

## **EMSL Capability Video: Focused Ion Beam Scanning Electron Microscope**

### **Transcript**

FIB-SEM is one of the unique capabilities in EMSL which can provide site-specific analysis and slicing capabilities with high resolution of biological and material science samples.

This instrument allows us to download it in a third-dimension where we've always been in the two dimension mode. With this instrument, we can have the power of the scanning electron microscope, and be very site specific about where we want to analyze the material. So we can take the ion beam and slice the material very precise in the area we want to take a look at. And that slice then can be analyzed with either chemical or crystallographic information.

And then we take another slice. And we continue to do this. And after we take multiple slices we can take all this information and put it back together into a 3D rendering. One of the benefits of the SEM detector here is that we can go to a resolution as high as a million times magnification. We are looking for samples all the way ranging from geochemistry to biological samples to samples used in solid oxide fuel cells. Scanning electron microscopy is a very simple preparation of material. We can basically take the sample from the client, put it in the instrument, and be able to analyze it within 20 to 30 minutes of after receiving the sample. This allows us to quickly give them answers. And, if needed, we can take it to the next level of instrumentation. The biggest advantage of doing research at EMSL is access to all of these unique capabilities that lie under a single roof.