CH. What was also evident is a consistent increase in particle mass within the stains with increasing potency and a decrease in mass after time adhering to a sort of expiry of form. The re-structuring of form as seen as a 'starry night' can also be seen in Kroplin (2001) homeopathic pictures of either thuja or aloe (Kroplin did not label specifically), the similarity of the images show consistent staining picture form regardless of solute, but the other homeopathic stain in Kroplin's book show evidence of differentialisation. This research being foundational work requires further investigation to confirm or refute differentialisation of water's form through the Homeopathic remedy manufacture process.

Quantum sense is not common sense and should not be mistaken as such. As was outlined earlier in chapter 2, reality is not as straightforward and if

anything quantum science lends us insight into the complexity of reality. The interdependent nature of things can be revealed by theories like quantum entanglement where pairs or groups of particles interact in such a way that the quantum state of each particle cannot be described independently but rather particles can be invisibly connected despite time and space (Baker, 2013). These intimate theories of unified behaviour show our interaction toward other people as well as toward quantum medicines like homeopathy may involve a journey toward deeper sense of well-being because these medicines seem to work in accordance to Nature and due to humans being a part of and not apart from Nature a natural flow toward health and well being will unfold. In recent years there are an increasing number of people who perceive the inadequacy of the molecular paradigm when it comes to coping with chronic diseases like, neoplastic, autoimmune, degenerative, metabolic, etc. (Bellevite and Signorini, 2002). This is in no way denying the healing due to the advancement in modern medicine but as long as the complexity of disease and the failure to cure all diseases remains, we must acknowledge and investigate any path that may even remotely show potential of the unravelling of a dis-ease state toward health.

The revolution for our self-understanding lies in that the forces that are hidden in things know more than we do. The essence of things is pure archetypal forces (Ehrler, 2001) and will express when its vital nature is revealed through medicines like homeopathy. In this research the awaking of the salt 'spirit' was accomplished as the re-structured water Natrum muriaticum.

A substance that is never static, the journey of water connects much of what we experience as reality and as a necessity for life, water may hold secrets to life itself. We are all symbiotically connected to plants, animals, and other humans, to all things organic and inorganic of mother earth. Considering super radiance and quantum entanglement we know this to be true on a sub-atomic level. Could water be the connecting factor?

*"Some say the world is a vale of tears, I say it is a place of soul making"*

*—John Keats (Longmore et al., 2010).*

It is the researcher's opinion that the human potential is far greater than what is experienced presently in our reality and is mostly due to fear, an emotion

that is reinforced by all the conditions that make one believe in their limitations. Homeopathy is one kind of medicinal art that empowers individuals through an unravelling of awareness be it through its remedies and / or its consultation. Homeopathy fundamentally deals with an individual's deepest fear that of self-acknowledgement or self-realization. Homeopathy utilizes the spirit of the planet to awaken the human spirit.

*“If you want to know the secrets to the Universe, think in terms of energy, frequency and vibration.” –Nikola Tesla (Buhner, 2004).*

Homeopathic remedies are like a note of music structured by the vibrational waves in the air. Structure, order and coherence may be regarded as synonyms. The remedy attempts to bring order to the ill / chaotic body. This research suggests the re-structuring of water through the homeopathic process of succussion and dilution offers transfer of information from solute to solvent. Further consideration is how this restructured information is conducted to the receiver system where quality and quantity of signal is important. Emoto's (2005, 2007) water crystals and Kroplin's (2001) glass stain patterns display effects of emotion on water. Topography of Tears (Stromberg, 2013) visualizes how emotion may affect the waters of the body. Davidson et al. (2013) attributes interfacial water stress.

Information is spatiotemporal and flows according to resonance, thus variables like susceptibility comes into consideration. Euclidean geometry joins the non-linearity of nature to help understand it. But nature is intuition flowing through rationality revealed in part to the mind and in part to the heart. Healing is not just a remedy in a bottle but the convergence of the experience of life itself. To stop resisting one's nature by being open to the flow of life and embrace ones purpose of design. Homeopathy seems to sit at the edge of non-linearity and due to the success of its action through the years, there can be no doubt as to its authenticity. This research sought to gain insight to the mode of action of homeopathic remedies, specifically through structural changes in water during remedy manufacture. The memory of water has been explored and this research suggests some truth as structural changes were detected but due to the nature of results being abstract qualitative, repeated experiments are required to scientifically validate results gained in this foundational research.

