

DIY DARKFIELD.

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INTRODUCTION:

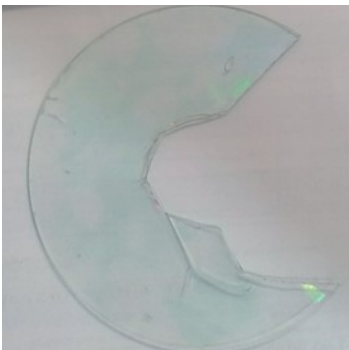
Paraphrasing Paul James's words with respect to Circular Oblique Lighting (COL) "... if COL lighting were the norm, and someone discovered brightfield, the latter would probably remain as an adjunct only". I would say that "If darkfield were the norm, and someone discovered all the other techniques, these ones would remain as an adjunct only". This is because darkfield is marvelous and so amazing. As I mentioned in [my previous article](#) about darkfield where I remarked that diffraction of light is the phenomenon that explains this illumination technique, that time I used the DARKFIELD CONDENSER that came with my microscope.

DEVELOPMENT:

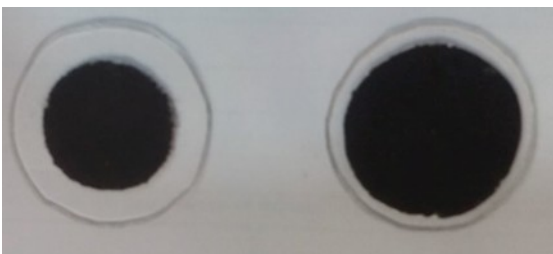
I wanted so much to present this article because darkfield illuminations is so easy to produce, in a DIY way. It just needs a circle of opaque material - it could be a coin, some black plastic or black cardboard. The only necessary feature is that it must be totally opaque, a translucent one would not be useful. This stop must block the direct passage of light from the illuminator to the objective, so it must be large enough to surpass the numerical aperture of the objective.

To support it, it's possible to use a transparent circle of plastic - I cut one from a CD in which I have removed the cover. I cut two circles of 3.05 cm that fit perfectly in the brightfield condenser's filter tray.

Here is the remainder of the CD.



Here are the circles to which I glued one black circle of 2 cm of diameter and one of 2.6 cm to the other.

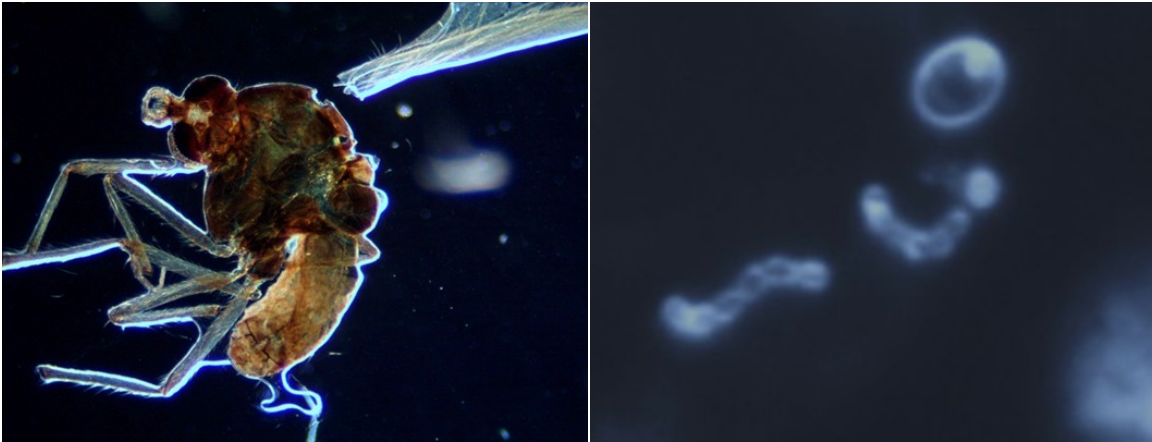


The first one is for use with the 4x, 10x objectives and the second one with 40x and with some subjects probably 100x, but for the moment use of the 100x is not presented in this article.

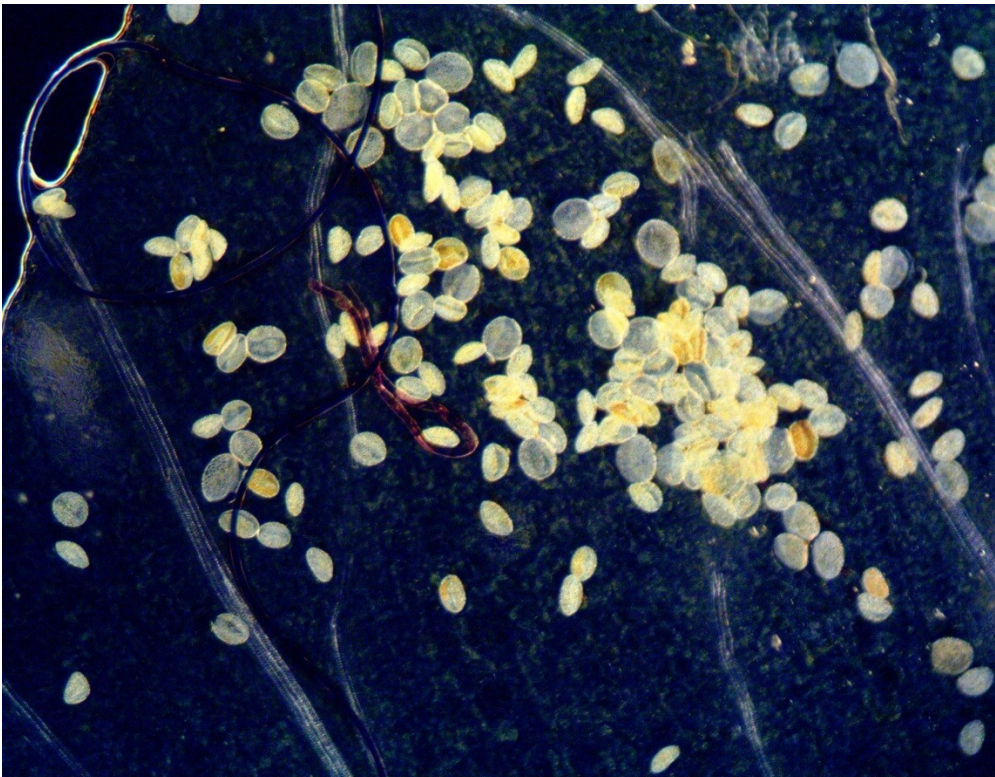
For getting the best use from the stops, it is necessary to adjust the light intensity and the aperture of the illuminator as needed and to apply the white balance features of the camera.



