

## Tricks of the Trade: Rectangular Field Diaphragm

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Compared to other professional meetings I attend, the greatest aspect of Inter/Micro is the wealth of information the technical presentations provide and the conversations one has with other attendees. One of many tidbits I heard at the last meeting was a comment by Jan Hinsch during his presentation. Jan said that a rectangular field diaphragm is useful when looking at non-equant particles which appear to be opaque, such as heavily pigmented fibers. So when I got back from the meeting, I dug out of the drawer an old rectangular aperture that went to a retired Nic-Plan IR microscope (Figure 1).

Next, I focused my light microscope on a dark Mongoloid head hair and placed the variable rectangular aperture in the light path on top of the microscope base. I closed the rectangular aperture down until the edges came into the field of view and adjusted the condenser until the rectangular aperture came into good focus with the sample plane.

Again, I re-adjusted the rectangular aperture (now acting as the field diaphragm) so the edges were just outside the periphery of the hair. I then opened the condenser aperture and increased the light intensity. It worked *great!* The pigmented area of the hair cortex was now visible and I could discern ovoid bodies, pigment size, pigment clumping, and the medulla as seen in Figure 2 D.

Besides looking at pigmented fibers and hairs, this technique can also be used when examining cross-sections of paint and pigmented tapes. So, do not throw the variable aperture out from the old IR microscope and put it to good use. Try it — you will like it!

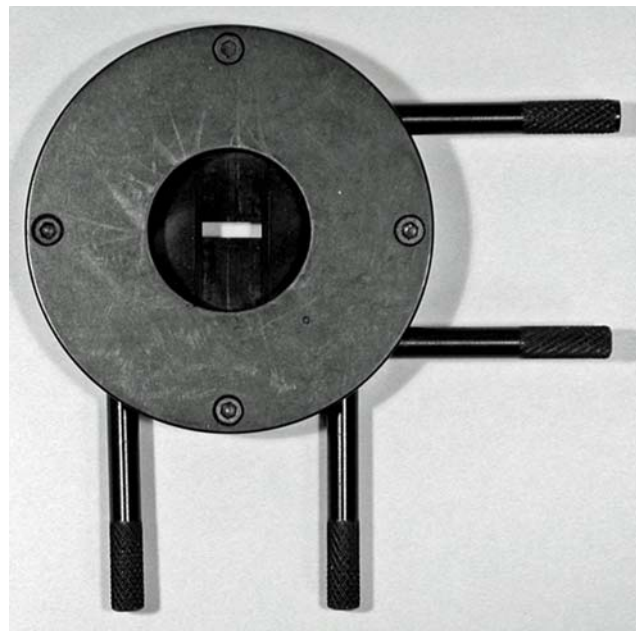


Figure 1. Rectangular aperture

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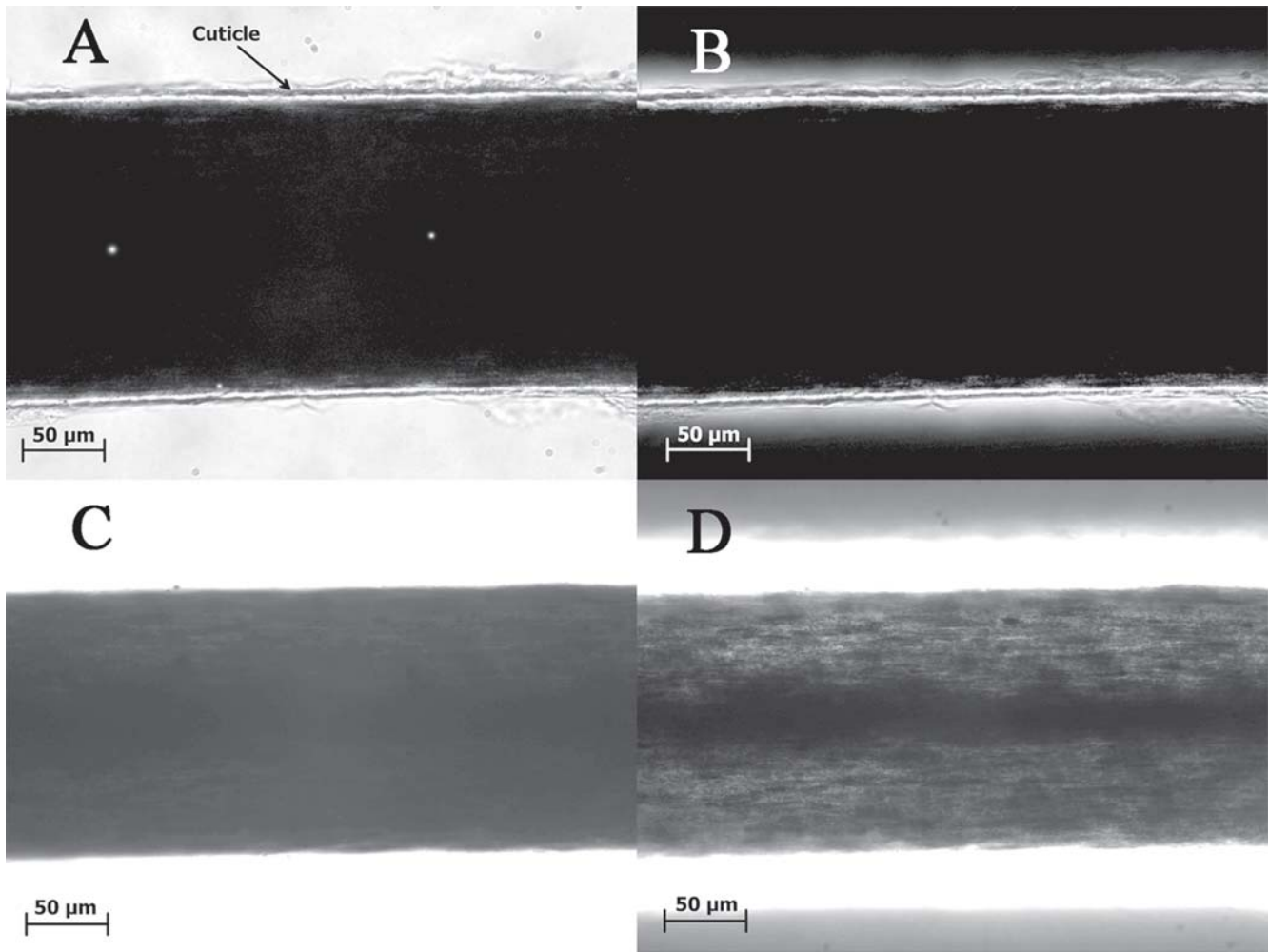


Figure 2. Images are of the same area of a heavily pigmented Mongoloid head hair showing, (A) normal microscopical view of the hair; (B) rectangular field diaphragm focused and positioned at the outer edges of the hair; (C) same as A but with the condenser aperture opened and the light intensity increased; (D) same as B but with the condenser aperture opened and the light intensity increased. Note that one now can discern the microscopic cortex features of the hair.