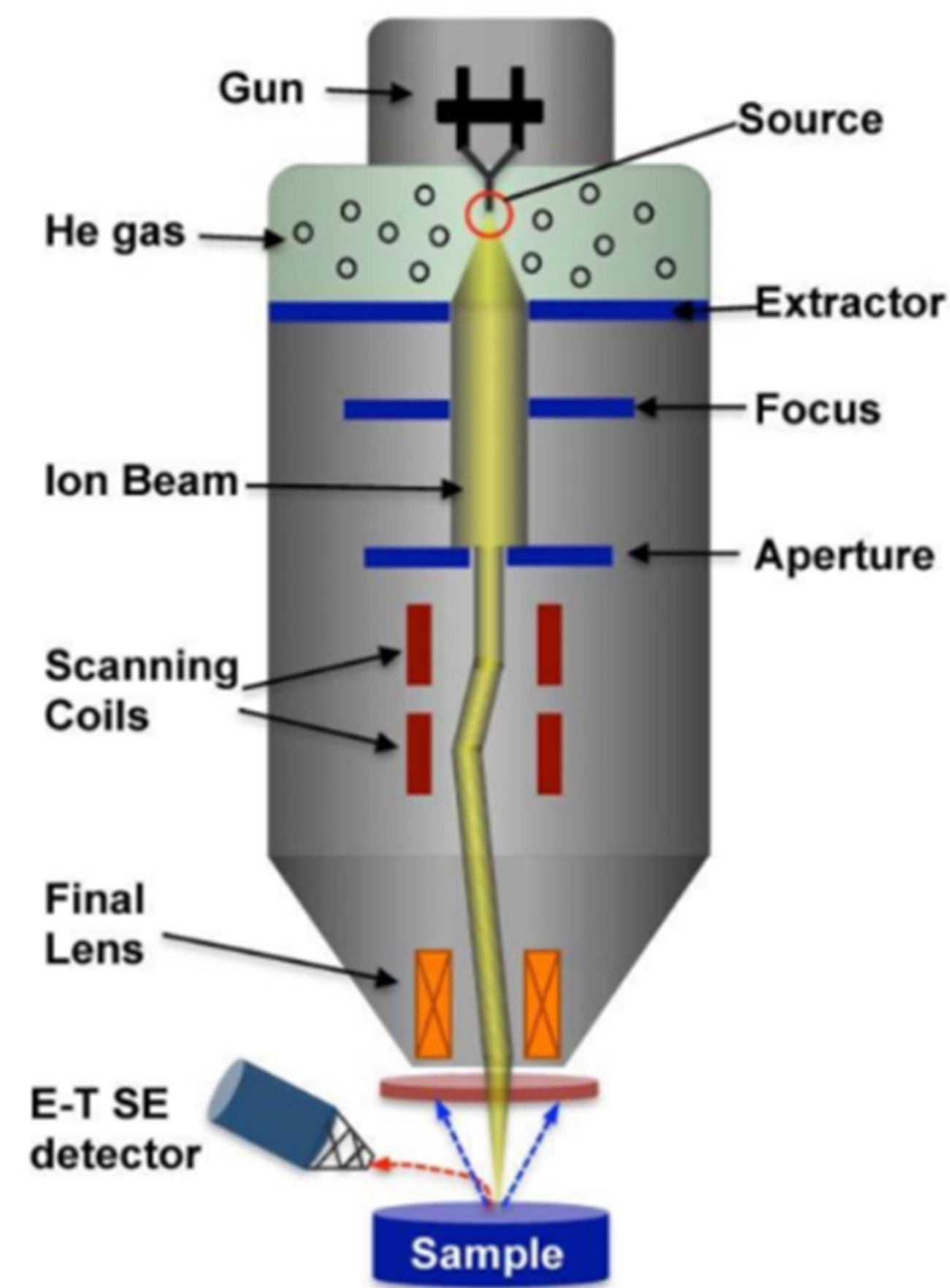


Sub-Nanometer Probe Helium Ion Microscope with Time of Flight Elemental Identification