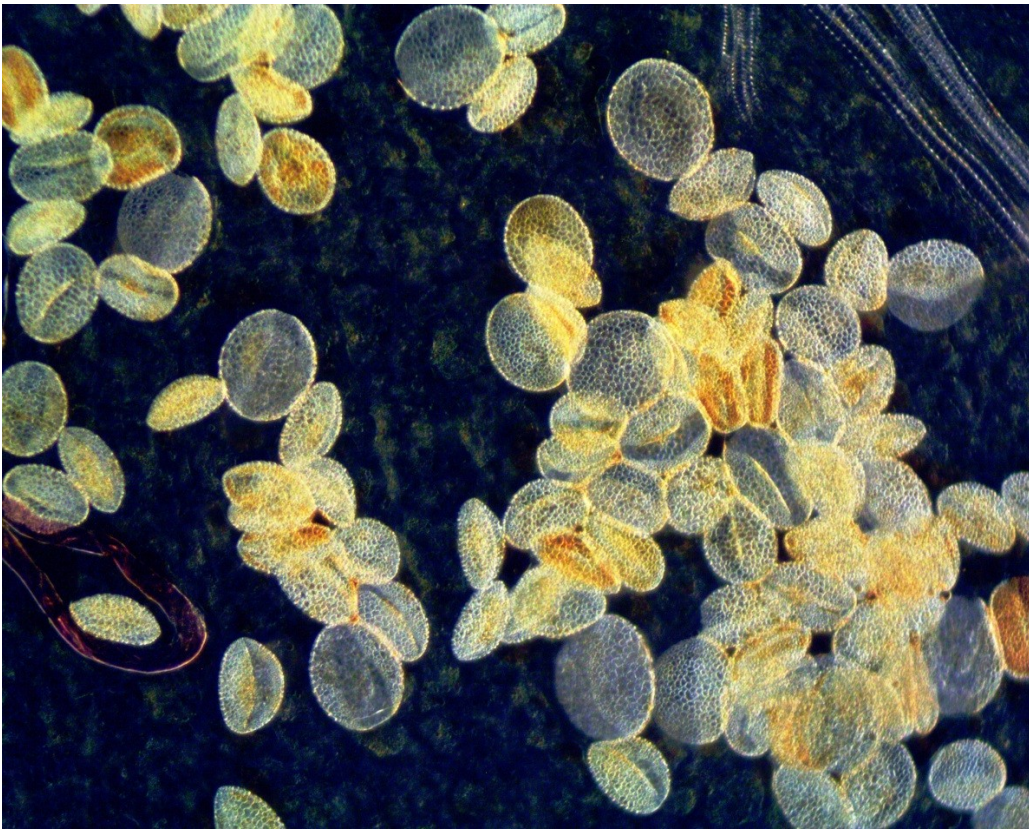
The results are comparable to those produced by a real darkfield condenser.



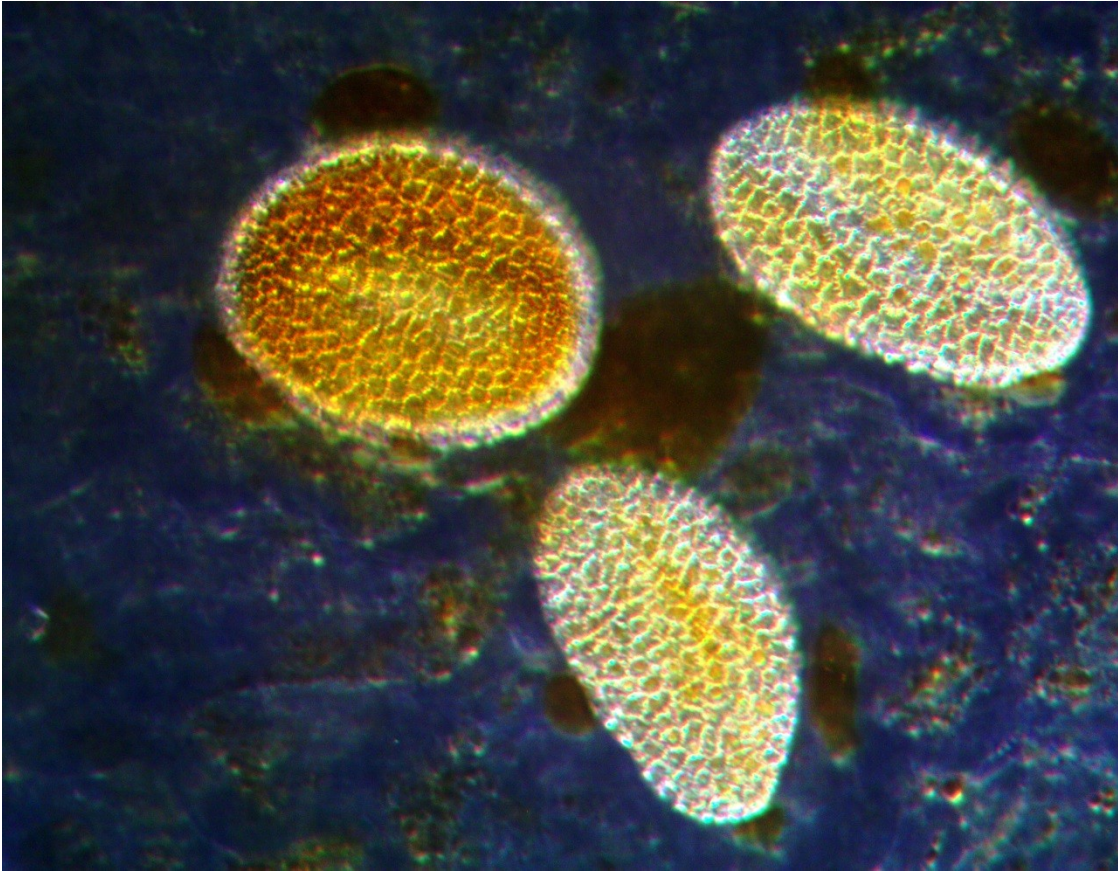
RESULTS:



