

Commercial and makeshift retarders

Like many amateur microscopists, I use polarising filters and retarders to add colours to crystals, minerals and various biological subjects. I started with a photographic polarising filter as the polariser (below the specimen), a disc of polarising film as the analyser (above the specimen), and various plastic films as retarders (just above the polariser), but I now have real Olympus polarisers and analysers.

Until recently I have only used makeshift retarders that I have cut from a variety of plastic films and mounted in 35 mm slide mounts or card annuli; they sit on top of the polariser and are easy to rotate to change the colours that they produce.

Now I have real Olympus AH-TP530-2 full-wave and AH-TP147-2 quarter-wave tint plates (retarders), so I wanted to compare them with my makeshift retarders. The Olympus tint plates slide into my BH2-KP intermediate polarising attachment that fits between the stand and the head and they cannot be rotated.

Today I have brought my Olympus CH-2 microscope fitted with the BH2-KP intermediate polarising attachment that includes an analyser, and a camera polarising filter that sits on the light output in the base.

You can try any of the makeshift analysers (in 35 mm slide mounts and card annuli) by putting them on top of the polarising filter and rotating them while looking through the microscope.



You can also try the Olympus full-wave tint plate (the one marked 530). It slides into the BH2-KP and has 2 positions. All the way in puts it in the light path, pulled out to the click stop removes it from the light path.



The Olympus full-wave tint plate gives more spectacular colours than any of my makeshift retarders do. You don't need to spend a lot on money to get a full-wave retarder – the Quekett Shop sells a 50 mm square full-wave retarder film for £9.20.

I have brought captioned photomicrographs of a thin section of quartz diorite taken with:

- No polarisers
- Crossed polarisers
- Crossed polarisers + Olympus quarter-wave tint plate
- Crossed polarisers + Olympus full-wave tint plate
- Crossed polarisers + various plastic film retarders

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