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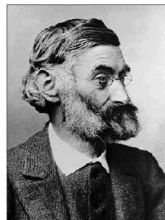
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BOOK REVIEW

Helium Ion Microscopy, Principles and Applications, by David C. Joy

Michael T. Postek



Dear Abbe

Dear Abbe,

A colleague asked a question the other day: “Is there a ballpark percentage for how much less bright an LED is compared to a standard mercury lamp light?” This was in the context of arm waving over a picture of beer (a good, dark stout). Personally, I think the answer is: “It doesn’t matter; the dimmer illumination system is still too bright to use all the available light and not damage the specimen.” What do you think?

Mercurial in Mt. Pleasant

Dear Merc,

First of all, as much as I like a good, dark stout, I find that after enjoying seven or eight pints of this adult beverage I’m likely to find myself at 3 a.m. pounding on the door of a seedy establishment demanding they reopen the drive-thru window so I might purchase half a dozen sliders. Second, it is clear that your colleague is a bit of a namby pamby whose chances of advancing up the ranks would be seriously diminished if he were under my tutelage. This over-reliance on electrical illumination sources of any kind is emblematic of the “ME-llennial” generation of scientists who have never had to back their way out of a pool hall swinging a cue stick. In my day a good fluorecence scope needed nothing more than an open light tube and a ceramic crucible in which one could burn magnesium filings. Not only would these produce an intense bright light that could fry the retinas of a blind man, but with wavelengths as low as 365 nm one could excite both FITC and Rhodamine—not to mention exciting the heartstrings of that cute little lab assistant from Furstenfeldbruck. To be perfectly honest, I simply do not trust any light that does not use a filament. There is also something creepy about the letters “L.E.D.” Wasn’t there a Zeppelin by that name? By the way, is Mount Pleasant anywhere near Miserable Valley? I think I spent a week there one day.

Dear Abbe,

I teach a graduate course in electron microscopy. While explaining your classic equation for resolution ($d = 0.612 \lambda/n \sin\alpha$), I’m always at a loss explaining to my students your choice of the constant 0.612. Why on earth did you use a constant from an astronomical equation of self-emitting points like stars? Couldn’t you have picked something a little closer to home?

Star Stumped in St. Petersburg

Dear Stumped,

It is always good to hear from people who still teach at universities! These days it seems there are only virtual instructors that appear on YouTube with flashy attention-deficit video effects bent more on entertainment. First, I must address the insult of having to remind me of my “classic” equation for resolution. As if I can’t remember my own equations! Third, the actual explanation may appear trifling. Many people will assume that I am a fan of a certain model of Swiss knife. Not so. Others (such as you) believe it has to do with star stuff. Your astronomical allusion is closer to the truth. The real reason has to do with the distance between my apartment and the bus stop for Barnards Pfeilstern Bierhaus. Precisely 0.612 kilometers from threshold to bus stop. So, believe it or not, it was close to home at the time. Many a fine evening was spent at the Bierhaus with colleagues discussing Raleigh’s criterion and its application to microscopes and whether Telescopists were actually 2x Microscopists. And after a hearty bowl of Bohnen Eintopf, we all became self-emitting points.

Have an itch to discover what makes you tick? Herr Abbe does too! Send your questions and comments to his assistant at jpsshield@uga.edu and maybe it’ll stop.