# Micro-Raman and Cathodoluminescence Microscopy and Spectroscopy

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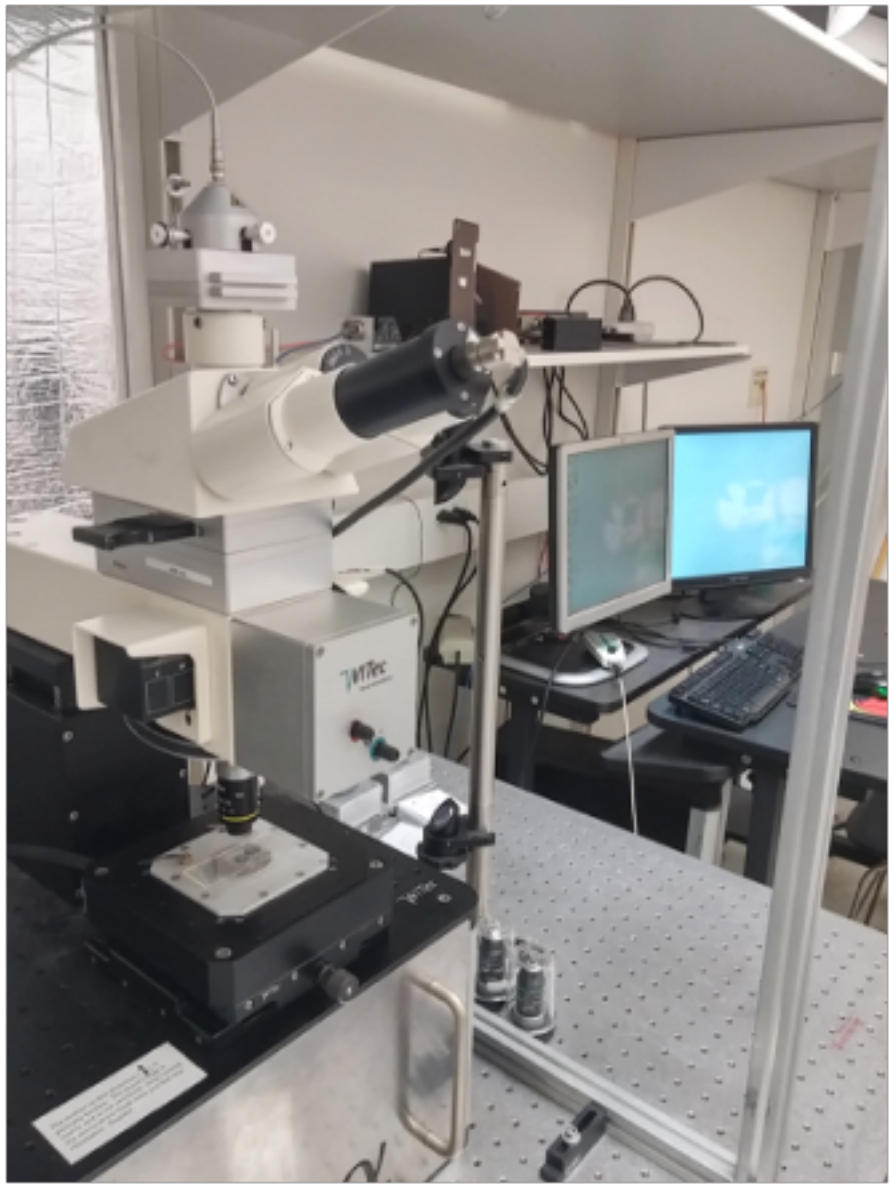
