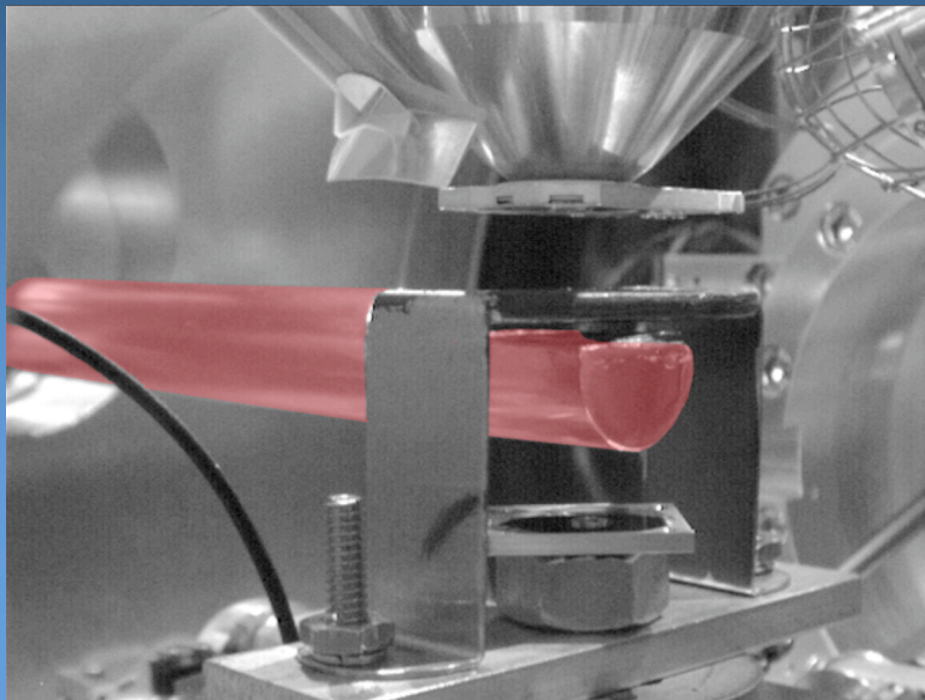


Novel X-Ray Detector for Improving Resolutions by as Much as 300X For Scanning Electron Microscopes (SEMs)



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New X-Ray Detector Technology Prototype – Mounted
Beneath the Sample to Capture π sr of X-Ray Signal

Technology

Elemental analysis in the scanning electron microscope (SEM) is an experimental technique now used routinely worldwide for advanced materials characterization. The realm of quantitative elemental characterization of individual nanoparticles is however an area which is frequently delegated to the more complex and expensive instrumentation such as the transmission electron microscope (TEM). Argonne's technology incorporates a modified x-ray detector which is uniquely configured so that it is capable of collecting more than π steradians (sr) or nearly 50% of the available x-ray signal.

This new x-ray detection technology has been developed at Argonne to allow investigators to use conventional SEMs to analyze nano-sized particles at resolutions which approach that achievable in TEMs. Offering as much as a 300 fold improvement in performance, compared to traditional implementations, this invention opens up new opportunities for innovative materials analysis using instrumentation which can be found in most laboratory environments today.

Markets

Potential markets are owners – universities, government laboratories and industry – of SEM microscopes and manufacturers of those microscopes and manufacturers of components such as x-ray detectors for those microscopes. The numbers of SEMs is enormous. SEMs can be retrofitted with this new detector technology and/or it can be configured on new systems by the manufacturers and component manufacturers.

So, the potential market size for this technology is substantial because cost of each unit could be up to \$50,000 times the large numbers of SEMS already in laboratories and large numbers of new ones being built. The technology has been demonstrated and is now ready for commercialization.

The amount of time needed to ready the technology for commercialization is estimated to be one to two year's time and. The estimated dollar cost is believed to be the cost of at least one full time person for the one to two years, or about \$150,000 simply to adapt and design the attachments for this sensor to a particular vendors SEM configuration.

Intellectual Property

A U.S. Patent has been applied for in March 2010.

Licensing is available.

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