Lily pollen 4x



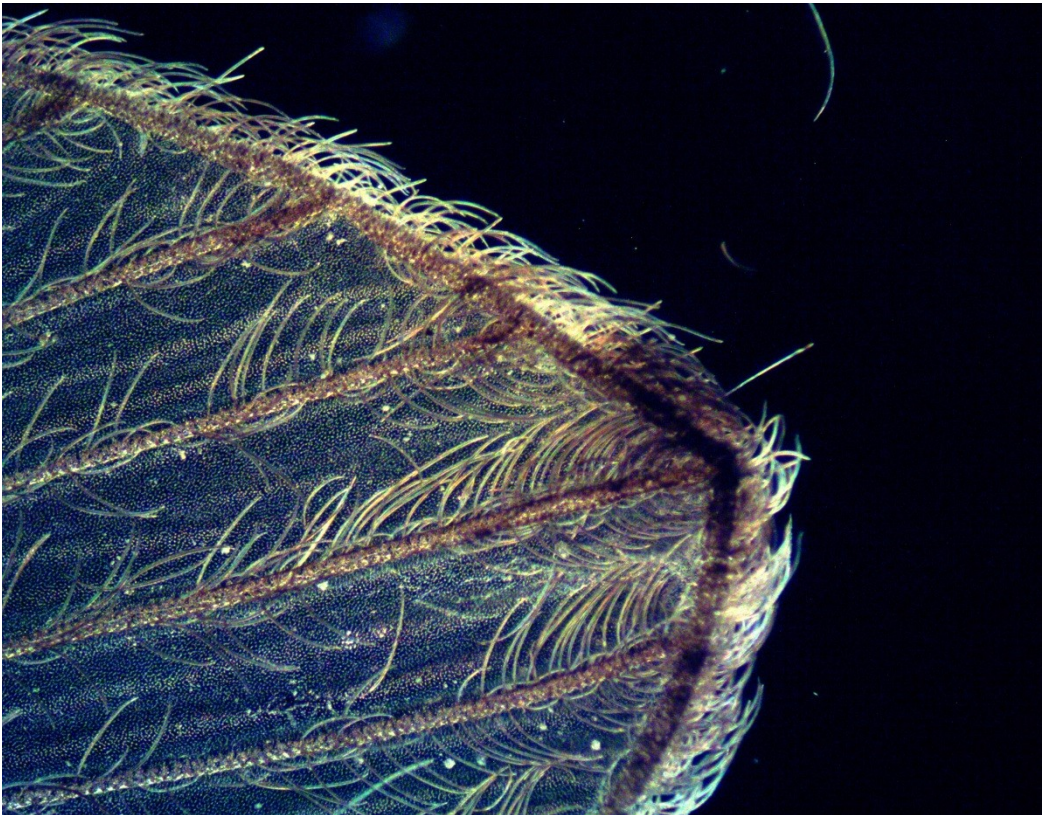
Lily pollen 10x



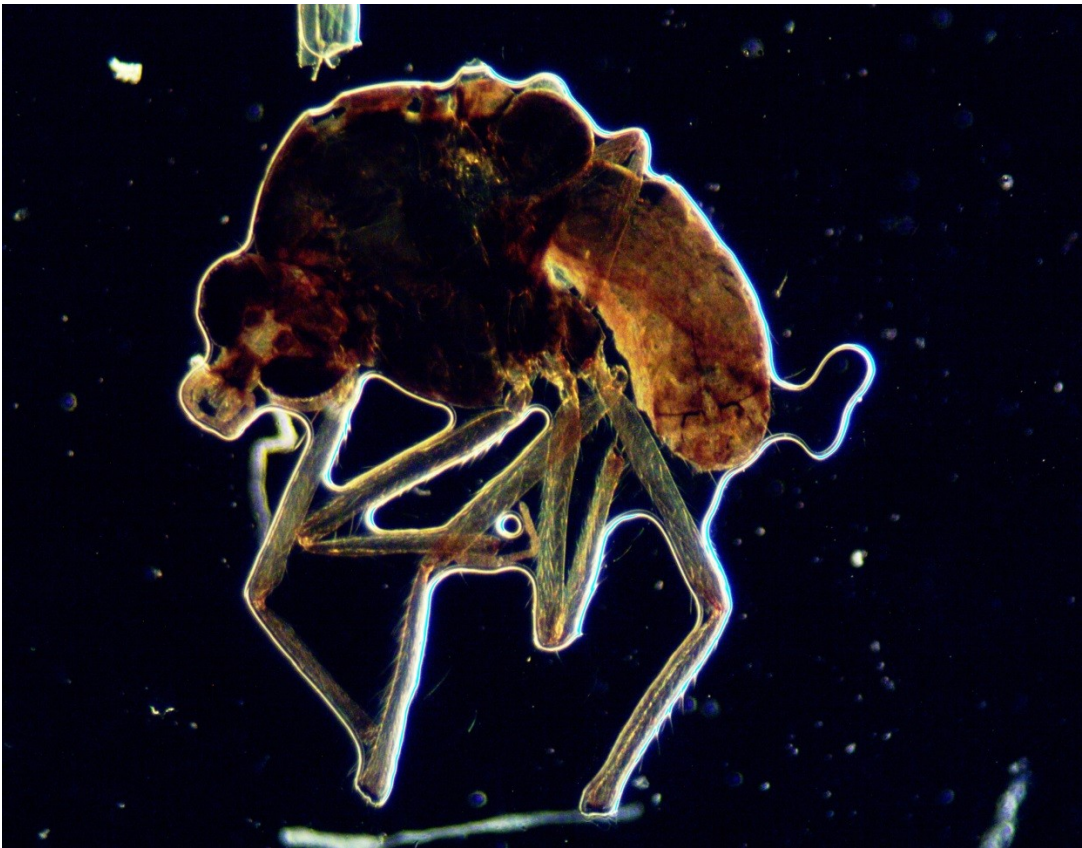
Lily pollen 40x 2cm filter



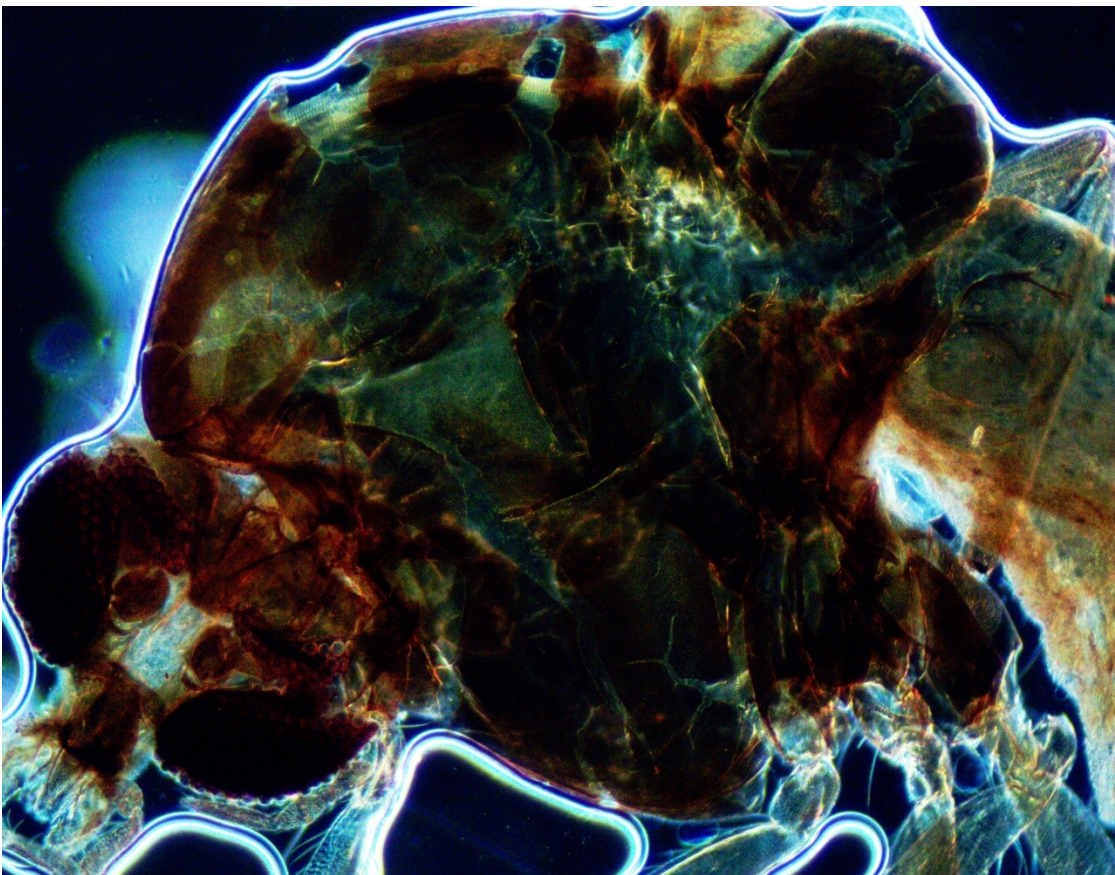
Mosquito's wing 4x