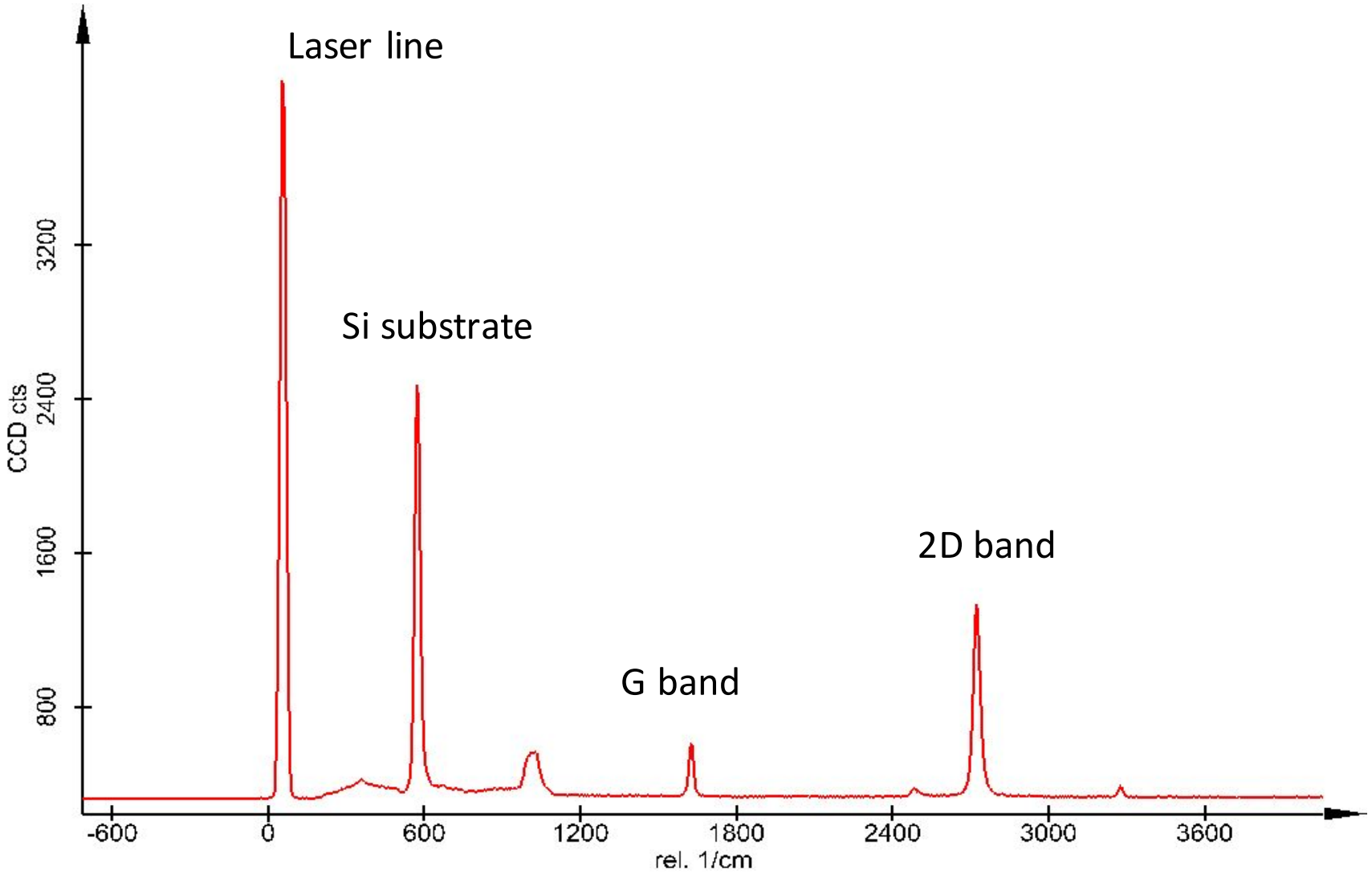
# Micro-Raman and Photoluminescence Spectroscopy and Microscopy

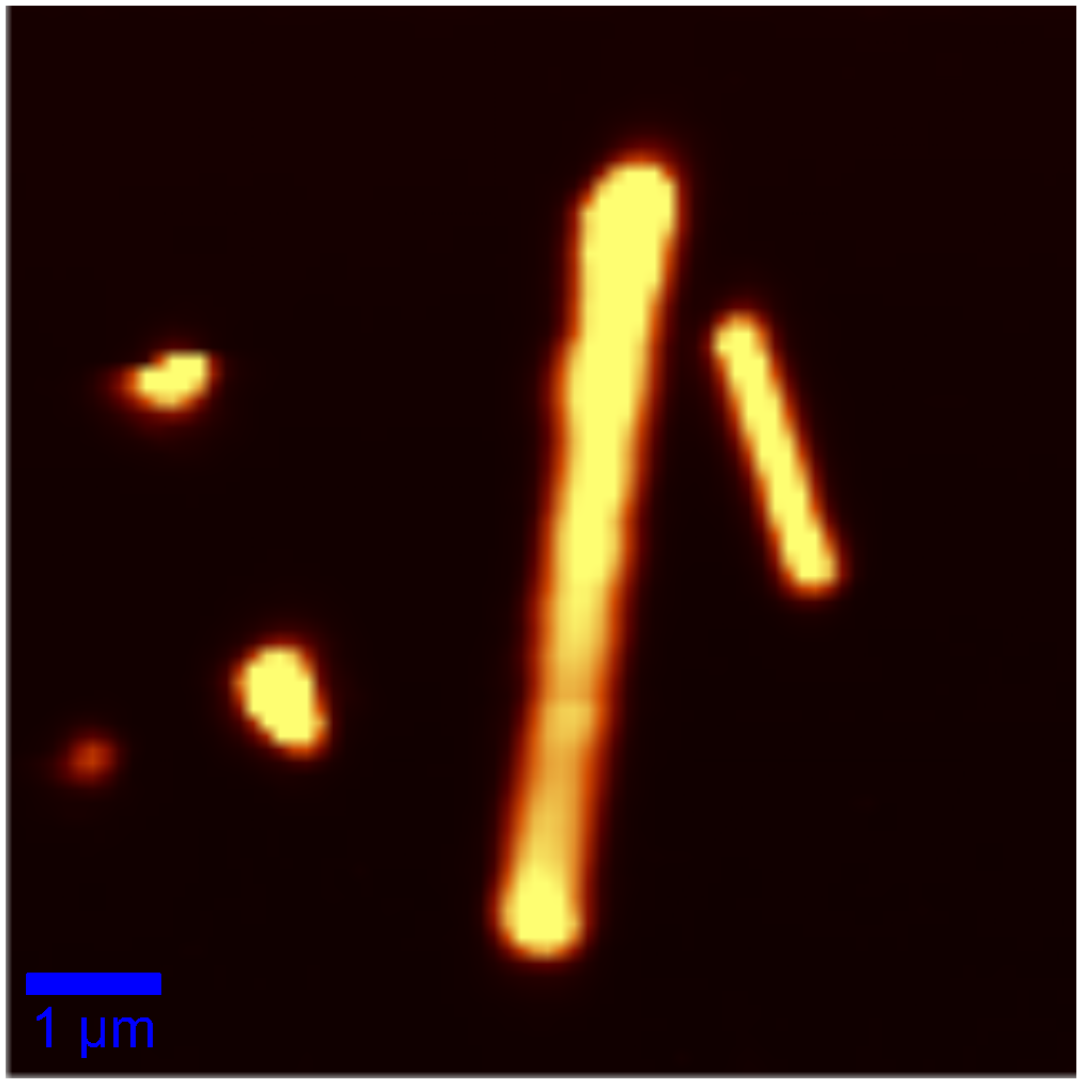