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Helium Ion Microscopy



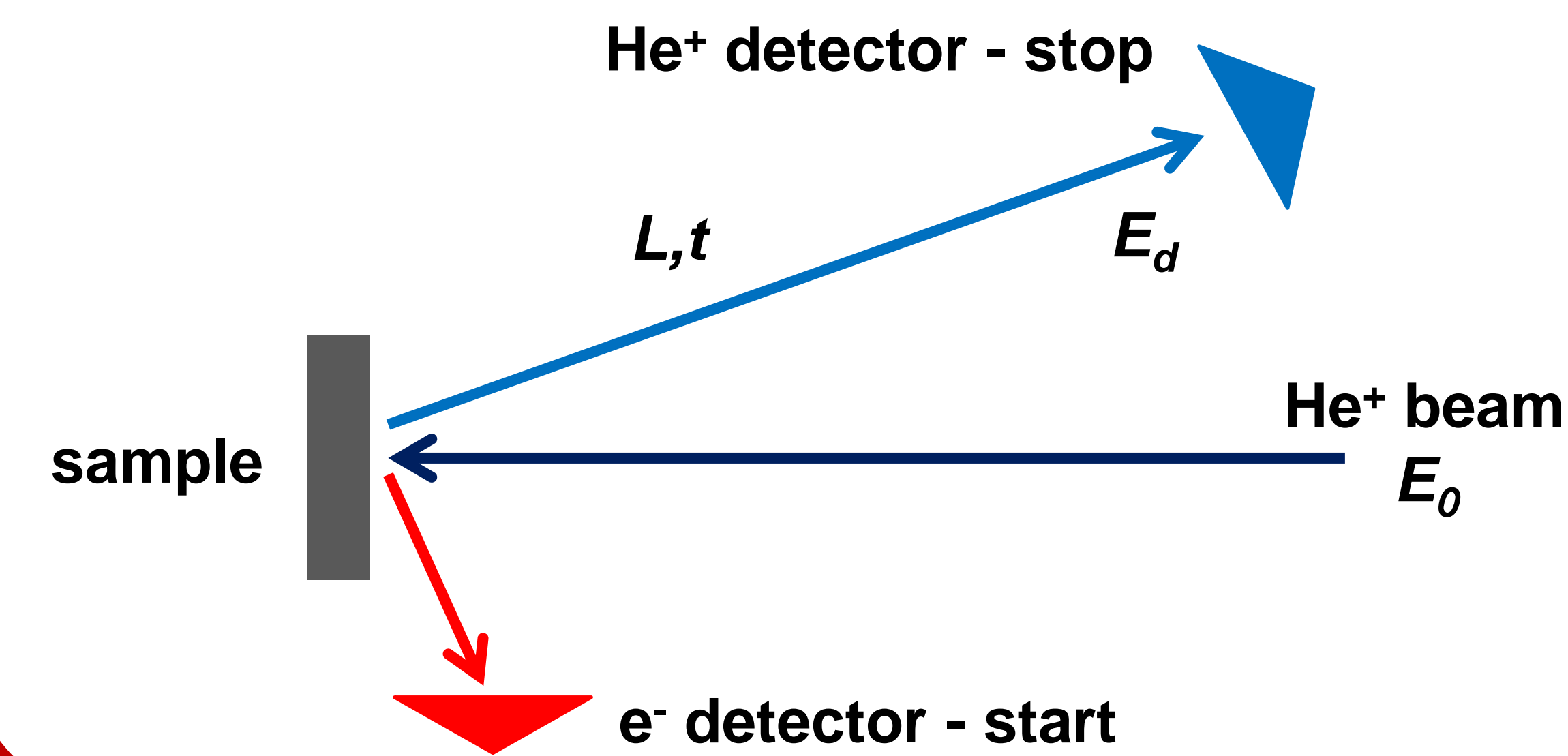
Helium Ion Microscope

~ 35keV He ions, 0.3nm beam spot
Imaging via secondary electrons.

Advantages over a SEM:

- Smaller spot size < 0.3 nm
- High secondary yield
- Large depth of field
- Ability to image non-conducting samples directly (no metal overlayer)
- Large field of view
- Patterning capability

