MICROSCOPICAL EXPLORATION FIVE

POLARISED PICTORIAL PERUSAL OF PELLUCID PARACETAMOL PREPARATIONS

or

A PERSONAL PORTFOLIO OF PRETTY PICTURES

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Firstly, I should apologise for the, perhaps, not quite grammatically correct alliterative excess of the above title. I can only hope that it is justified by the quality of the images alluded to therein and shown below.
For this Microscopical Exploration (ME5) the microscope used was a Vickers M10A dating from July 1985. It is fitted with a PRIOR x2.7 objective in addition to Vickers x4, x10 and x40 lenses. The same polariser/analyser combination as used in Microscopical Exploration Four (ME4) is installed, in crossed configuration, with the polariser immediately on top of the sub-stage condenser and the analyser in the body tube above the objective turret. The microscope is also equipped with a plane glass stage plate to allow the interposition of the same homemade wave-plates as were used in ME4 between the polariser and analyser without disturbing the specimen slide. A BRUNEL EYECAM PLUS was used in place of the normal eyepiece lens.

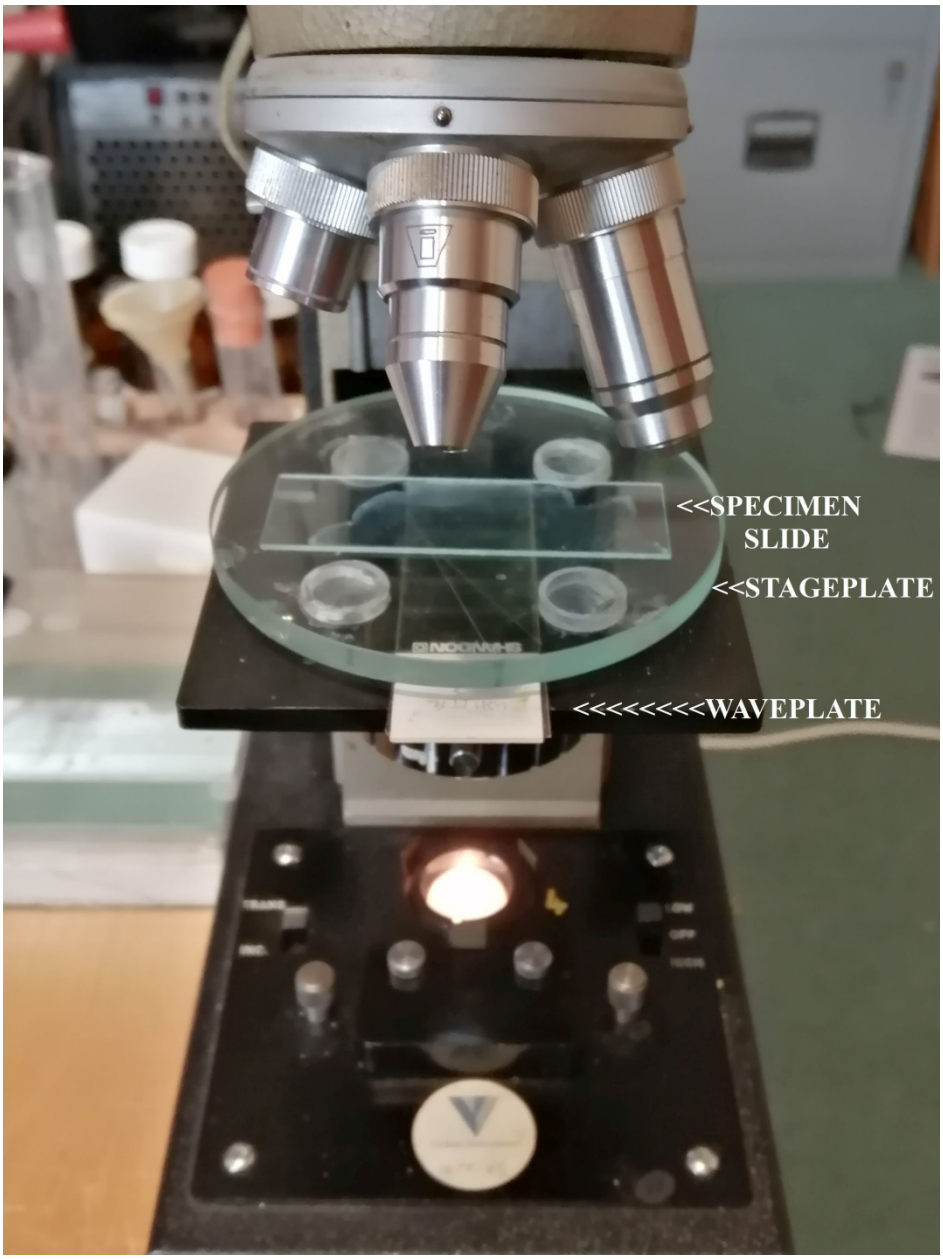
THE TEST SOLUTION

In Microscopical Exploration Four the solvent ethyl ethanoate was used to dissolve only one organic solute**, N-(4-hydroxyphenyl)acetamide**, otherwise known as **Paracetamol** (UK) or **Acetaminophen** (USA).