### 6.1. Suggestions:

- Repetition of experiments adhering to same methodology outline. Consider 5.2. Obstacles For Further Investigation in chapter 5.
- Methods other than the Kroplin glass stain method can be explored to investigate structural changes of water before and after homeopathic manufacture.
- Will the type of water influence the remedy? i.e. structured water vs. Distilled water vs. ozone water. Different types of water can be investigated.
- The second experiment occurred greater than six weeks from manufacture of remedy there was still remnants of the first picture possibly denoting an expansion of expiry time.
- This was a foundational study using a water-based remedy, which is not the conventional remedy base thus effect of alcohol in the solution should be tested.
- The effect of trituration on the solution can be tested.
- The effect of re-structured water on the human body fluids such as blood or saliva can be tested.

Meaning is the synthesis of experience and is not the revealing of an essential truth yet we seek that path toward everlasting health but the researchers journey during this thesis has revealed a know truth, pain is the inevitable companion to life (Longmore et al, 2010) and through mindful awareness expanding the boundaries of what is known and through empowering medicines we shall operate against an incumbent paradigm of a dis-eased mind. In awe of water, the great mother of this planet!

*You are not  
a drop in the ocean,  
You are  
the entire ocean in a drop.  
– Rumi*

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## Appendix 1

Preparation of Sodium Chloride, mother solution to *Natrum muriaticum* 30CH:

Required:

4 x 250ml borate glass bottle

20g Sodium Chloride [batch No.18042017]

1.5 litres aqua distillata

Pipette

Spatula

Method:

Pour 200ml aqua Distillata into a 250ml borate glass bottle to be kept aside as water control sample.

1) Preparation of Sodium Chloride mother solution:

Sterilize relevant equipment.

$1/100 \times 200\text{g} = 20\text{g}$  Sodium Chloride

$99/100 \times 200\text{ml} = 198\text{ml}$  aqua distillata

Dissolve 20g Sodium Chloride into 198ml aqua distil in a 250ml borate glass bottle.

Label Sodium Chloride  $\emptyset$ .

2) Preparation of *Natrum muriaticum* 1CH:

Measure 10ml of above mother solution into a 20ml amber glass bottle, seal and succuss 10 times. (Vortex method of succussion in this and all further steps in which bottle is held firmly in manufacturers hand and forcefully moved in a vertical up-down motion to stimulate a vortex within the liquid.)

Label 1CH *Natrum muriaticum*

3) Preparation of *Natrum muriaticum* 2CH:

$1/100 \times 10\text{ml} = 0.1\text{ml}$  (100 $\mu\text{l}$ ) Nat mur 1CH

$99/100 \times 10\text{ml} = 9.9\text{ml}$  aqua distillata

Measure above calculated ingredients into a 20ml amber glass bottle, seal and succuss 10 times.

Label 2CH *Natrum muriaticum*

4) Repeat step 3 using 2CH Nat mur and thereafter - successive potency to make up 8CH Nat mur.

5) Preparation of *Natrum muriaticum* 9CH:

$1/100 \times 150\text{ml} = 1.5\text{ml}$  Nat mur 8CH

$99/100 \times 150\text{ml} = 148.5\text{ml}$  aqua distillata

Measure above ingredients into a 250ml borate glass bottle, seal and succuss 10 times.

Label 9CH *Natrum muriaticum*

6) Repeat step 3 using 9CH Nat mur and successive potency to make up 29CH *Natrum muriaticum*.

7) Preparation of *Natrum muriaticum* 30CH:

$1/100 \times 150\text{ml} = 1.5\text{ml}$  Nat mur 29CH

$99/100 \times 150\text{ml} = 148.5\text{ml}$  aqua distillata

Measure above ingredients into a 250ml borate glass bottle, seal and succuss 10 times.

Label 30CH *Natrum muriaticum*.

Store above bottles in a cool dark sterile room until use.

