# *MICROSCOPICAL EXPLORATION*

# *THIRTY SIX*

## ALIQUOTS! DOES SIZE REALLY MATTER?

Firstly, we need to know what an aliquot actually is! The Oxford English Reference defines an aliquot as: any known part of a whole.
In the context of Microscopical Exploration 36, an aliquot will be defined as:
a small sample taken from a larger volume of a solution for microscopical observation.

The test solution under exploration here is similar to that used in Microscopical Exploration 32, and was made by the dissolution of 0.75gram ß- Alanine and 0.25gram L-Glutamine in $30cm^3$ 1:1 water : 90% Industrial Methylated Spirit.

Next, a series of specimen slides was prepared as follows:
i) Eight clean glass microscope slides, labelled 30,60,90,120,150,180,210,240 respectively, were placed on the fins of the room central heating radiator and allowed to temperature equilibrate to 45°C.
ii) An aliquot of a multiple of 30µL, up to 240µL of the test solution was pipetted onto the centre of each of the correspondingly labelled slides and allowed to evaporate for thirty minutes.
iii) After thirty minutes evaporation at 45°C the slides were removed from the radiator and allowed to come to room temperature, as shown in this image.


As can be seen in the image, the larger the aliquot the further across the slide surface it spread, although the solution did not migrate beyond the edge of the slide: this was probably due to the surface tension of the solution.

A second set of eight specimen slides was prepared, as above, using slides with a polished 15mm cavity at their centre, in order to limit the spread of the aliquot of solution applied. Due to the cavity, more of the test solution was confined to the centre of the slide and this resulted in an evidently thicker layer of crystals at that position. These slides are shown in the next image.

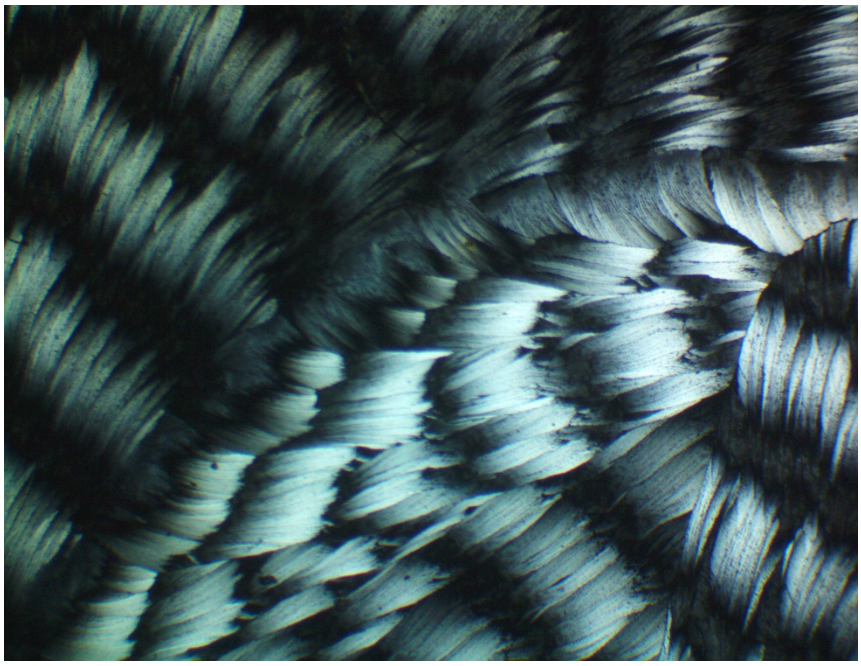

The Swift SW380T microscope was set up for polarised light observation as in previous Microscopical Explorations, and its mechanical stage was positioned such that the centre point of each of the specimen slides was centred in the field of view.

Each of the specimen slides was observed using the x4 objective with both linearly polarised illumination and circularly polarised illumination, and an image of each was captured using the Swift SC1003 10MP camera mounted on the microscope trinocular port. No further alteration or digital adjustment or enhancement of any of the images was undertaken and, to coin that well known and well-worn phrase,

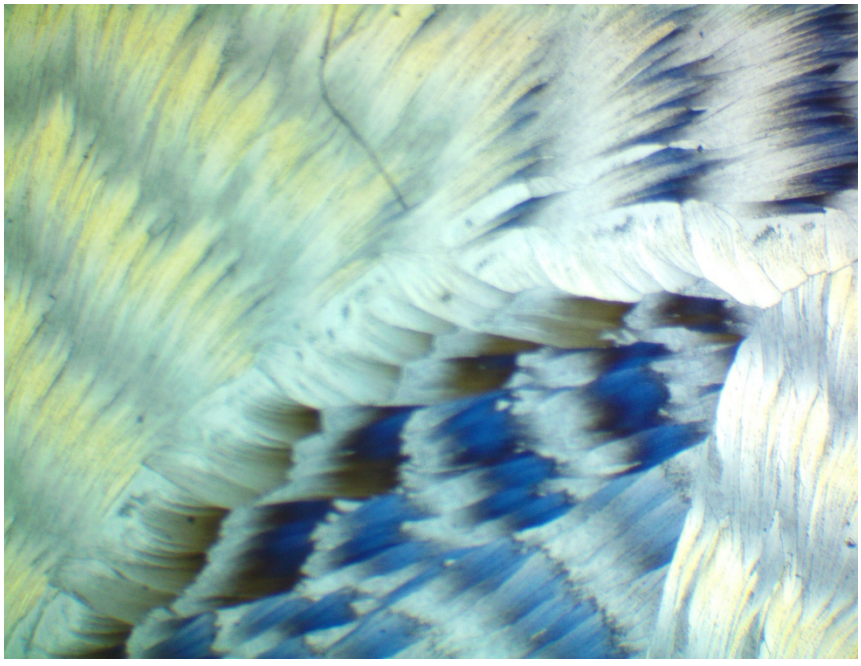
WYSIWYG

# THE IMAGES

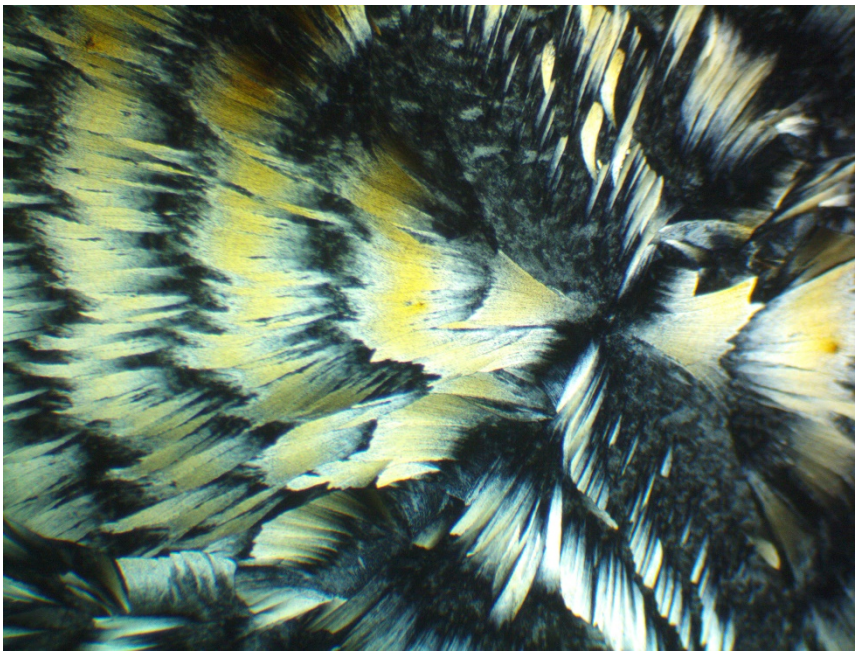
## 30µL aliquot/ plane slide linear polarisation