For the purposes of ME5 a different solvent was used to dissolve the Paracetamol/Acetaminophen, that solvent being **propan-2-ol** (also known as **isopropyl alcohol** and **rubbing alcohol**)**.**
To make the test solution the contents of two 500milligram Paracetamol capsules were emptied into a small lidded glass jar and 20 millilitres of propan-2-ol were added. The jar was sealed with its lid and shaken to mix the contents which were then allowed to dissolve and equilibrate for several hours. The solution thus formed was then clarified by filtration.

THE SPECIMEN SLIDES

Specimen slides were prepared by applying 5 drops (approximately 0.25 millilitres) of the test solution to clean glass microscope slides and allowing the solvent to evaporate at ambient room temperature.

Each of the specimen slides was viewed by placing it transversely on top of the glass stage plate with one or other of the wave-plates interposed in the light path at right angles to the slide beneath the stage plate (See photo).



THE PICTURES

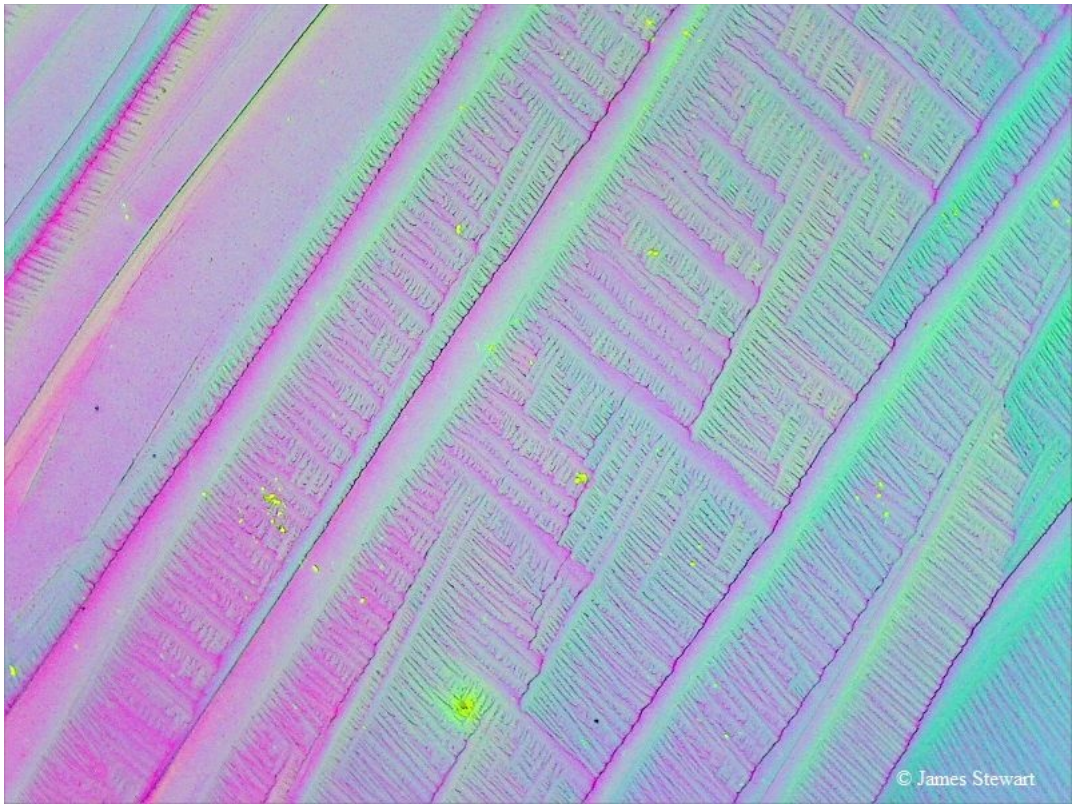
The following pictures were captured using MycoCam 5.0 image capture software and each is the result of the focus-stacking of between two and four images.

