

Re: More on A.pellucida

Source: <http://sci.tech--archive.net/Archive/sci.techniques.microscopy/2007-01/msg00073.html>

- *From:* "NoSpam" <NoSpam@xxxxxxxxxxx>
 - *Date:* Thu, 25 Jan 2007 17:28:49 GMT
-

Rene,

I am beginning to have doubts regarding your competence. Your recommendation that I should keep it up because I will be learning a lot is entirely misplaced as the following lines will clearly show.

From your recent post:

"rene" <renewanwezel@xxxxxxxxxxx> wrote in message
>news:1169727731.244566.22640@xx
Hi NoSpam, can you tell me where exactly this is located on the Baertierchen site??

The site where you can find the article by Martin Mach showing the van Heurck A. pellucida picture is under
<http://www.baertierchen.de/archiv.html>
where there is the telling title: Februar 2004: Feine Strukturen.

From your recent post:

Also, you seem to have been lucky to be able to download Spitta's and Carpenter/Dallinger's book, I could only get snippets which were useless. Would you mind sending them to www.yousendit.com, so that we could download them from there?

The Carpenter/Dallinger book can be found exactly where I said it can be found. Now you will know that long, that is several line long links, are not properly handled in newsnet messages. It is therefore unproductive to just click on the address as given. What you need to do is copy the entire link to a text editor, like Notepad. You do this by "copy" the link in sections, line by line, and reconstructing the address by "paste" in your text editor. Then you copy the entire address so obtained into your browser and VOILA, there is the book. (To be entirely sure I repeated this process just now and it works, like it always does.) I do not know how else I can make

Re: More on A.pellucida

it easy to find this source. Believe me, I spent a lot more time finding it and then the page numbers, than it would have taken you to follow the described process! So go ahead, download the book, look at the pages I quoted and you will be able to read the text and see the picture.

You are quoting from a prior text of yours:

The more empty magnification, the lower the contrast. 36mm fim and 3Mp cameras are more then adequate.

Your addition to that text is:

I stand with this conclusion. A 100x 1.4NA lens with 20mm secondary image (such as seen with a 10x eyepiece with fieldnumber 20) only needs 2000 pixels along the middle line for all detail for all to be resolved (ie 2 pixels for 0.2 um). If you fix a 36mm frame inside the field of view, you will need less pixels, but add some to compensate for the Bayer filter in the digicam, then you will have enough with 3Mp. I agree with you, increase pixelSIZE (but not total amount of pixels) and with corresponding extra magnification will reduce noise, but that is irrelevant in this discussion.

You seem confused by the issue of contrast. I will say it one more, final time: contrast increases when the target's image spatial frquencies move to the left on the MTF curve. The only way for this to happen at a fixed pixel or grain size is to decrease the spatial frequency, that is to increase the size of the image.

What may lead you astray is the custom of presenting the MTF curve for targets with 100 % contrast. The x% which are deemed sufficient for detection are then at a certain position on the horizontal axis. BUT, when the contrast of the target is less than 100%, this point moves to the left and for small contrast it moves a lot to the left.

Your quote from a prior post of mine:

I produced an image of A. pellucida by projecting the intermediate image of this diatom upon the CCD of my *ist Pentax (n=1) and was UNable to resolve the striae. I then projected the intermediate image through a 2.5 projection lens (n=2.5)and could resolve the striae perfectly well as shown at <http://www.mikroskopie-forum.de/read.php?2,25394,25394#msg-25394> .

Your response to that quote:

I'm not sure exactly where your exp did go wrong. By 'direct projection' you mean you simply took out the projection lens/eyepiece

Re: More on A.pellucida

and adjusted focus? That would increase the effective tubelength a couple of cm from the original 160mm it was designed for. This would create spherical aberration, ie unsharpness. Your CCD should be at the place where the secondary image is placed (where your eyepiece 'picks it up'), somewhere a cm or so below the rim of the tube).

You say you are not sure where my experiment went wrong. Well, it just simply did not go wrong! The image was taken by placing the CCD of the mentioned camera to exactly where the intermediate image is located and taking the picture. The picture itself was only 100x (the magnification of the objective) x 70 micrometers(the length of the diatom), or 0.7 cm tall. This is smaller than the vertical dimension of the CCD leading to a loss of contrast and inability to see the striae by the mechanism I have described above.

It may well be that you did not read my notes well. In these notes it is stated that I am using an Olympus BX51, a microscope with infinity optics and a fully corrected intermediate image. This intermediate image is accessible above the dovetail connection on the trinocular leading to the camera port.

You quote a prior post of mine:

Finally I wish to point out that my image of A. pellucida (see the link in my original post) was obtained using a magnification of 250x (100x from the objective, 2.5x from the projection lens), while Dr. von Heurck used magnifications of 1800x to 3000x.

Your response to it:

That would make your specimen a very big one ;-)

Please see the arithmetic I have gone through above, showing that my diatom was of regular dimension and not a "very big one".

From your recent post:
ps, keep it up, you are learning a lot.

Rene, please refer to the first paragraph in my response.

G.R.