

## Re: Which SEM??

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- *From:* Gary G <[see.signature@bottom](mailto:see.signature@bottom)>
  - *Date:* Fri, 14 Nov 2008 13:14:44 -0800
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On Fri, 14 Nov 2008 02:06:11 -0800 (PST), birerozgur@xxxxxxxxxx wrote:

Thanks for the tips Gary,

I am a bit confused about the resolution at VP mode. Zeiss' spec for Supra 55VP is 2.0 nm@30kV (VP Mode) and you say it is much worse. ?!

As to cleaning the crud, of course one should have gloves when working with high vacuum parts but how do you clean the crud if not with a "safe" solvent?

Ozgur

That is the spec. Don't believe it. I don't and have never been able to produce that resolution. The high vac mode specs use in-lens detector at 2-3mm WD. The VP detector is a glass rod pointed at the specimen and depends on light being generated by the electrons hitting chamber gas (N<sub>2</sub>). This light is then amplified by a PMT as is done with E-T. S/N is really poor as mag increases so given that, the extra cost and the tricky column, I don't see the value. The way the VP is designed, it introduces a serious path for mechanical and acoustic noise into the chamber and column. If one needs to look at wet specimens, get an ESEM.

Considering resolution specs, what is the mag needed to measure 1nm of resolution? For Zeiss, it is typically done at 300KX-400KX. So, for 2nm in VP mode, 150KX-200KX? Good luck getting any useful image. Note that there is no WD stated for high vacuum or VP. VP is typically done at longer WD to find the optimum WD along with chamber pressure value. For specimens that need VP or have charging issues, just lower the KV. The other option is the Zeiss Ultra Plus. This uses a small jet of N<sub>2</sub> to neutralize charge at the specimen. It is akin to a flood gun in an ion implanter.

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Cleaning takes on two facets. One is cleaning the gun chamber and components. Best approach is not to have to do this. it is a nightmare path. particles can be blown out with canned air but no liquids should be used. On the otherhand, the chamber and column can be cleaned with lint-free (Kimwipes) cloth and methanol--no isopropanol. It will still cause out gassing but not as bad as a messed up gun chamber. Unlike thermionic SEMs, never use Pol anywhere in the system.

Look at the Ultra and Ultra Plus. These have multiple in-lens detectors and can do really neat imaging.

Kiss French. Drink California.

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