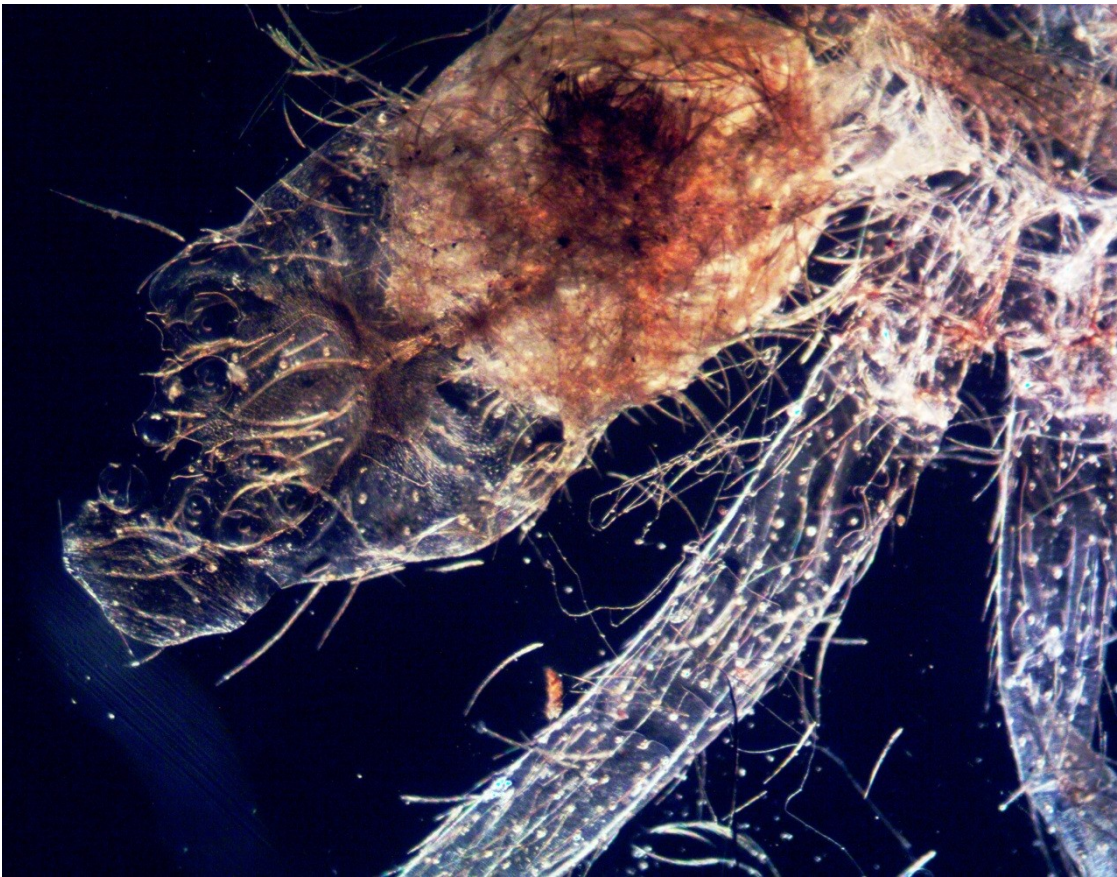
Mosquito's wing 10x



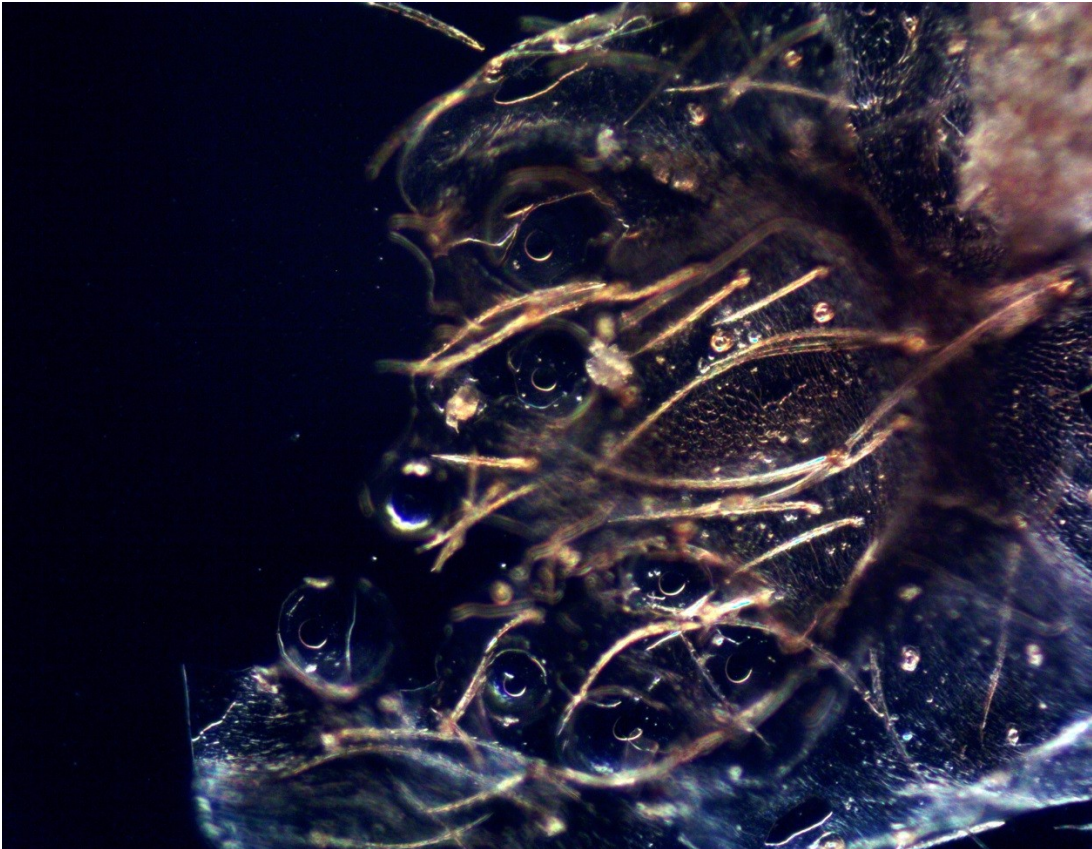
Mosquito 4x



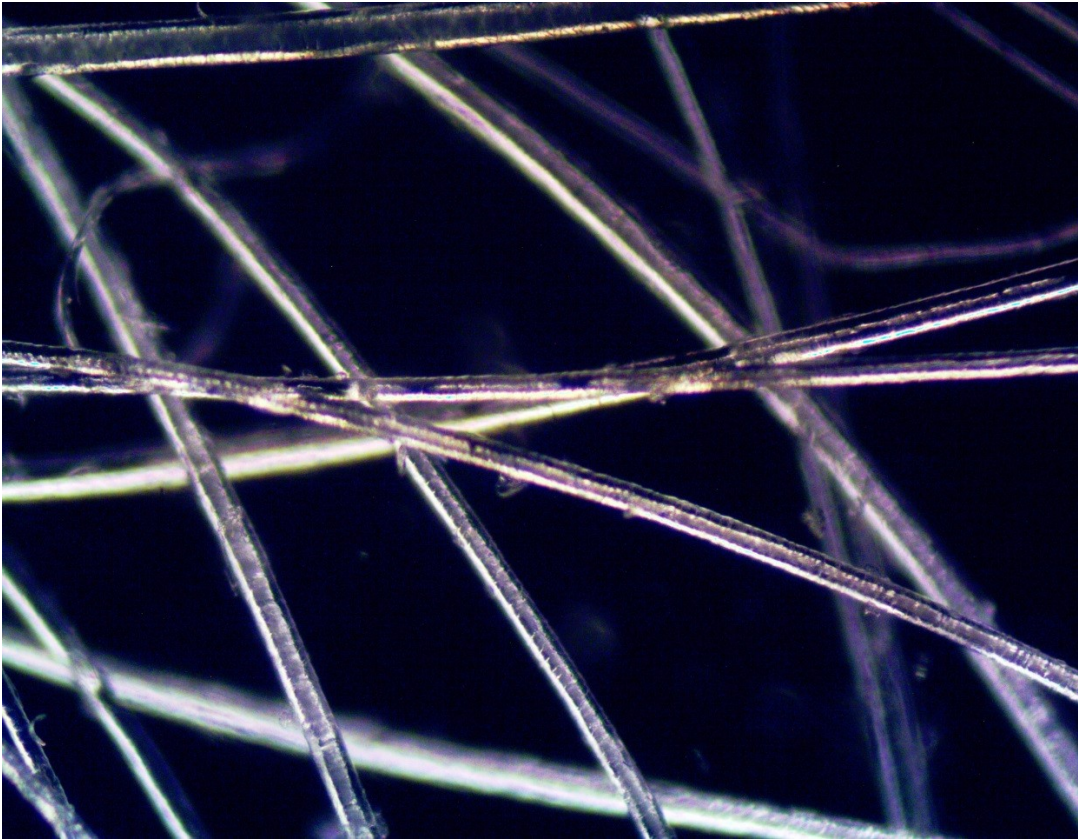
Mosquito 10x



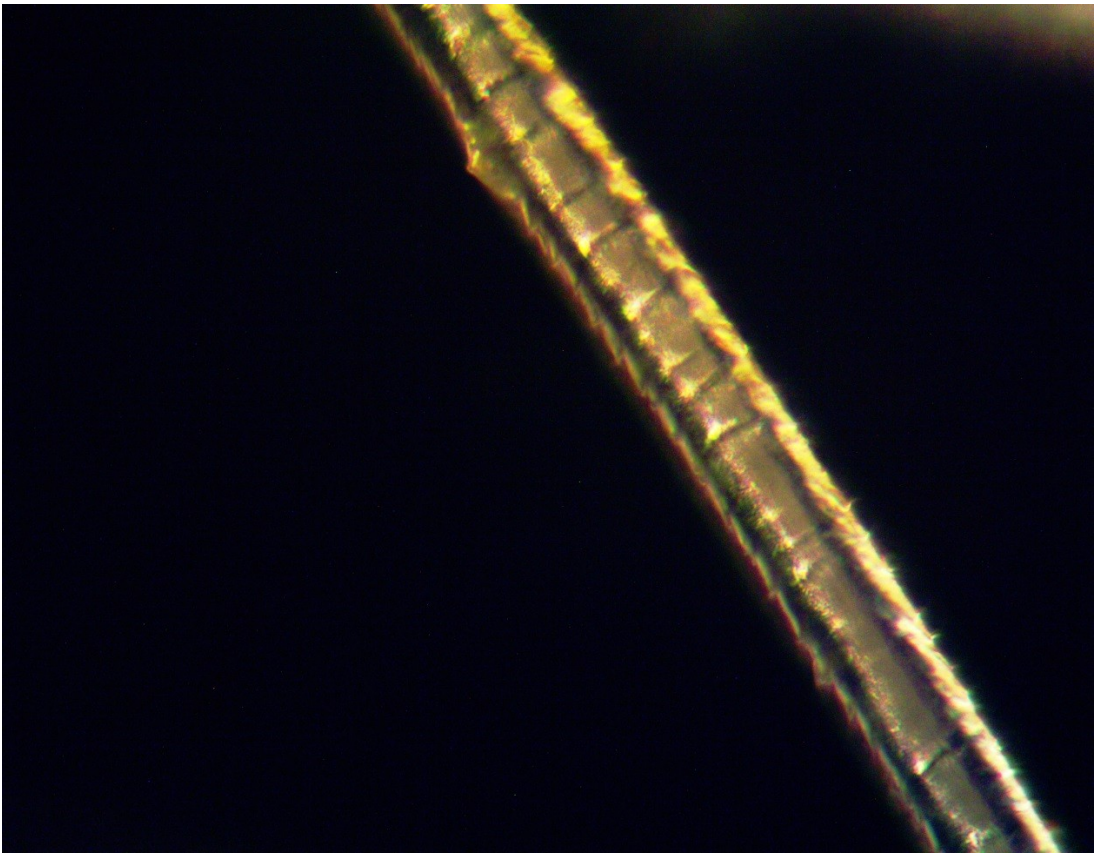
Spider pouch 4x