Elemental Identification: New Detection System

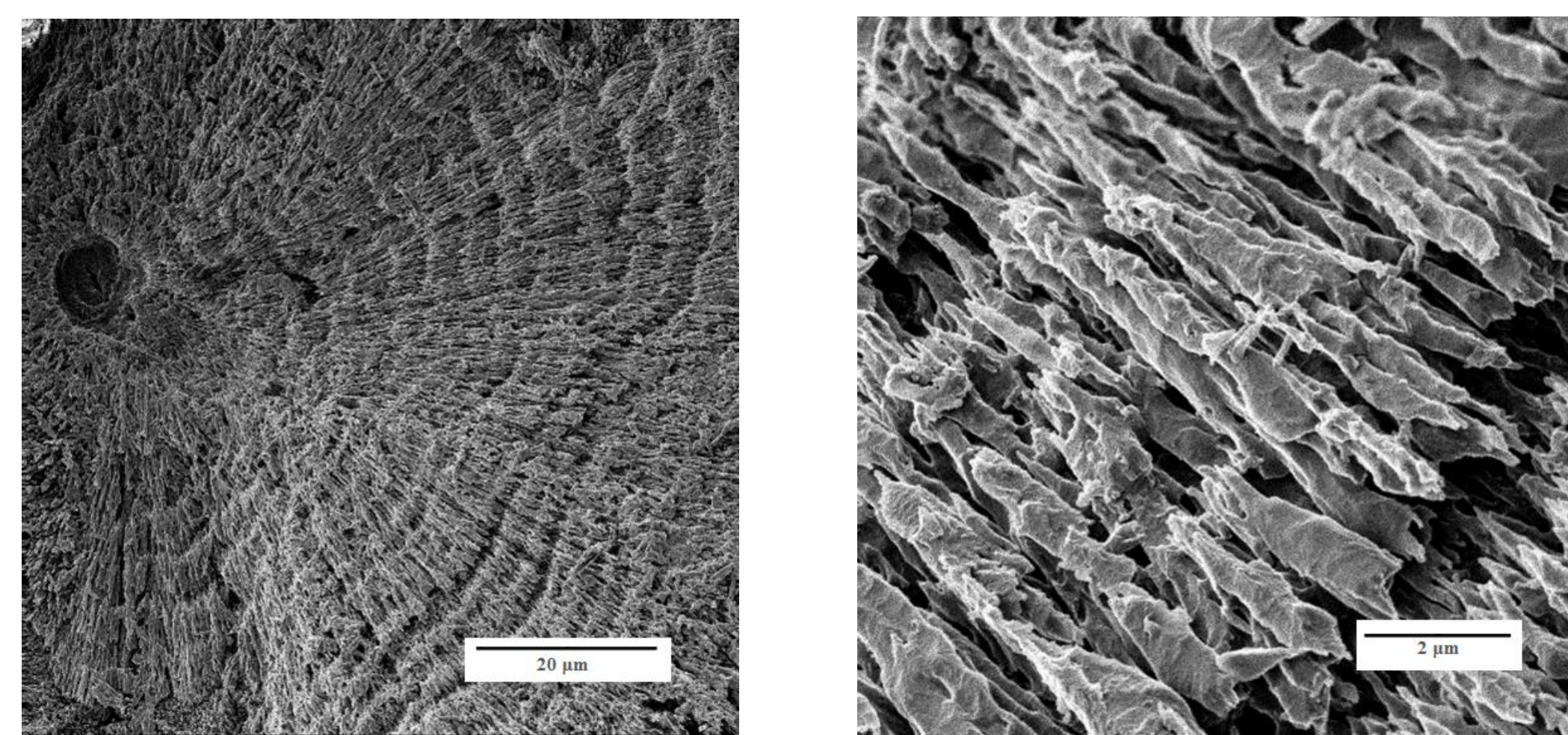


Nano-RBS detection system for simultaneous imaging and elemental analysis.

- Time resolution ~ 200 ps (0.1 KeV)
- Flight length ~ 130 mm
- Beam current ~ 1 pA
- Depth Resolution: 0.7 nm

