UNIVERSITY AT ALBANY
State University of New York

First Use of the Energetiq 10W Electrodeless EUV Plasma Source

Gregory Denbeaux[1], Patrick Naulleau[1], Rashi Garg[1], Stephen Horne[2], Matthew Besen[2]
[1] College of Nanoscale Science and Engineering, University at Albany, Albany, NY
[2] Energetiq Technology Inc., Woburn, MA

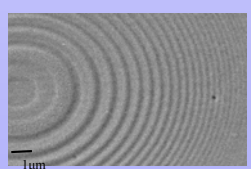
Introduction:

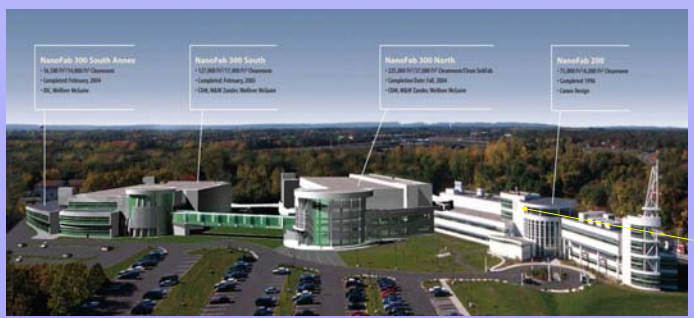
Many laboratory experiments for EUV research have been limited by the lack of a powerful and cost effective source. We report on the first use of an Energetiq EQ-10M electrodeless Z-Pinch EUV source. This source has been installed at the College of Nanoscale Science and Engineering at the University at Albany and will be used for a variety of at-wavelength EUV experiments. The source uses Xe in an inductively coupled electrodeless design for low debris operation and produces 10W of in-band EUV power.

Multi-purpose vacuum chamber has been installed with the source and is available for other projects which require EUV photons

Installation, use, and future plans:

- Small footprint of the source helped make installation and first use easy
- The source uses Xewith electrodeless design for clean operation.
- Typical operation includes a freestanding Zr foil
  - Reduces out of band radiation
  - Enables separation of vacuum system so that experiments can be performed at high vacuum
- First experiments by Sematech/PhysTeX have verified that the source produces more than the specified 10W into 2π in 2% bandwidth
- Currently being used for optics development for high resolution imaging of mask defects with zone plates
- Future experiments will likely include resist outgassing and other projects





Source has been installed here