DEPARTMENT OF MECHANICAL ENGINEERING COLLOQUIUM

UNIVERSITY OF CALIFORNIA
UC RIVERSIDE

The Department of Mechanical Engineering

PRESENTS

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Friday, March 16, 2018
Bourns Hall A265
11:10-12:00PM

Abstract:
The ORION instrument is a newly introduced technology based upon the recently commercialized gas field ion source (GFIS). This ion source provides a continuous source of helium ions with high brightness and low energy spread. Such a beam charged particle beam, can be focused to a sub-nanometer probe size, which enables many practical applications at the nanoscale.

This talk will begin with the historical foundation - explaining the original conception of this technology back in the 1950's. The underlying principles of this technology are relatively simple, and they will be explained in detail. The talk will introduce several of the most important applications of this technology. Such applications include imaging with high resolution, surface sensitivity, and depth of focus, even for electrically insulating materials. The beam has also been used for nanofabrication by exploiting its ability to sputter away material, expose resist, introduce dislocations, or interact with gas phase precursors. Lastly, this same technology can provide compositional information by mass spectroscopy of sputtered atoms (SIMS) and ion scattering mechanisms.

About the Speaker: In 2005, John was one of the founding scientists at ALIS Corporation where he developed the helium gas field ion source (GFIS). Since being acquired by Zeiss, John has continued to advance the technology and broaden the scope of applications. Presently, John serves as chief scientist for business development and "technology evangelist" at Carl Zeiss in Peabody, Massachusetts. John has over 30 journal publications, and is named in over 100 patents around the globe. John received his physics Ph.D. from U. C. Berkeley, in 1997 where worked on novel electron traps. He has worked for a number of instrumentation companies such as AMRAY, KLA-Tencor, and FEI, where he worked on imaging systems, detectors, and electron optics.