Picture 1

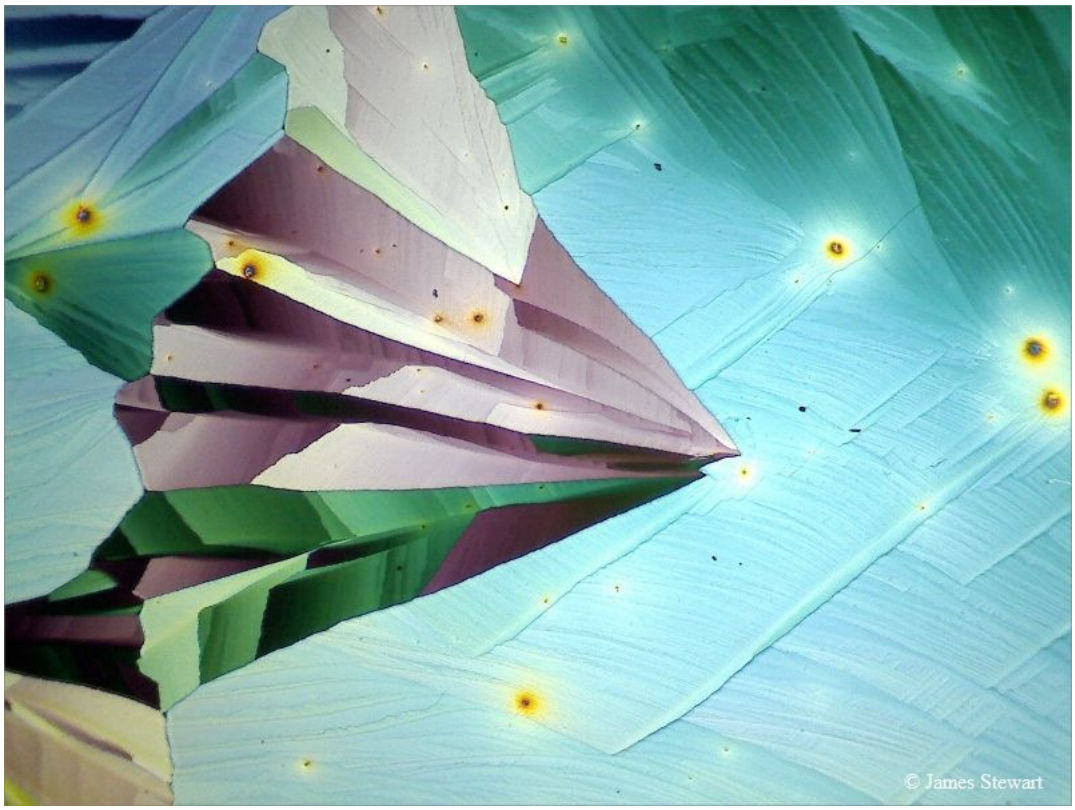
Picture 2

Picture 3

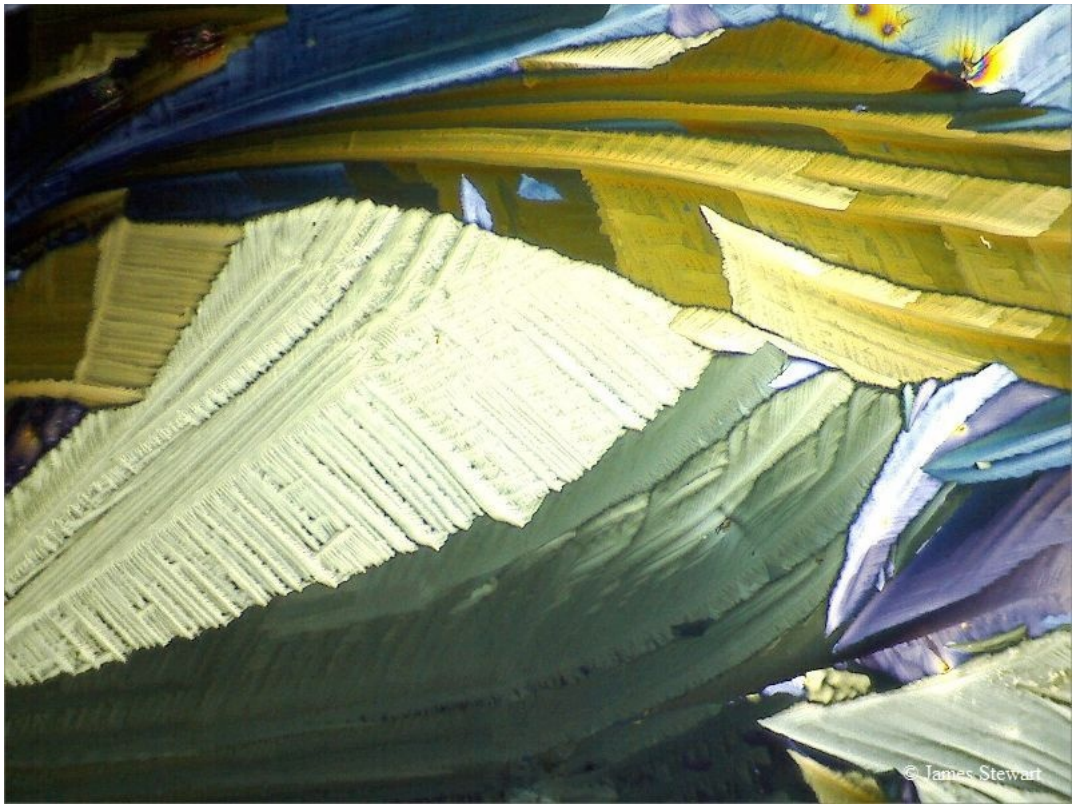
Picture 4



Picture 5



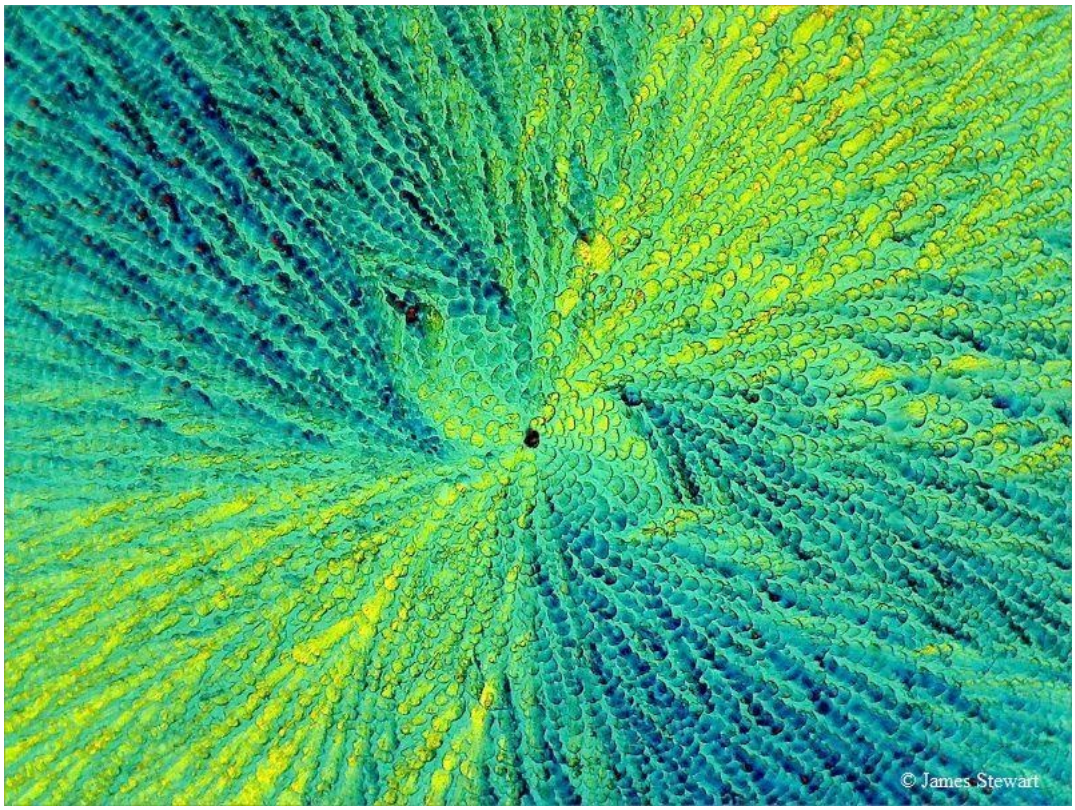
Picture 6



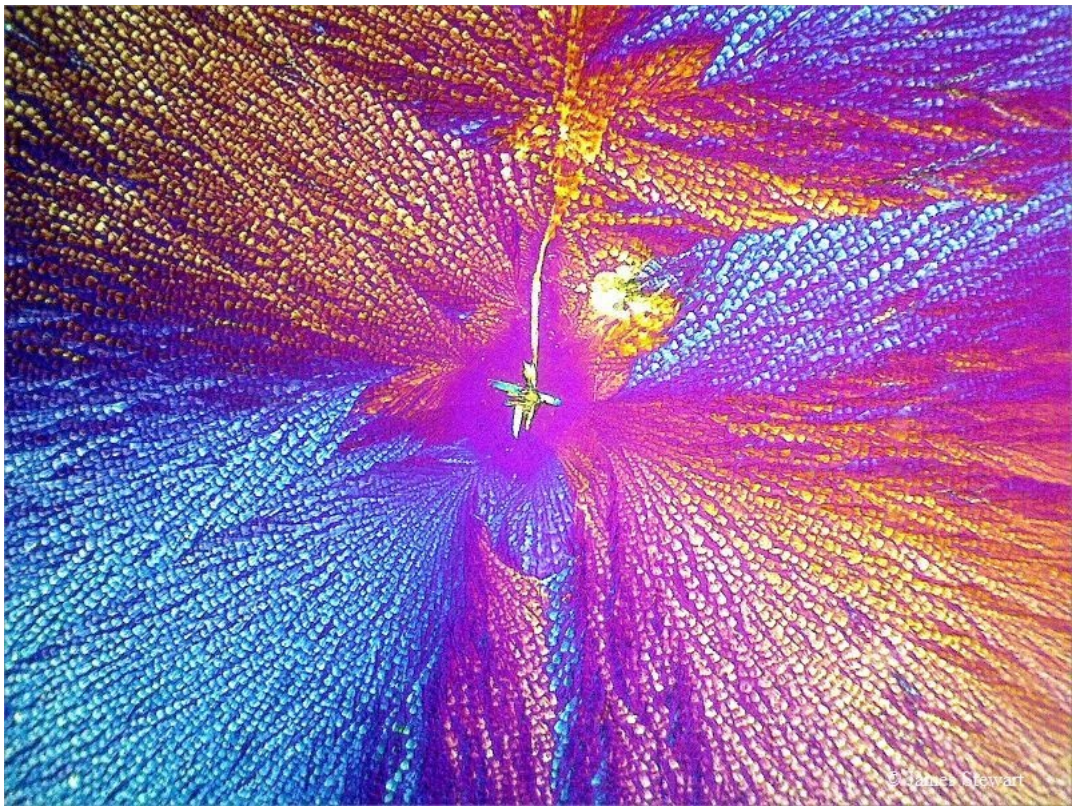
Picture 7