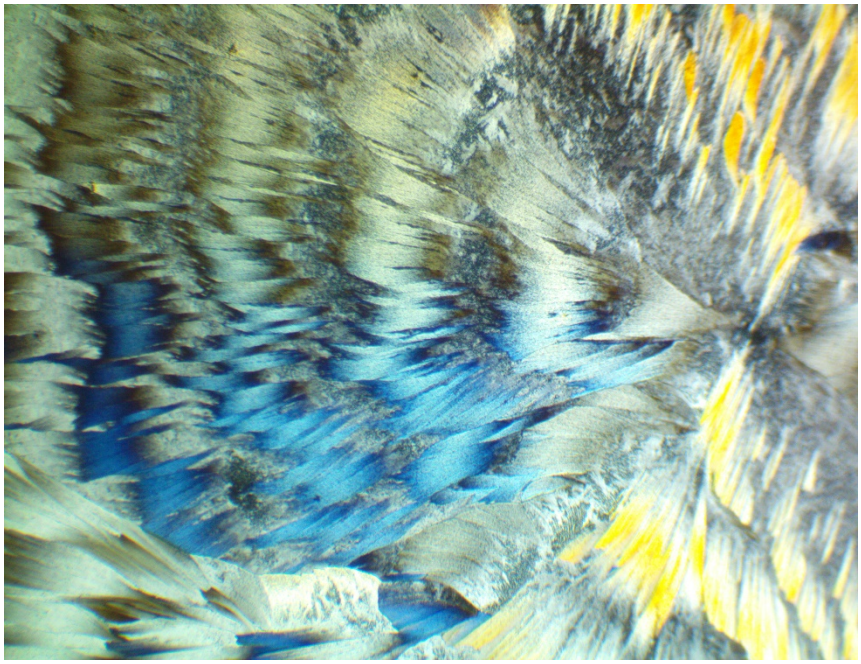
## 30µL aliquot/ plane slide circular polarisation



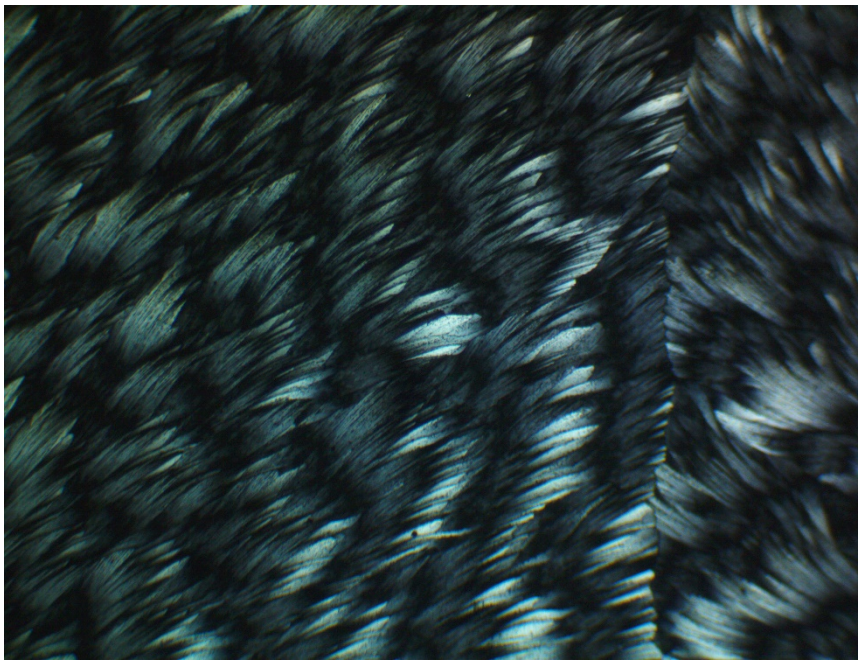
## 30µL aliquot/ cavity slide linear polarisation



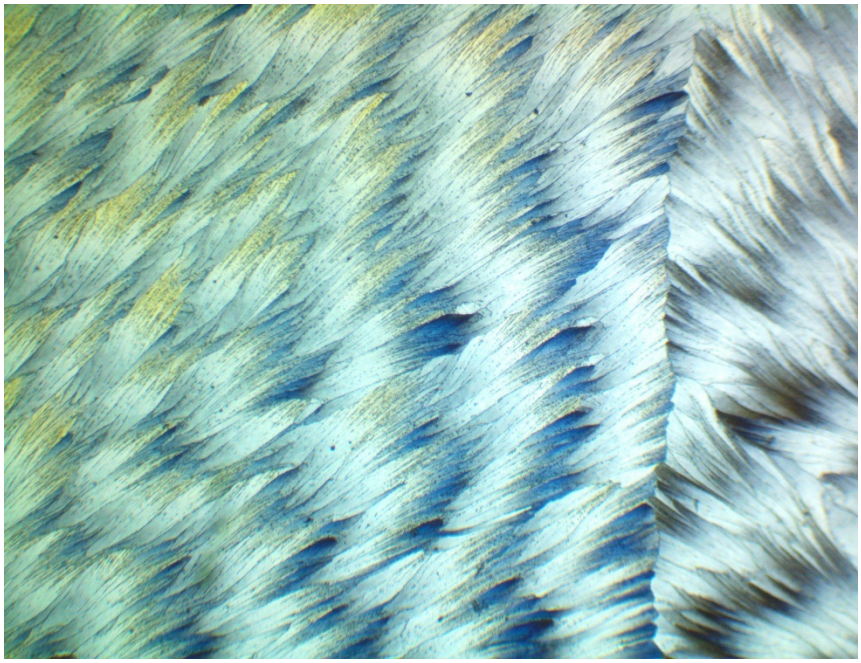
## 30µL aliquot/ cavity slide circular polarisation



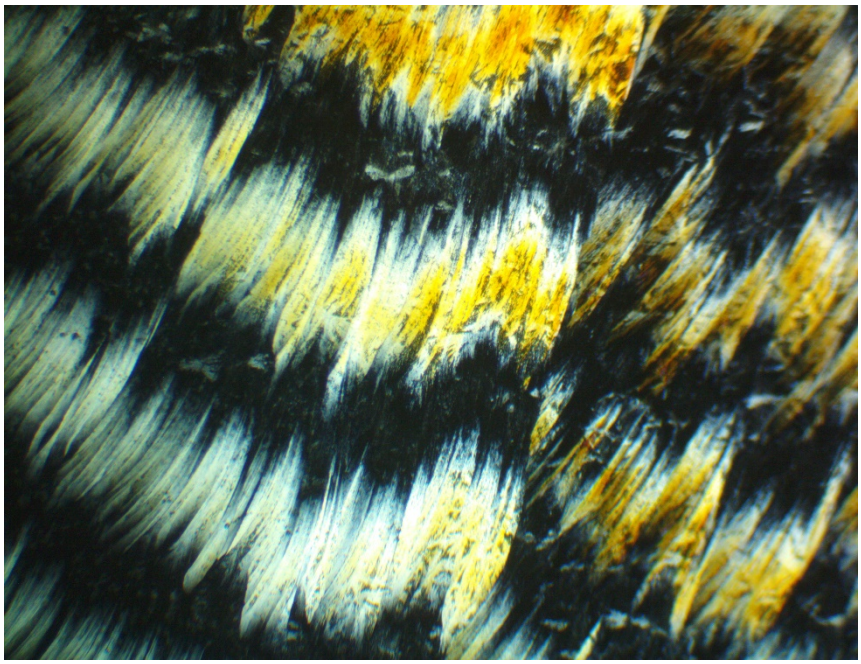
## 60µL aliquot/ plane slide linear polarisation



