

The Latest information on JEOL CryoTEMs

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Ongoing research and development in the field of organic-inorganic interfaces will often require high performance electron microscopes to study the structures in depth at a sufficient resolution to identify the structures of interest. These studies are often at a molecular level, and due to the beam sensitive nature of the organic components, cryo-TEMs are usually the tool of preference for studying such materials in a close to native state at high magnification.

JEOL can provide a number of TEMs to fulfil the cryo-TEM requirement, from conventional low cost cryo-TEM imaging tools, all the way up to state of the art fully automated cryo-TEMs.

At 120kV the JEM-1400Flash is a very capable cryo-TEM and can certainly be used to visualise composite structures when using a suitable cryo-transfer specimen holder. As many people will know the JEM-1400Flash is currently being used in the development of a field emission 100kV cryo-TEM, specifically for cryo-specimen screening at high performance levels.

At an intermediate level the JEM-2100Plus has the advantage of 200kV, which can reduce beam induced damage, and provide high performance. This is useful for cryo electron tomography (Cryo-ET), which is a technique frequently used in the study of some combined organic-inorganic samples.

The addition of field emission improves the source coherence and as a result provides more contrast. The JEM-F200 Cryo-TEM has a choice of Schottky or cold field emission sources, and coupled with the SpecPorter for trouble free cryo specimen transfer, this instrument is ideal for studying electron beam sensitive samples. The JEM-F200 cryo-TEM is a high performance and highly flexible TEM and can be used for protein screening, data acquisition, cryo-ET, and micro-ED studies.

To conclude this presentation we will introduce the latest 300kV automated cryo-TEM from JEOL. This instrument provides high contrast imaging for vitrified protein samples in particular, using the standard cold field emission source and Omega filter. The advantage of this configuration is that high resolution data can typically be generated from fewer images, thus improving the throughput of this instrument. We will highlight some of the differences, whilst at the same time providing some examples to show the advantages of the updated CRYO ARM™ microscope.