

Re: Zeiss ICM 405

Source: <http://sci.tech-archive.net/Archive/sci.techniques.microscopy/2004-12/0157.html>

From: Aaron (*nghy_at_comcast.net*)

Date: 12/23/04

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Hi,

What you have is a very fine metalograph, an inverted microscope principally used to examine polished and etched metal samples. This is similar in concept to other Zeiss incident light microscopes, but the one you have uses bottom up lighting while the others use top down lighting. Incident lighting means that the light is first directed through the objective and the reflected image is collected in the same objective. In addition to the eyepieces, there were built in camera systems which need separate control modules. You will also need a power supply for the particular type of lamp that has been installed.

There were two different sets of objectives offered by Zeiss for incident light microscopy. The HD Epiplan objectives are for brightfield and darkfield. There is a slider somewhere between the light source and the condenser head that allows an opaque circular stop to be inserted into the light path that will change the lighting from brightfield to darkfield with the HD objectives. The darkfield is with the patch in.

The epi-pol objectives were for reflected DIC (abbreviated by Zeiss as INKO). If you have epi-Pol objectives with INKO sliders (Wolaston prisms) just before the light enters the objectives your scope was setup for DIC. DIC is a technique that relies on polarized light so somewhere in the light path (usually just in front of the slider with the stop, there is a spot for a special polarizing filter that rotates and another polarizing filter before the light reaches the binoculars. Properly set up DIC will create interference colors related to slight differences in the height profile of the specimen. Hence a polished metal surface etched with acid or some other reagent will have phase boundaries and crystalline areas showing as different colors when the surface looks like a uniform metal surface to the unaided eye.. This is also an awesome system to observe semi-conductor chips as the image of individual components on the chips take on different colors.

I hope this gives you a starting point.

Congratulations,
Aaron

PS There is a image of the microscope on John Oren's website for Vermont Optechs.

see: <http://scopeshop.max-it.com/Infopage.asp?ZMI01>

and another image

<http://www.absoluteclarity.com/Zeiss%20ICM%20405%20Inverted.htm>

Here is some tech info in German

<http://f25.parsimony.net/forum62175/messages/8944.htm>

Brief instructions for camera portion

[http://www.zeiss.com/4125681F004E2140/EmbedTitelIntern/ICM405Microscope/\\$File/GE-41-126ICM405.pdf](http://www.zeiss.com/4125681F004E2140/EmbedTitelIntern/ICM405Microscope/$File/GE-41-126ICM405.pdf)

This is a very famous microscope and a google search will bring pages and pages of information.

On 23 Dec 2004 03:36:59 -0800, steve_beats@hotmail.com (justbeats) wrote:

>I just bought a Zeiss ICM 405 off Ebay. Listed "sold as seen" by a
>vendor who "knows nothing about microscopes" meant it was a big risk.
>But after asking several questions, I decided break-up value would
>recoup some loss if it turned out a real lemon and took the plunge.
>
>I got it yesterday and everything works perfectly! The guy was just
>being honest. And what a scope it is! Makes my metallograph and simple
>binocular scopes look like toys in comparison. Best grand I ever spent
>:-)
>
>I've figured out most of it but there are a couple of features I'm
>unfamiliar with and I have no manual to refer to. What are the small
>"focussing" knobs on the epi-plan objectives for? How and why should I
>use the sliding filter block beneath the objectives - other than to
>switch direct illumination on and off? (It affects the output of the
>turret lighting too - and looks like filters can be changed via
>snap-in rings - but why and what for?). I'd also like to confirm I
>really am setting the illumination up properly, and so on...
>
>I've searched everywhere for a manual and come up empty. Zeiss have
>>manuals for all their old scopes online, but the one for the ICM 405
>only comprises a couple of pages of brief notes on how to take a
>photo.
>
>Can anyone help?
>
>Cheers
>Beats