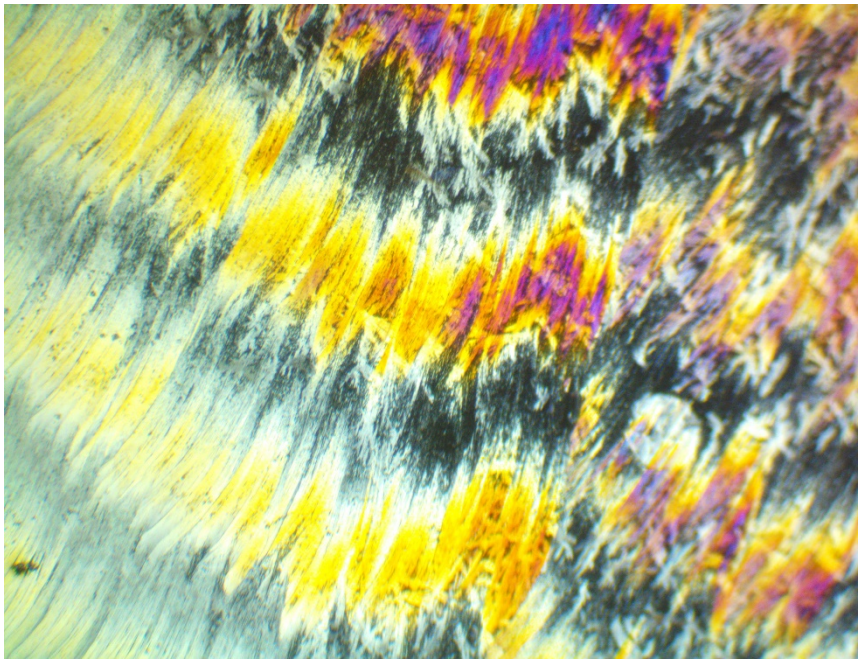
## 60µL aliquot/ plane slide circular polarisation



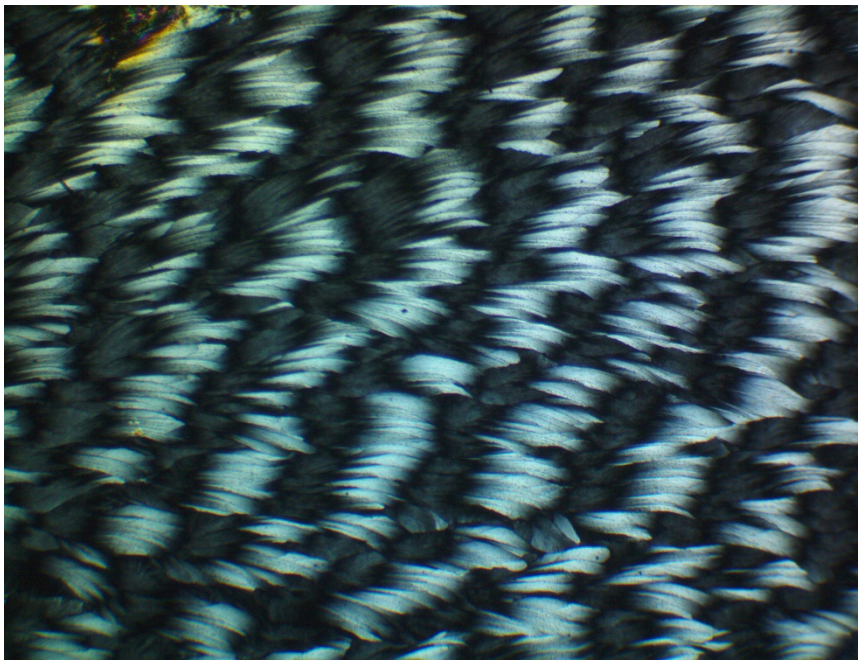
## 60µL aliquot/ cavity slide linear polarisation



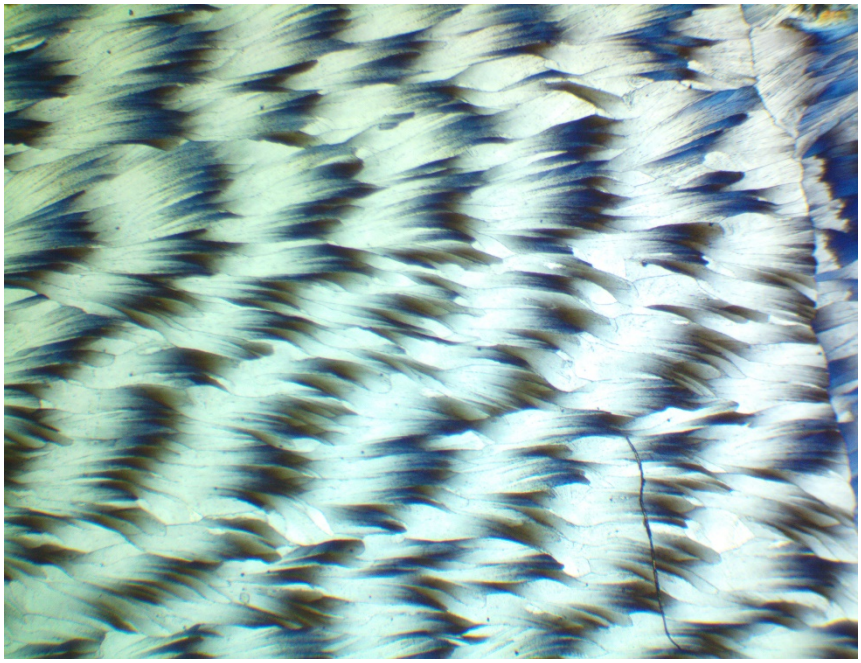
## 60µL aliquot/ cavity slide circular polarisation



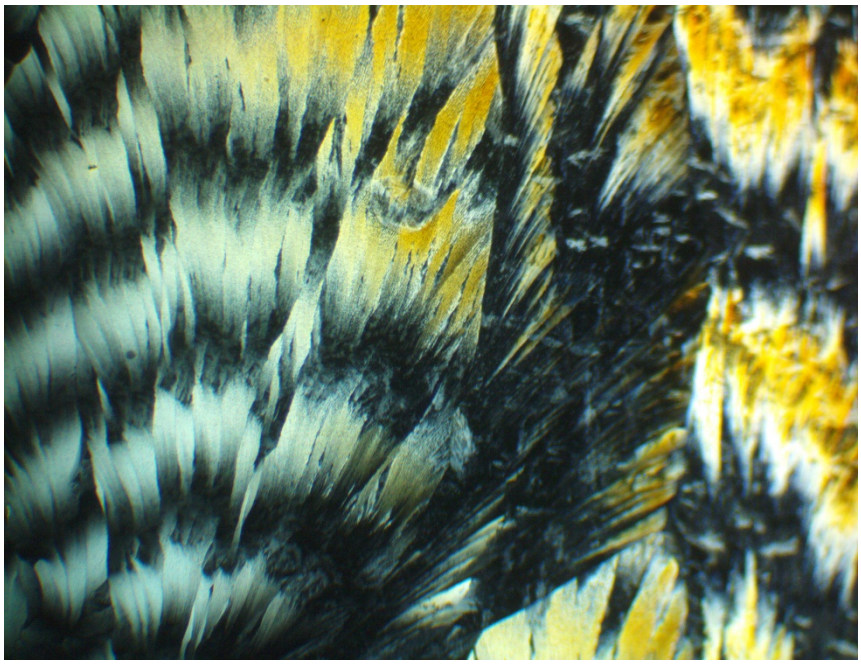
## 90µL aliquot/ plane slide linear polarisation