Picture 8

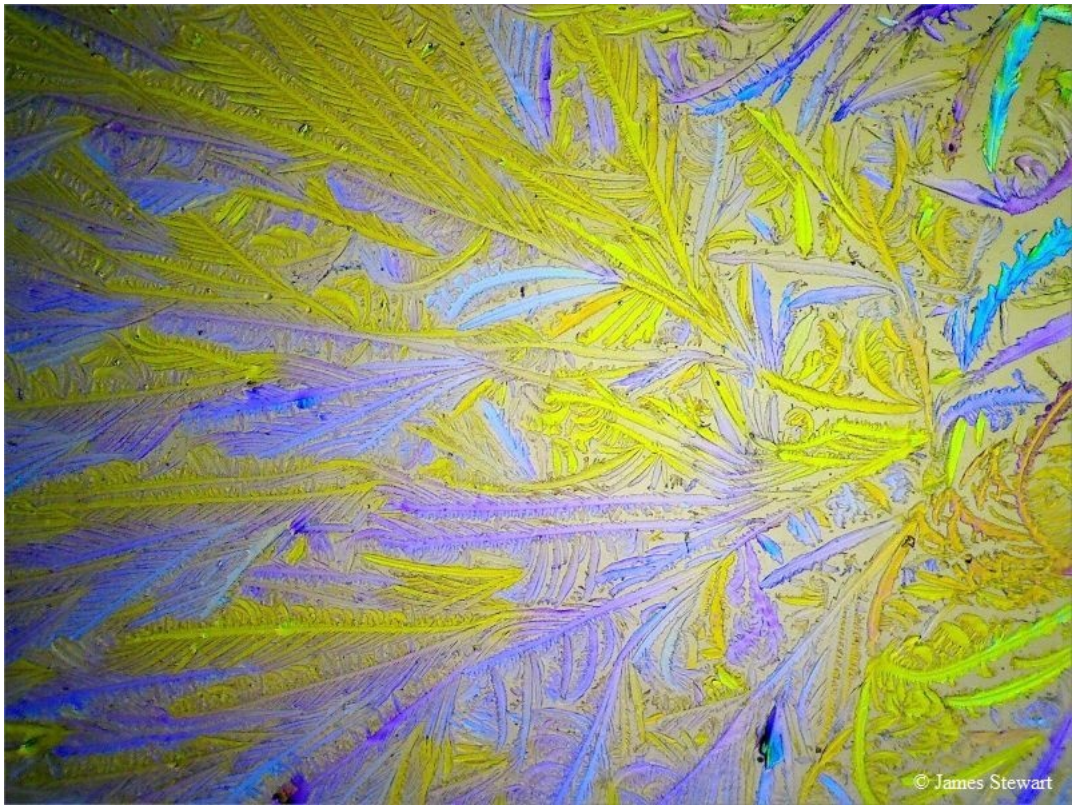
Picture 9



Picture 10



Picture 11



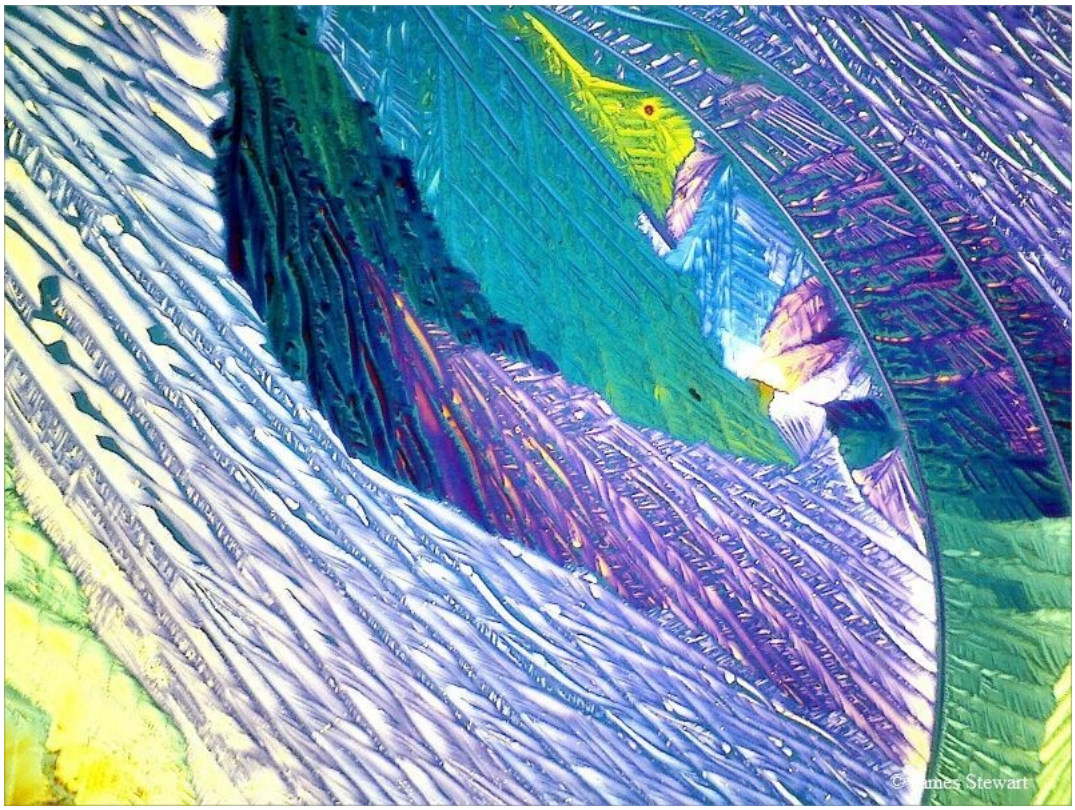
Picture 12

Picture 13

Picture 14

Picture 15

Picture 16

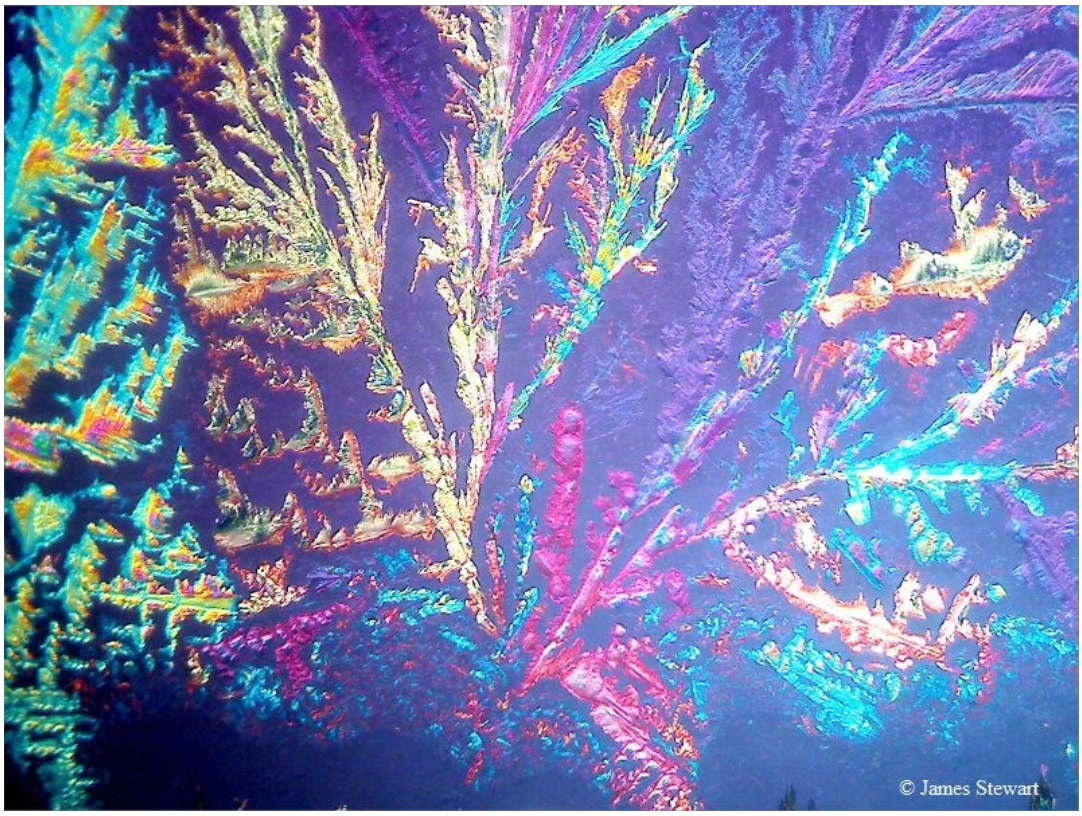


Picture 17

