

Potential for *In situ* Transmission Electron Microscopy (TEM) Electron and Ion Irradiation of Living Cells

SAND2011-4143C

K. Hattar

Radiation Solid Interaction Group

June 2, 2011

Sandia National Laboratories



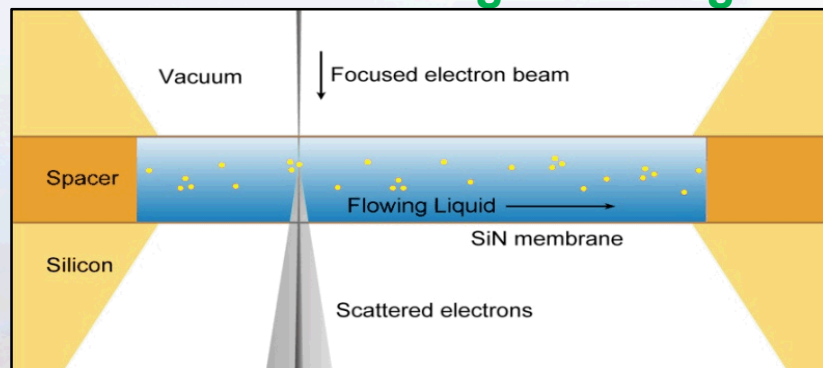
In-situ TEM Ion Irradiation

Electron Beam



Light and Heavy Ion Beam 1kV H⁺ to 30 MV Cu³⁺

Microfluidic Mixing TEM Stage



Key Points

- Two brand new state of the art capabilities:
 - In-situ TEM ion irradiation
 - Microfluidic TEM stage
- If combined will permit **real time nanoscale observation** of dynamic fluids and their content.
 - Living cells
 - Protein structures
 - Nanoparticles



Sandia is a multiprogram laboratory operated by Sandia Corporation, a Lockheed Martin Company, for the United States Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000. SAND2009-2801P



Sandia National Laboratories