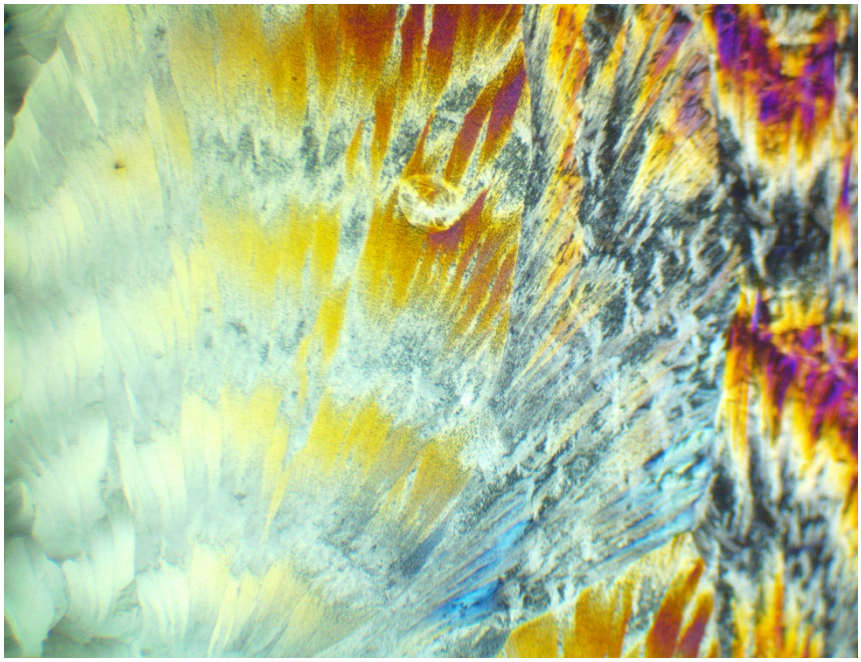
## 90µL aliquot/ plane slide circular polarisation



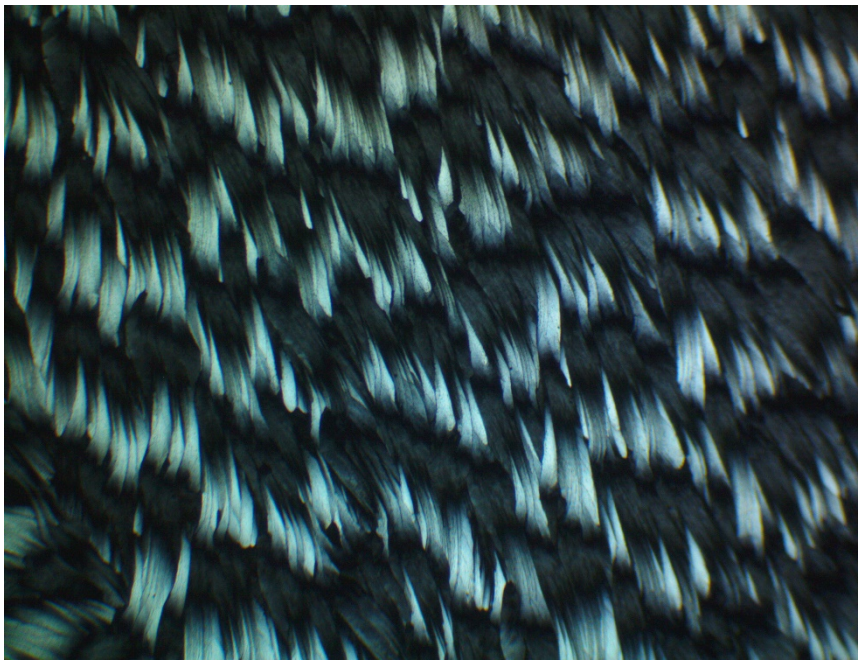
## 90µL aliquot/ cavity slide linear polarisation



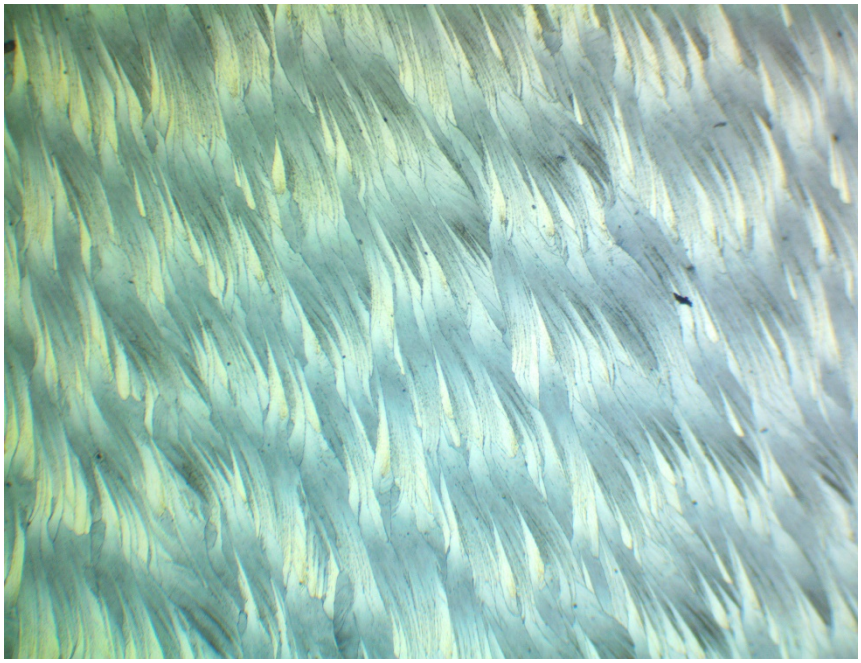
## 90µL aliquot/ cavity slide circular polarisation



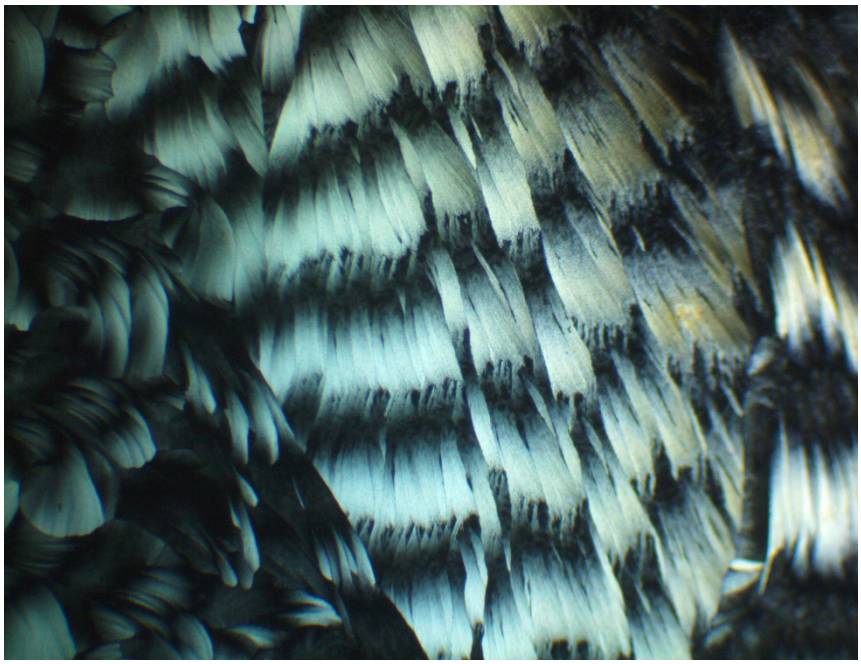
**120µL aliquot/ plane slide linear polarisation**



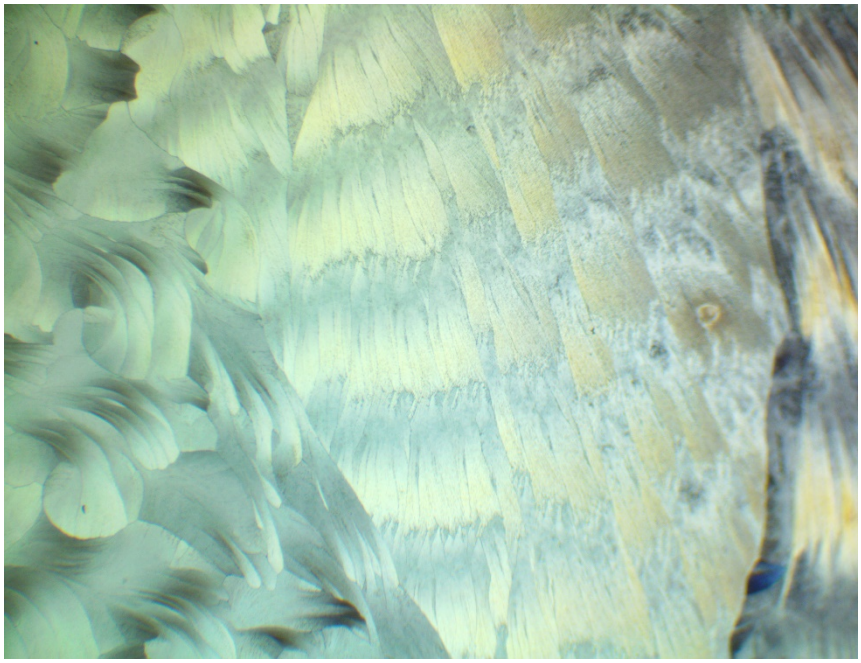
**120µL aliquot/ plane slide circular polarisation**