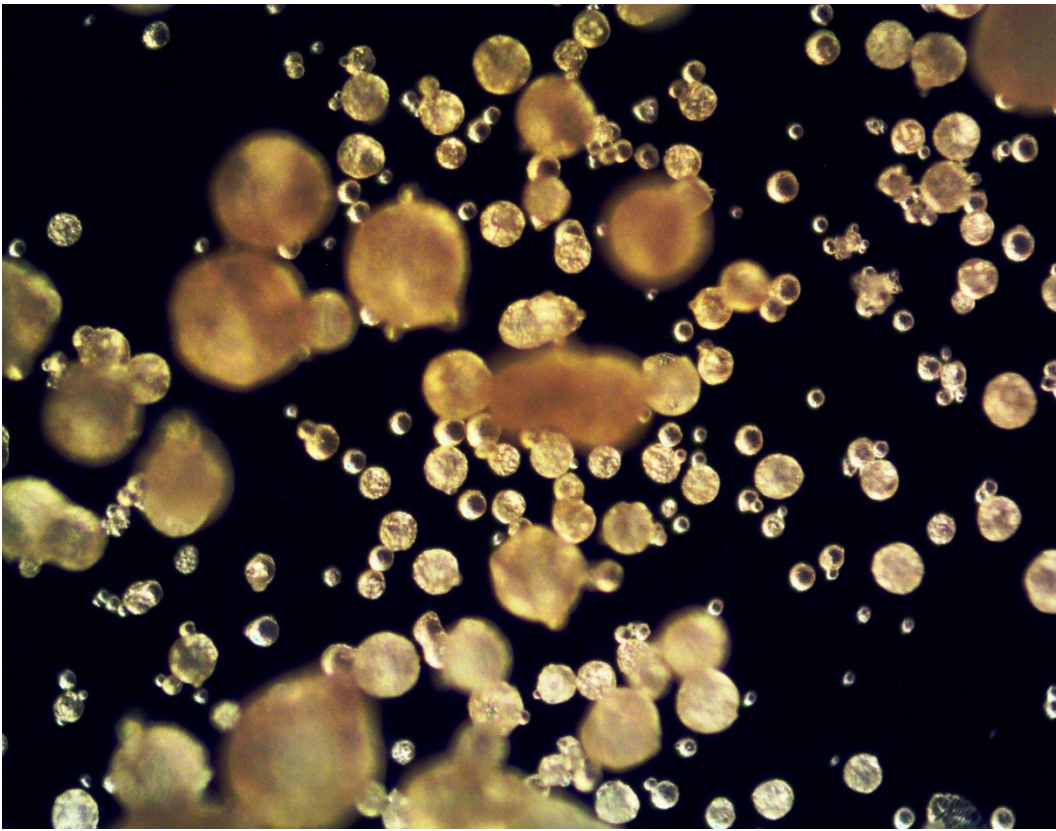
Spider pouch 10x



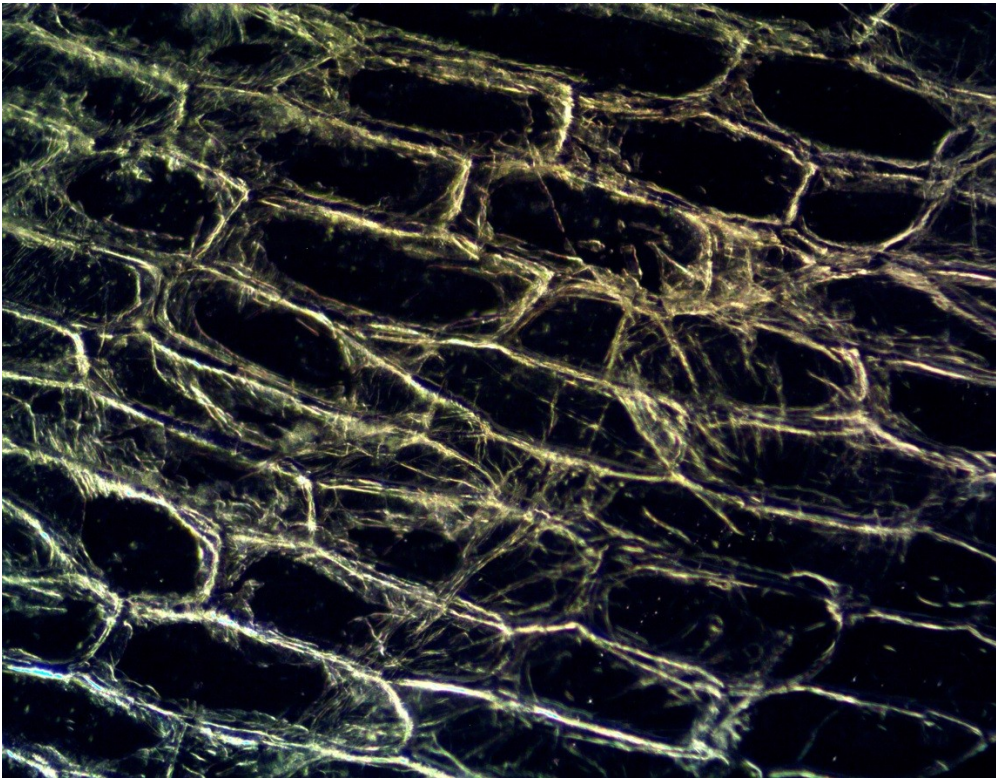
Dog fur 10x



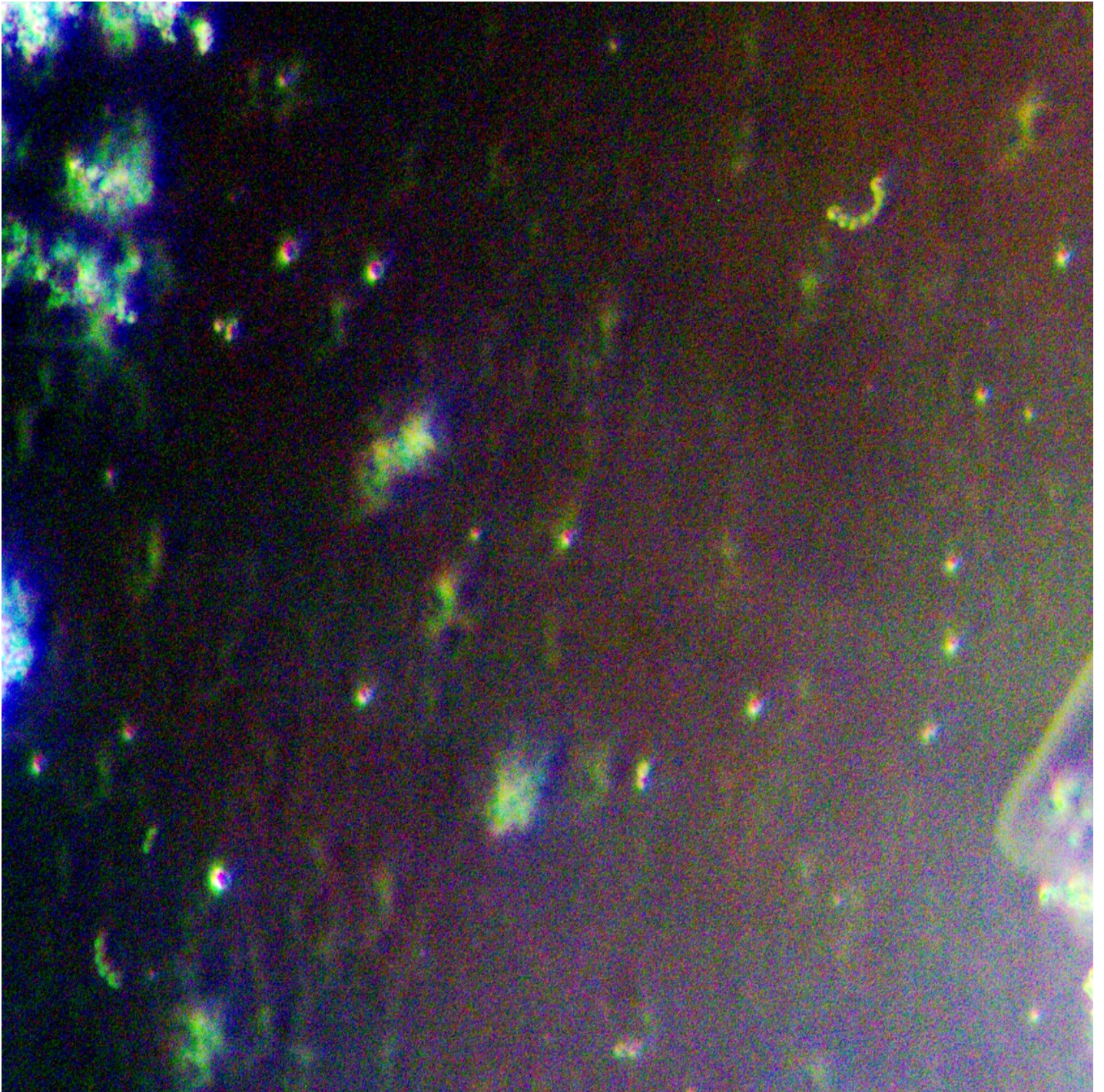
Dog fur 40x



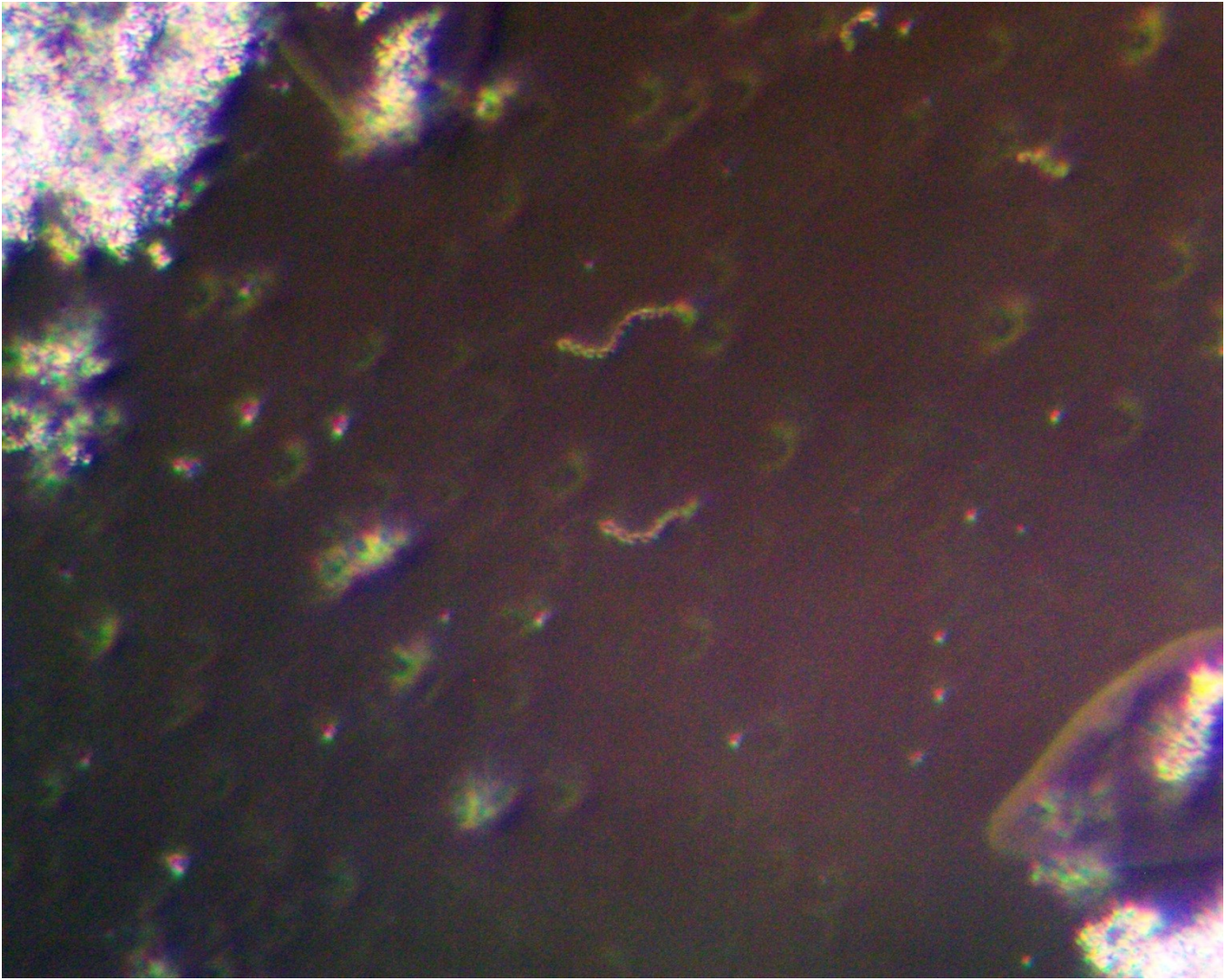
Brewer's yeast 10x



Onion 10x



Streptococcus of yogurt 40x with the 2 cm stop



Streptococcus of yogurt 40x with 2.6 cm stop

CONCLUSION:

Darkfield is a very easy to create technique for giving contrast to our samples even when we do not have a real darkfield condenser. So let's take the most advantage of it that we can, nobody should miss the opportunity to make his or her samples look as if they were bright in a starry night.

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(Above in anti-spam format. Copy string to email software, remove spaces and manually insert the capitalized characters.)

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