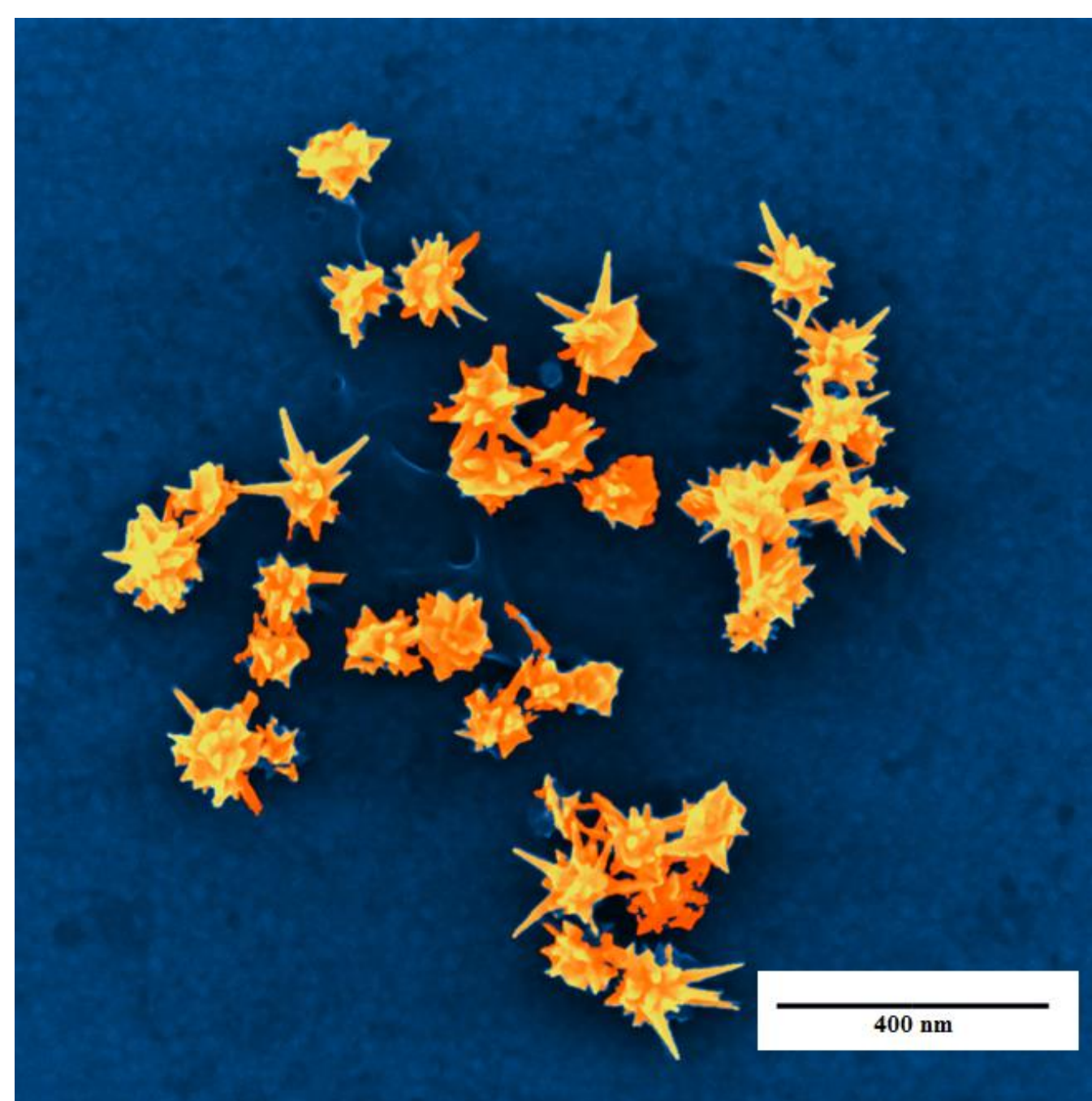
Imaging

Calcification centers of Corals

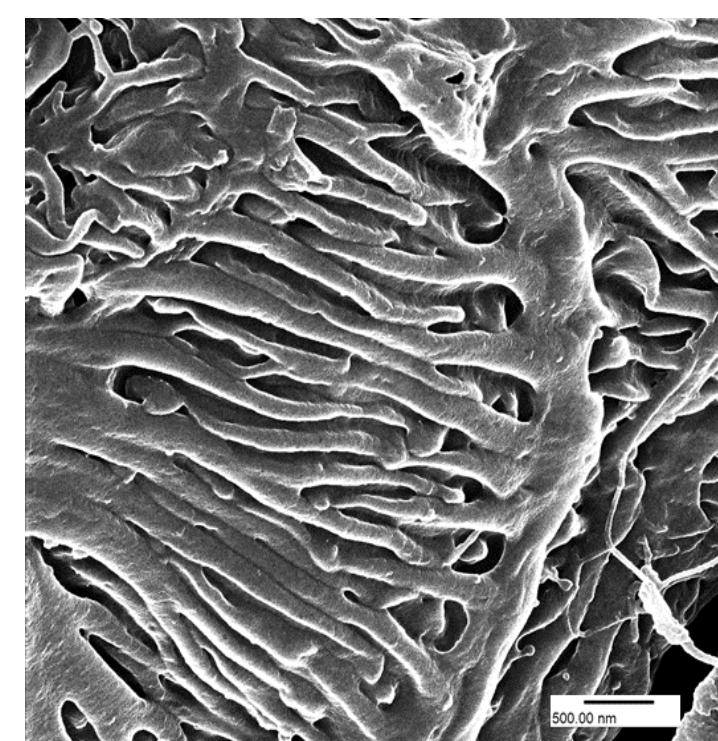


Accepted by Science