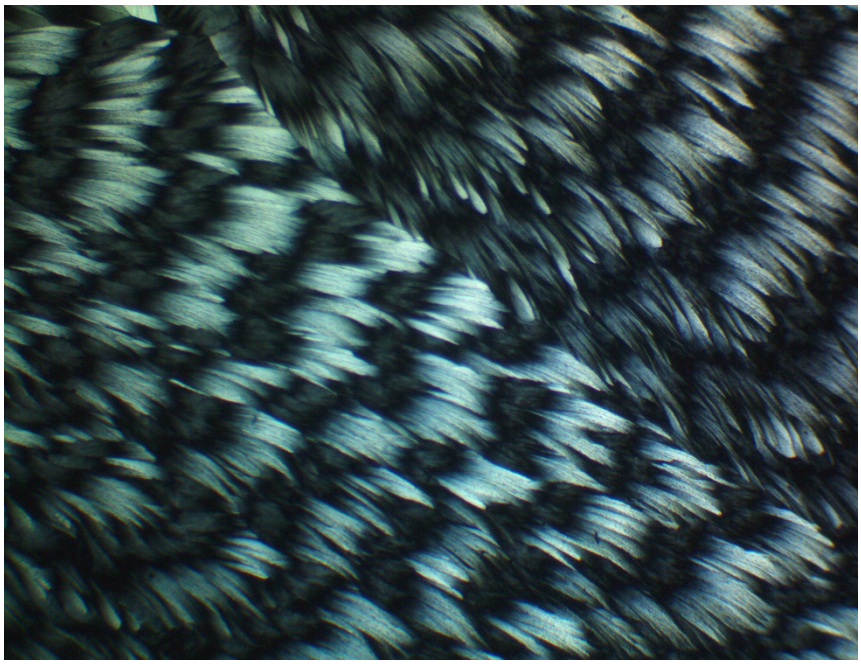
**120µL aliquot/ cavity slide linear polarisation**



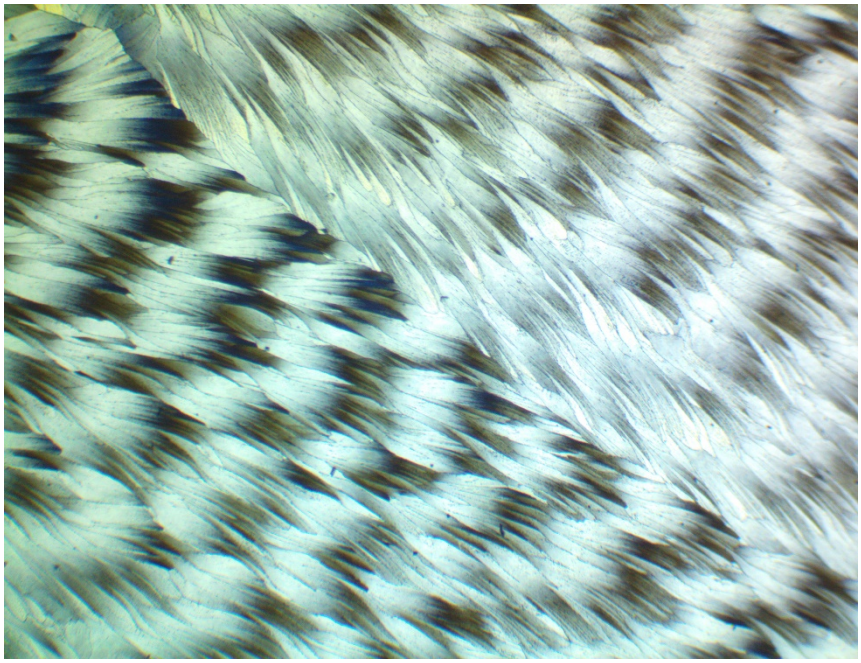
**120µL aliquot/ cavity slide circular polarisation**



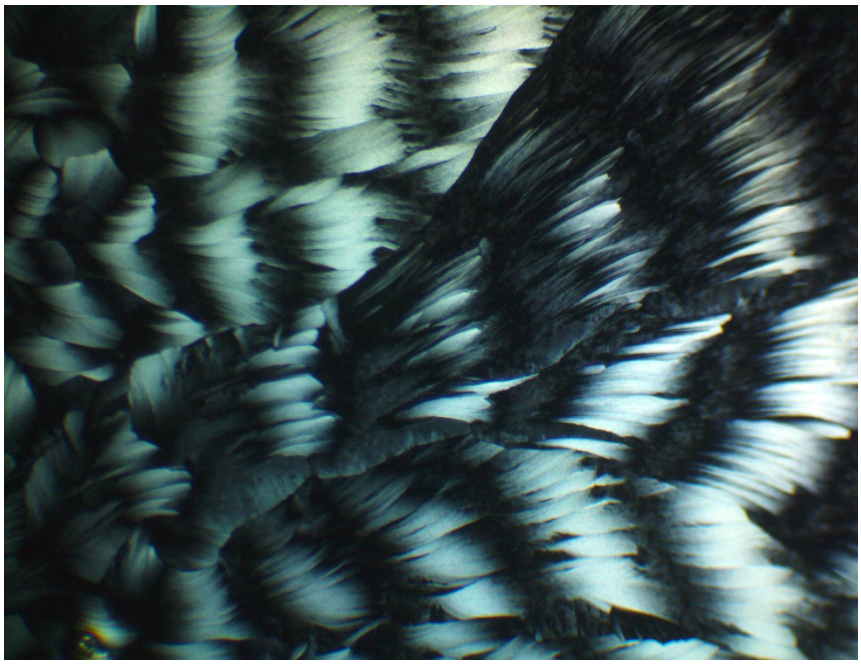
## 150µL aliquot/ plane slide linear polarisation



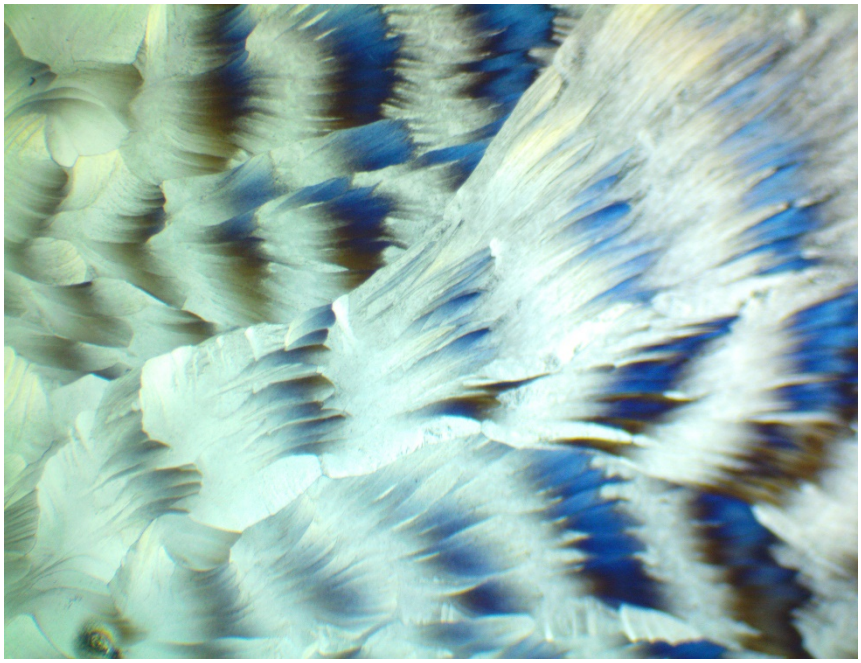
## 150µL aliquot/ plane slide circular polarisation



