



Choosing a Brightfield Condenser: 1.25 NA/oil immersion or 0.9 NA/dry?

A condenser controls the angle of light (expressed as "numerical aperture" or "NA.") hitting the specimen. Adjusting this angle is an important part of setting Koehler illumination to optimize both resolution and contrast. For best **resolution**, the angle should match the collecting angle of the objective (NA condenser = NA objective). To improve **contrast** however, the iris located below or within the condenser needs to be closed by about 25%. For a 1.25 NA/oil immersion condenser, this reduces the working aperture to about 0.9. So why not use a less expensive, less messy 0.9 NA/dry condenser to begin with?

RECOMMENDATIONS

1. Use a 0.9 NA condenser for routine brightfield applications using a broad range of objectives (10X to 100X). With a 0.9 condenser, you simply leave its iris fully open.
2. For high resolution samples, electronic imaging quantitative microscopy or critical photomicrography, match the NA of the condenser to the highest NA of the objective. (To exceed an NA of 1.0, the condenser must be oiled to the back of the slide.)

BENEFITS

- A 0.9 condenser is less expensive.
- A 0.9 condenser does not require oil.
- A 0.9 condenser gives better images without oil than a 1.25 condenser used in air.

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