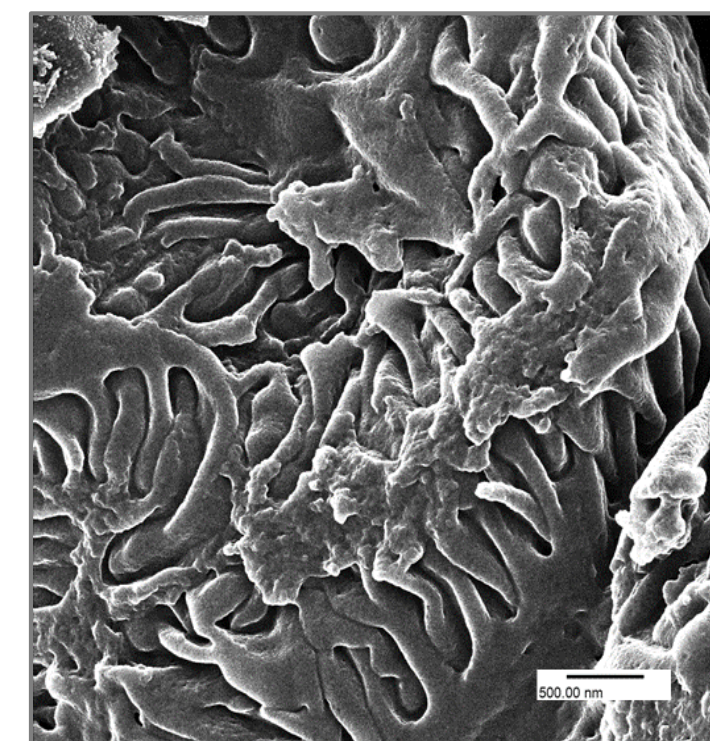
Gold Nano Stars



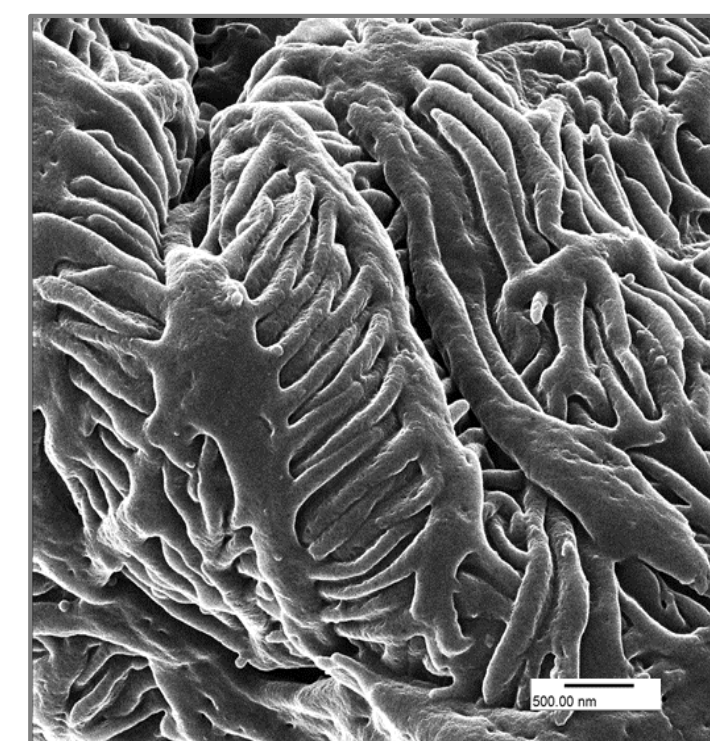
Normal podocytes