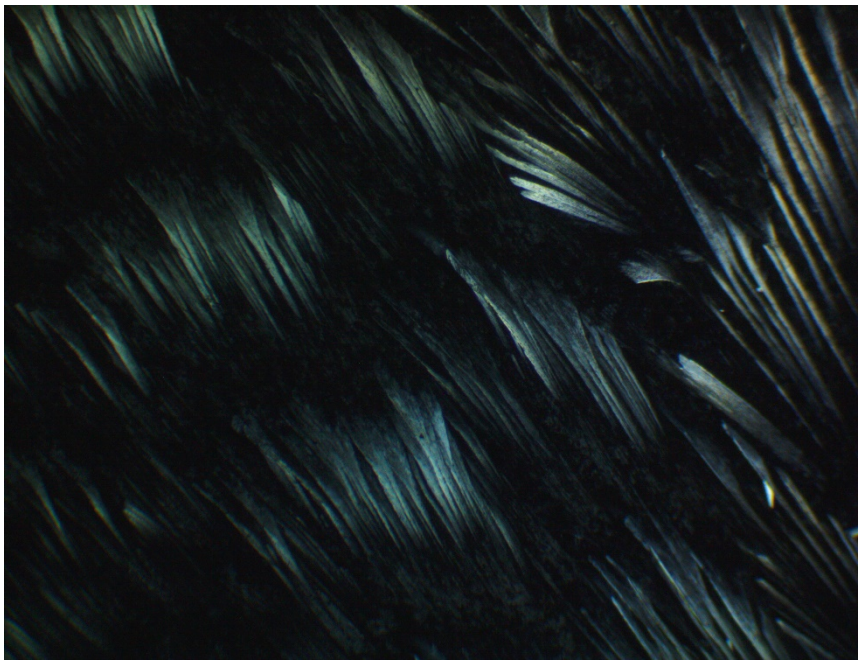
## 150µL aliquot/ cavity slide linear polarisation



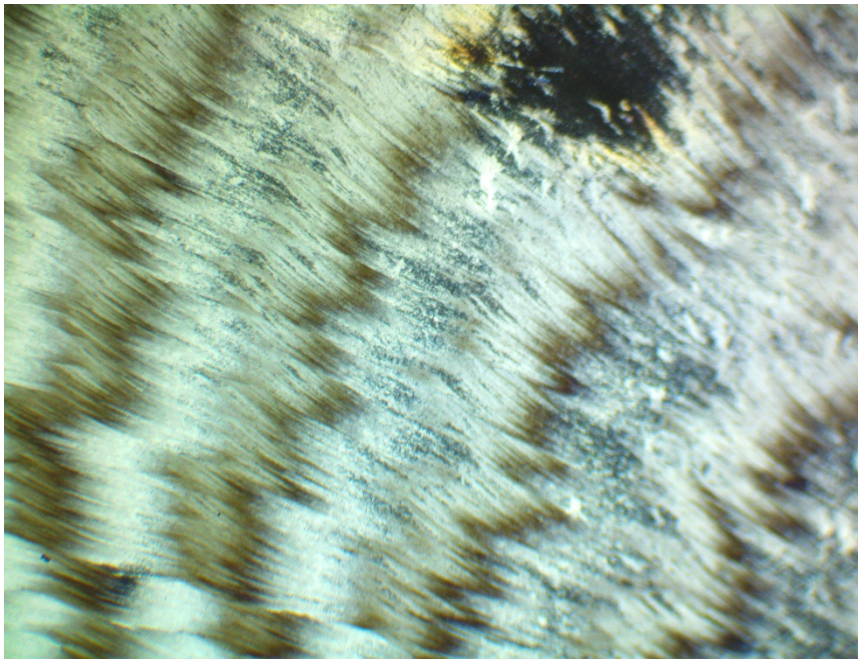
## 150µL aliquot/ cavity slide circular polarisation



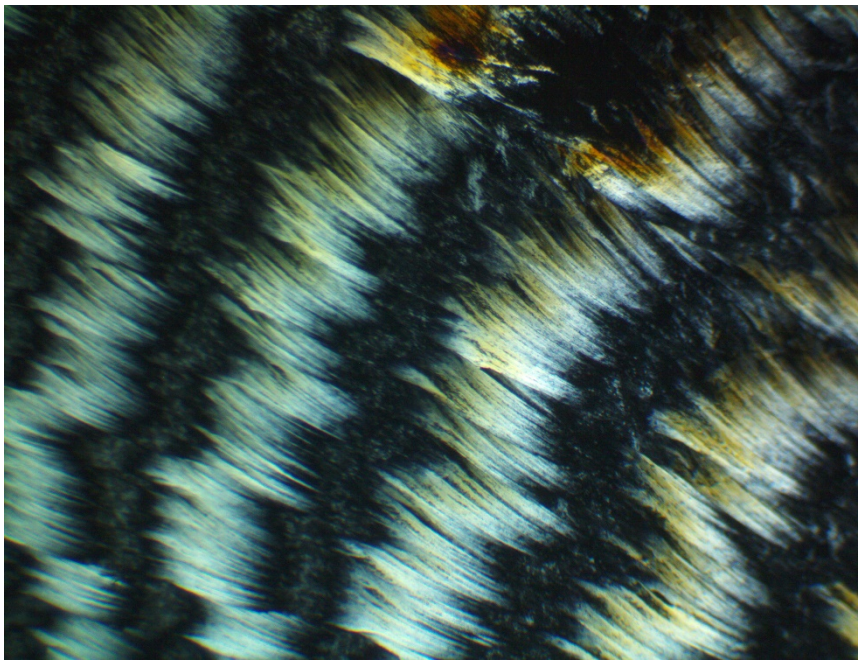
**180µL aliquot/ plane slide linear polarisation**



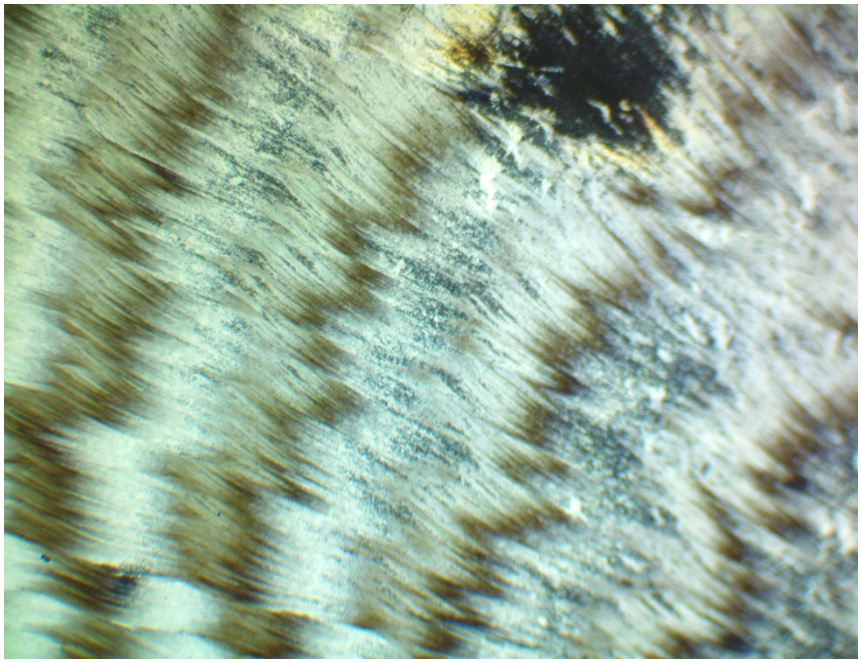
**180µL aliquot/ plane slide circular polarisation**