Appendix 2

[dineshanaicker@gmail.com](mailto:dineshanaicker@gmail.com)

117 Ridge Road,

Umhlanga,

4319

22 October 2014

Dear Dr Cornelia Hall,

I am a Homeopathic student completing my thesis at Durban University of Technology (DUT), entitled: "An ontological analysis of the visual expression of water based Homeopathic remedy, Natrum muriaticum, as droplet glass stain patterns."

I would like your permission for use of the DUT Homeopathic laboratory to manufacture the following specific samples:

- 100ml Distillata water (sample of water used at the DUT lab)
- 100ml mother solution Natrum muriaticum (water only base)
- 100ml 9CH Natrum muriaticum (water only base)
- 100ml 30CH Natrum muriaticum (water only base)

The above samples are to be manufactured by the researcher and will be used in researcher's thesis, "An ontological analysis of the visual expression of water based Homeopathic remedy, Natrum muriaticum, as droplet glass stain patterns", within 1 week of manufacture and again 6 weeks later. And before such time all samples obtained, i.e. DUT & elsewhere, to be stored in amber glass bottles at the DUT laboratory.

If these arrangements meet your approval, please sign this letter where indicated below. Your assistance would be greatly appreciated.

Thank you very much

Sincerely,

Miss Dinesha Naicker

PERMISSION GRANTED FOR THE USE REQUESTED ABOVE:

By: HOD of Homeopathic Faculty at Durban University of Technology

Sign\_\_\_\_\_

Date\_\_\_\_\_

Appendix 3

[dineshanaicker@gmail.com](mailto:dineshanaicker@gmail.com)

117 Ridge Road,  
Umhlanga,  
4319

22 October 2014

Parceval (Pty) Ltd  
P.O. Box 158  
Wellington 7654  
SOUTH AFRICA

Dear Wendy Clapham,

I am a Homeopathic student completing my thesis at Durban University of Technology, "An ontological analysis of the visual expression of water based Homeopathic remedy, Natrum muriaticum, as droplet glass stain patterns."

I would like your permission to reprint in my thesis your company trademark name 'Parceval' as one of the suppliers of the following specific samples requested:

- 100ml Distillata water
- 100ml mother solution Natrum muriaticum (water only base)
- 100ml 9CH Natrum muriaticum (water only base)
- 100ml 30CH Natrum muriaticum (water only base)

The above samples are to be sent to the researcher via overnight courier within 5days of manufacture in amber glass bottles and will be used in my thesis, "An ontological analysis of the visual expression of water based Homeopathic remedy, Natrum muriaticum, as droplet glass stain patterns", within 1 week of receiving and again 6 weeks later.

The requested permission extends to any future revisions and editions as well as dissertation publications made of my thesis, "An ontological analysis of the visual expression of water based Homeopathic remedy, Natrum muriaticum, as droplet glass stain patterns." My thesis may also be made available for free on the internet.



If these arrangements meet your approval, please sign this letter where indicated below and return it to me via email. Your assistance would be greatly appreciated.

Thank you very much

Sincerely,

Miss Dinesha Naicker

PERMISSION GRANTED FOR THE USE REQUESTED ABOVE:

By: Parceval (Pty) Ltd

Authorised by WENDY CLAPHAM Head of QC/QA  
Sign [REDACTED]  
Date 23/10/2014

## Appendix 4:

Microscopy and Microanalysis Unit (MMU)  
University of KwaZulu-Natal,  
Westville Campus,  
Durban



16 October 2014

To whom it may concern,

This letter serves as confirmation that Dinesha Naicker, a student from DUT, will be using the facilities at the Microscopy and Microanalysis Unit (MMU) at the University of KwaZulu-Natal (UKZN). She will be assisted by Mr. Phillip Christopher (Principal Technician) with the use of the light and dark field microscopes.

Should you require any further information, kindly contact me.

Regards,  
Nelisha Murugan

Manager: Microscopy and Microanalysis Unit (MMU)  
University of KwaZulu-Natal  
Westville Campus  
E Block  
Room E1 04-50  
Tel: 031 260 2174  
Murugann@ukzn.ac.za