34 weeks after ischemia



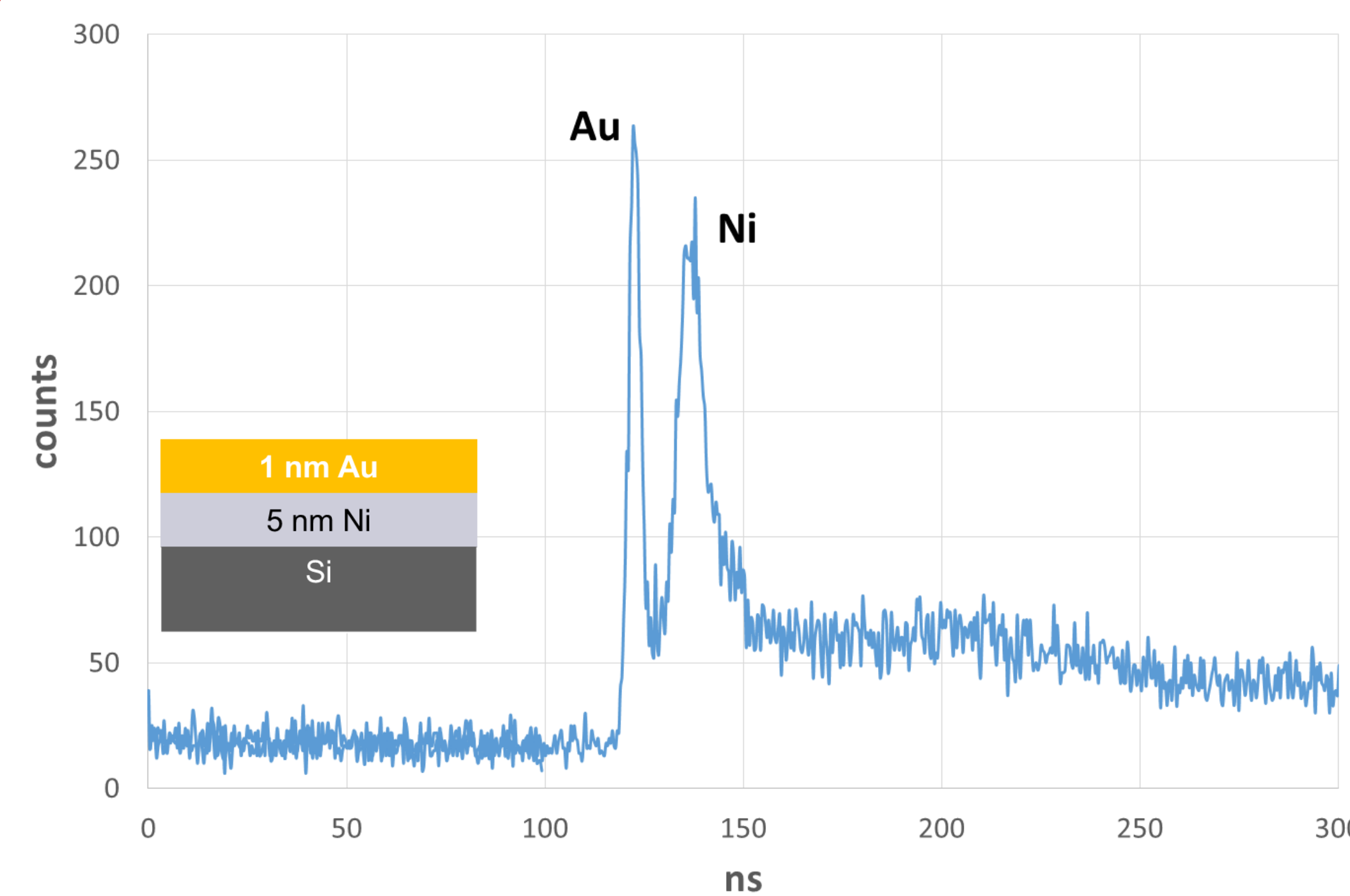
SS-20 treated after ischemia



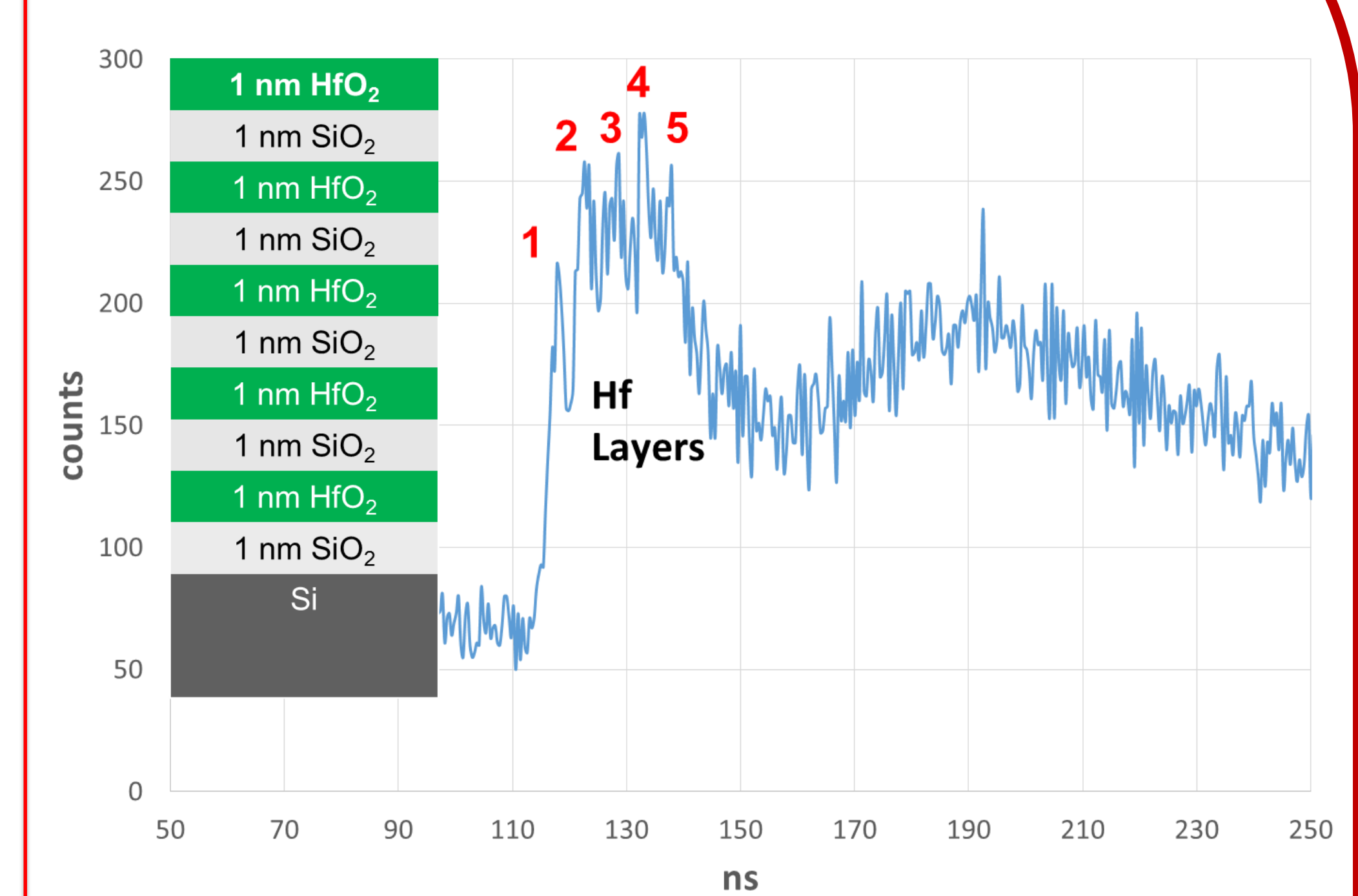