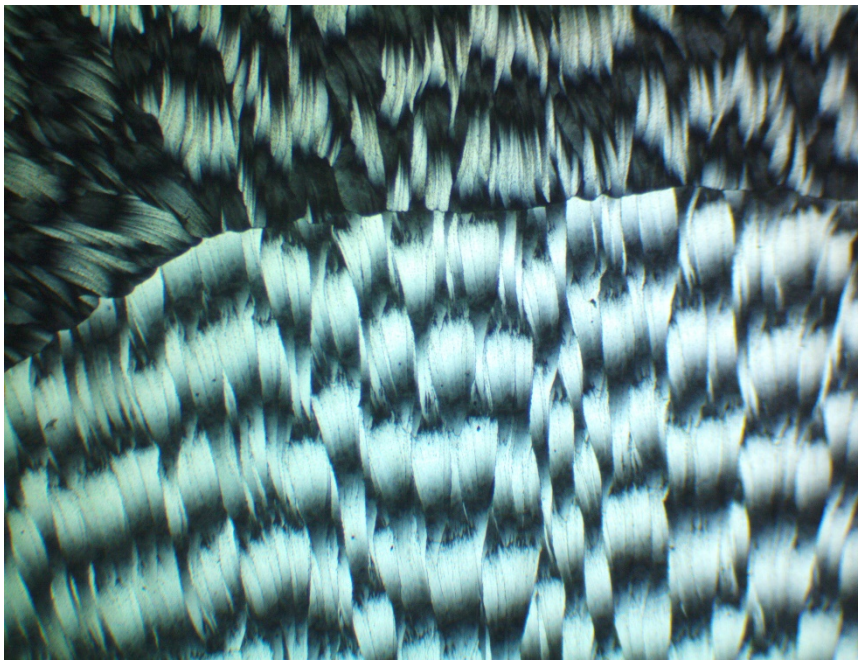
## 180µL aliquot/ cavity slide linear polarisation



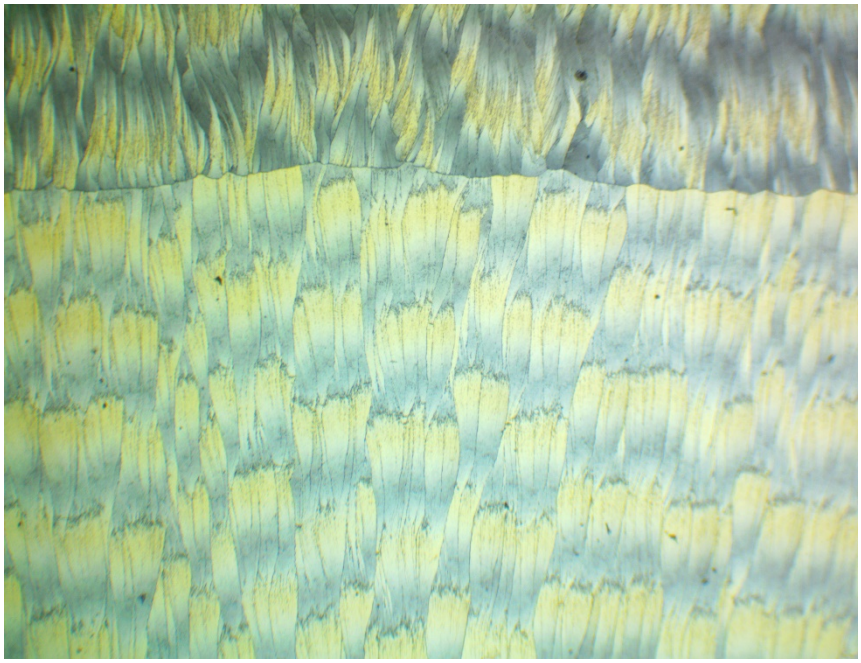
## 180µL aliquot/ cavity slide circular polarisation



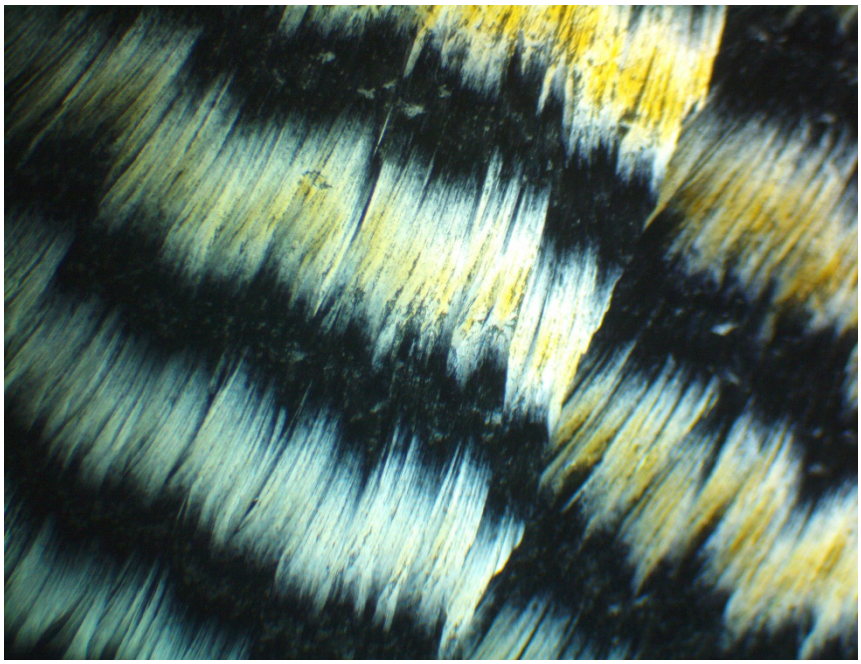
## 210µL aliquot/ plane slide linear polarisation



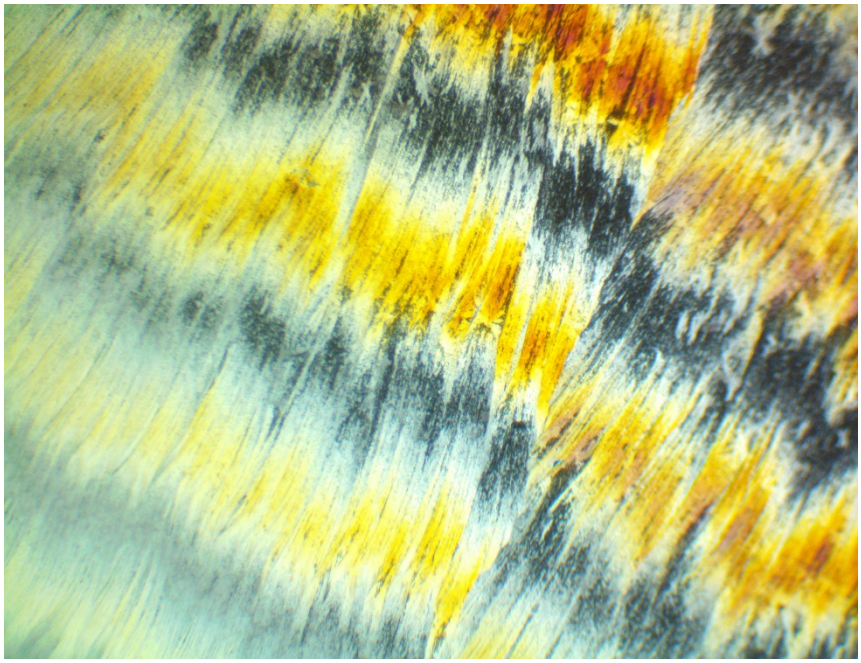
## 210µL aliquot/ plane slide circular polarisation