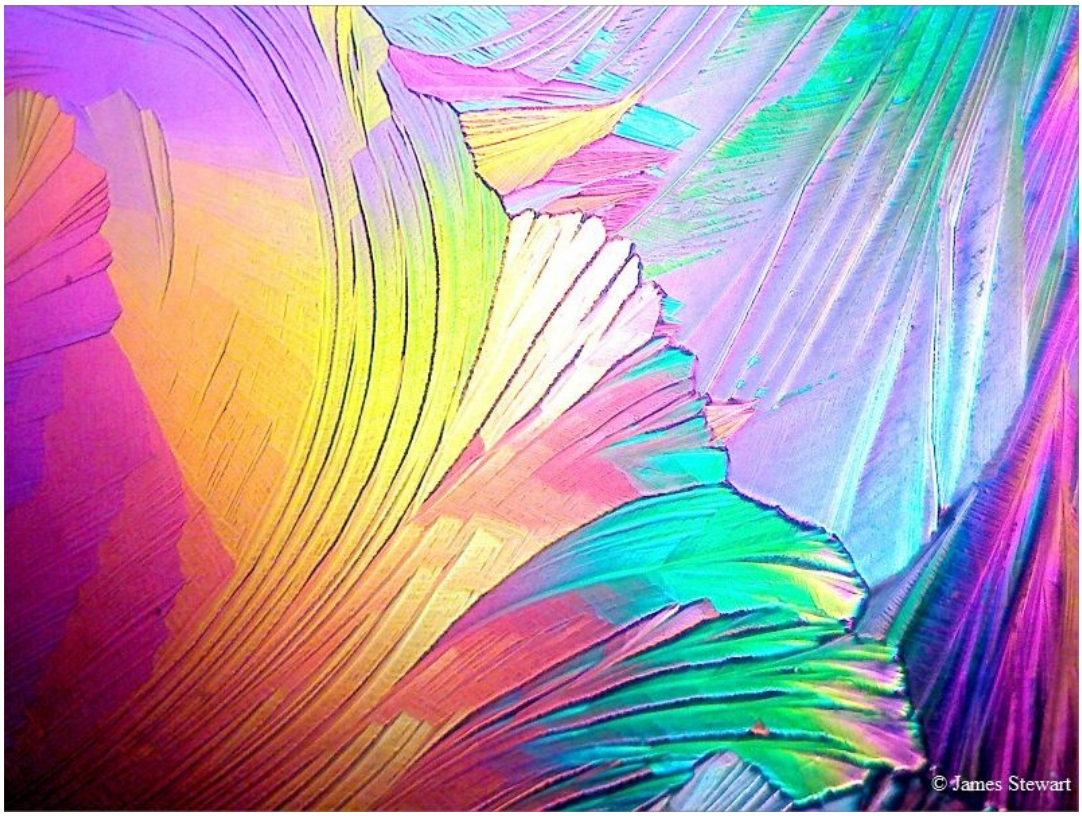
Picture 18

Picture 19

Picture 20



Picture 21



Picture 22

IN CONCLUSION

The differences between the abstract patterns evident in the pictures above and those in ME4 are most probably attributable to the slightly higher boiling point and consequently lower volatility of the solvent used in the test solution for ME5 compared to that used in ME4. It is postulated that this leads to a slower rate of evaporation and crystal formation and thus gives rise to the differences in the sizes and shapes of the crystallised forms on the specimen slides. It is also suggested that other contributory factors to the differences seen in ME5 might be the smaller volume of test solution applied to each specimen slide, changes in ambient temperature and variations in airflow over the slides during their preparation.

Once again, interpret these abstract pictures as you will, but as we say here in Cumbria:

'Ave a go yersel'!

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