JASN November 23, 2016

Elemental Identification: Sample Structures

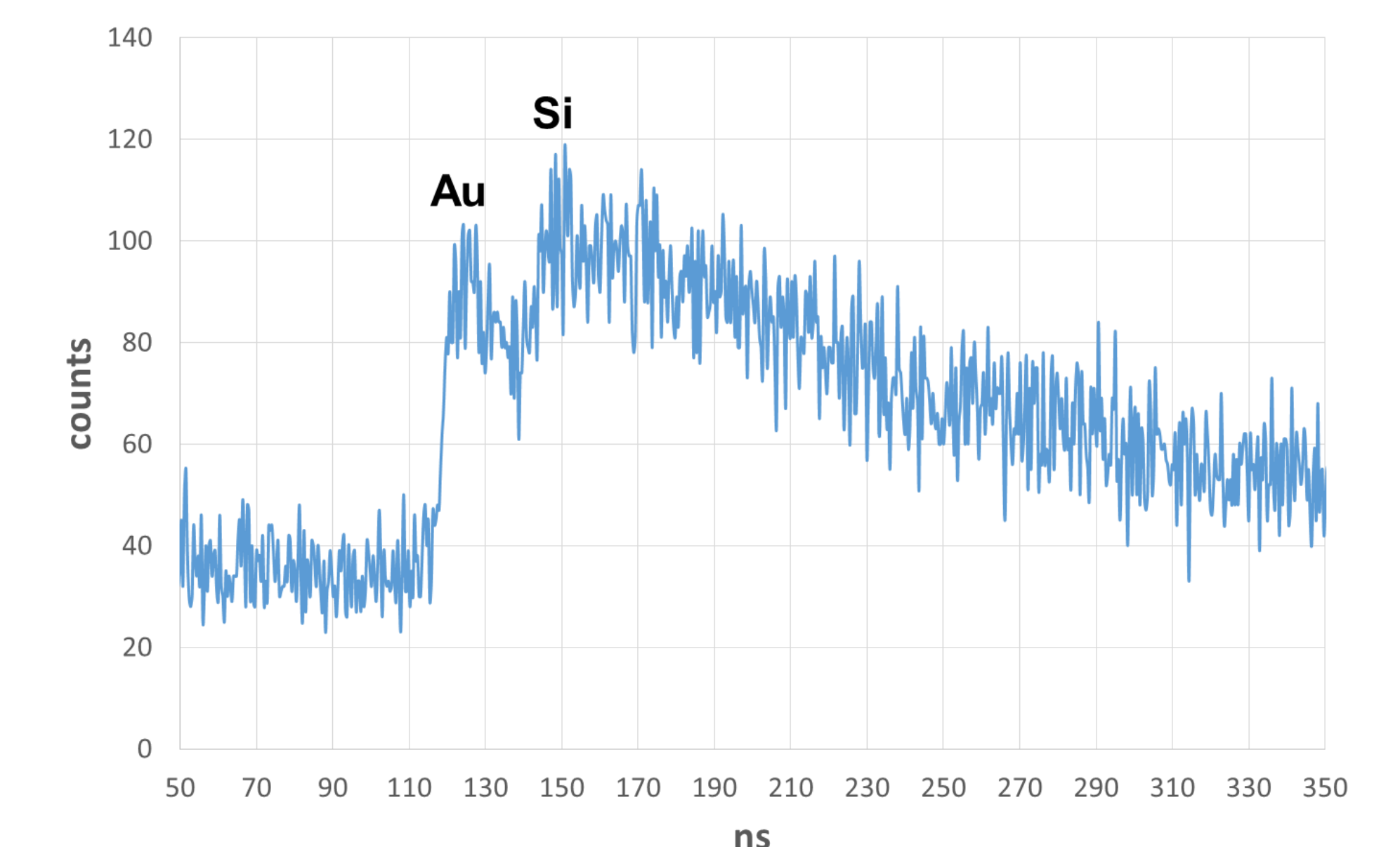
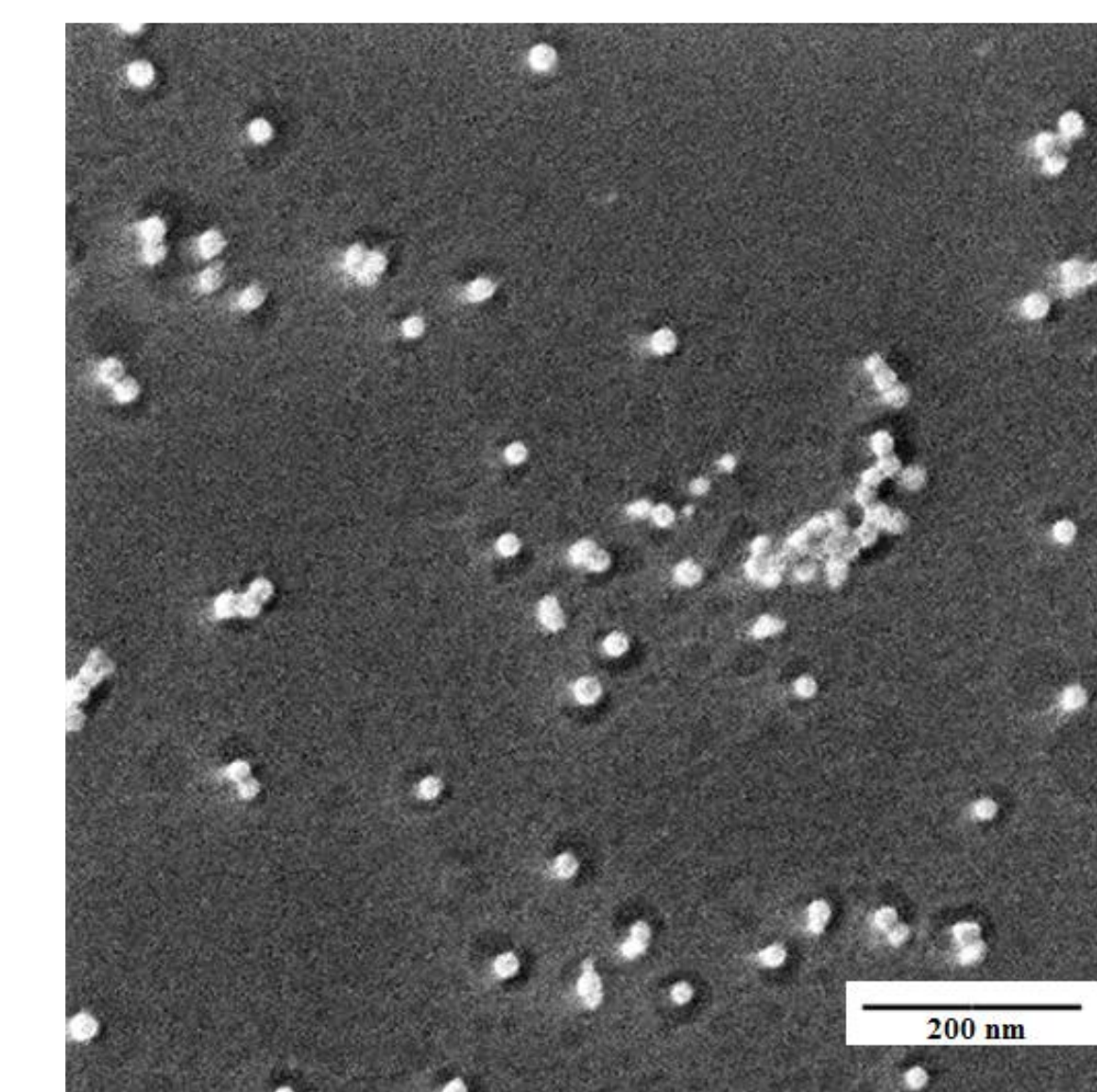
Multilevel metallization



Dielectric stack



Spherical Au nanoparticles



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