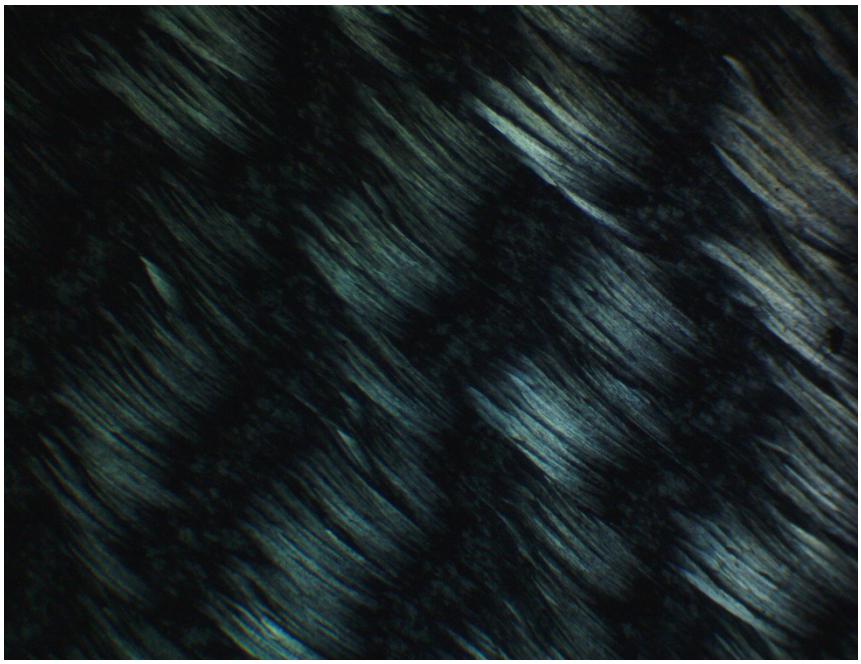
## 210µL aliquot/ cavity slide linear polarisation



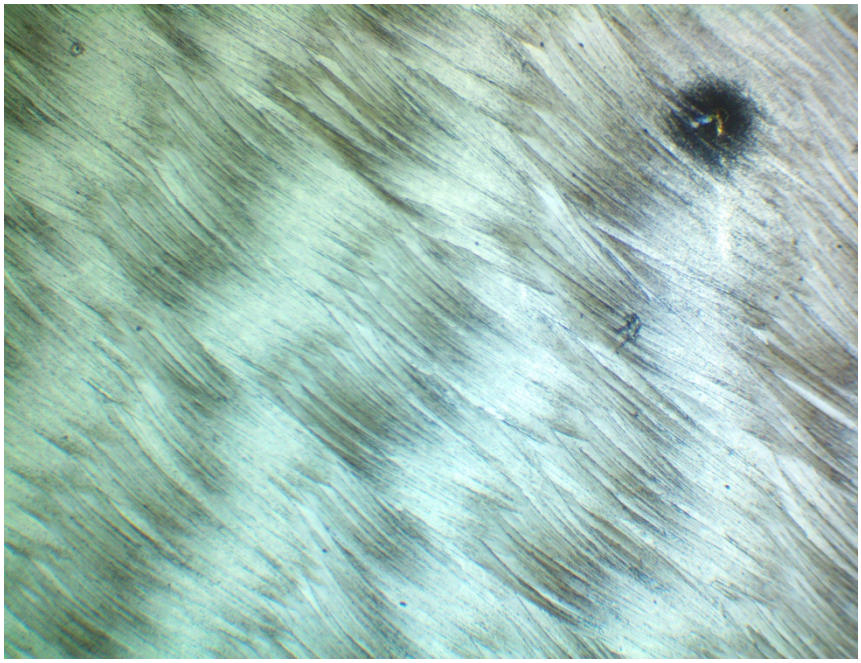
## 210µL aliquot/ cavity slide circular polarisation



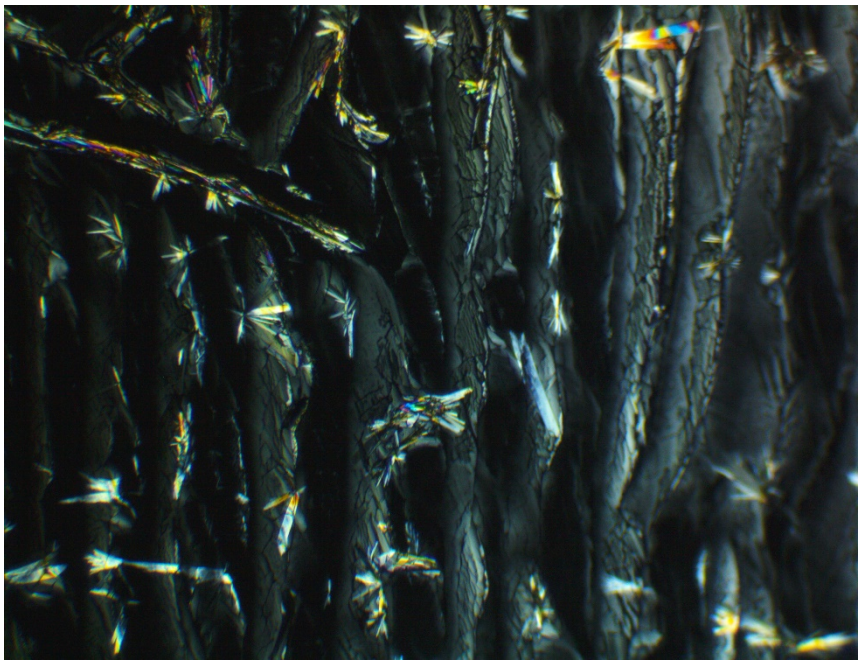
**240µL aliquot/ plane slide linear polarisation**



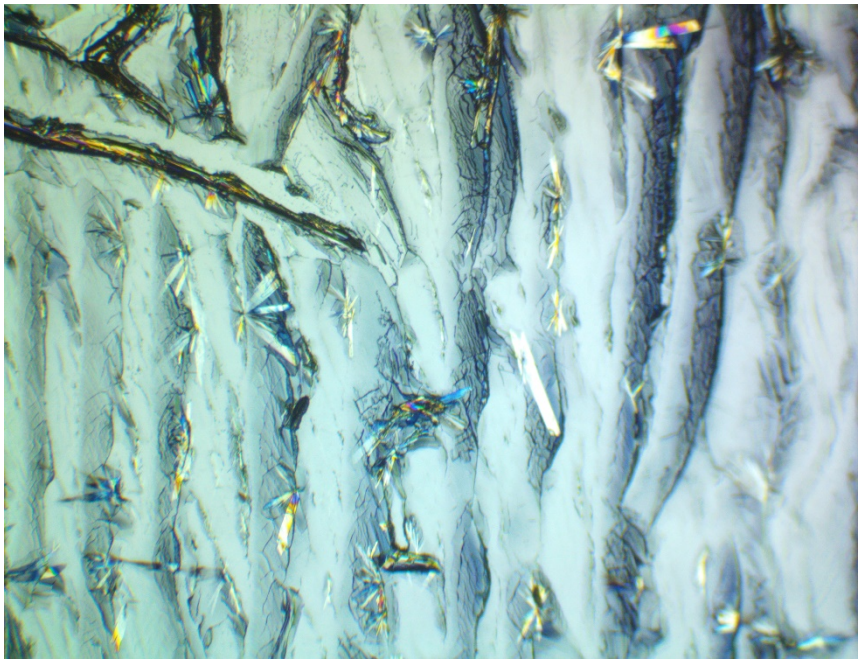
**240µL aliquot/ plane slide circular polarisation**



## 240µL aliquot/ cavity slide linear polarisation



## 240µL aliquot/ cavity slide circular polarisation



Now that the pictorial evidence has been presented, the only thing left to do is to answer the question posed in the title above.

For me, the answer is YES, but I leave you, esteemed reader, to make up your own mind based upon what you have seen in ME36.

James Stewart
Cumbria
UK

**As we say here in Cumbria:**

**'Ave a go yersel'!**

**Comments, gratefully received, to:**

**stewartr178ATyahooDOTcoDOTuk**

Published in the September 2024 issue of *Micscape* magazine.