- WiTec AlphaSNOM system
- Sub-micron spatial resolution
- 2D-scan capability for spectral imaging
- Multiple laser lines for excitation



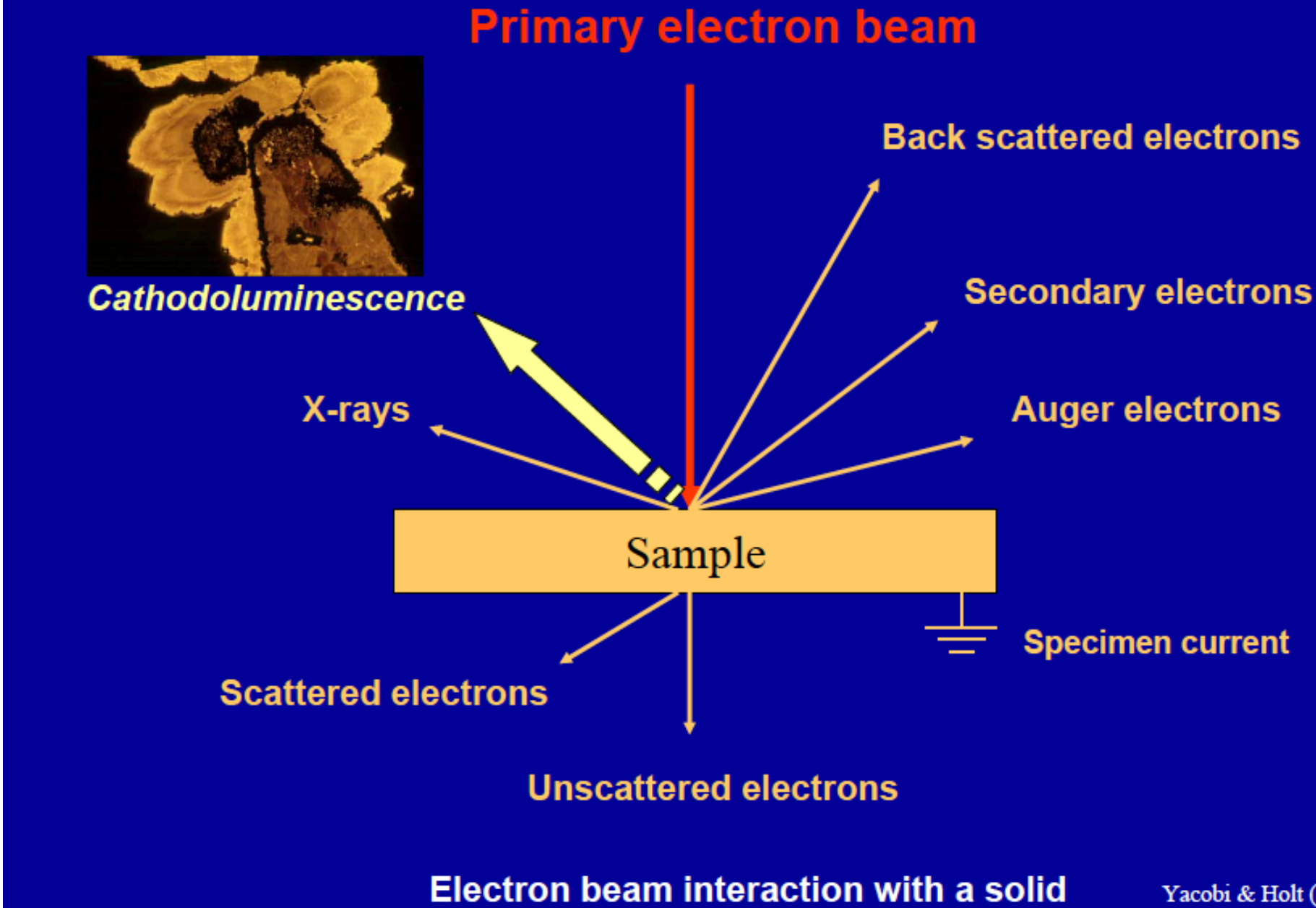
# Micro-Raman of Graphene



# Spectral image of nanowire



# Cathodoluminescence in SEM

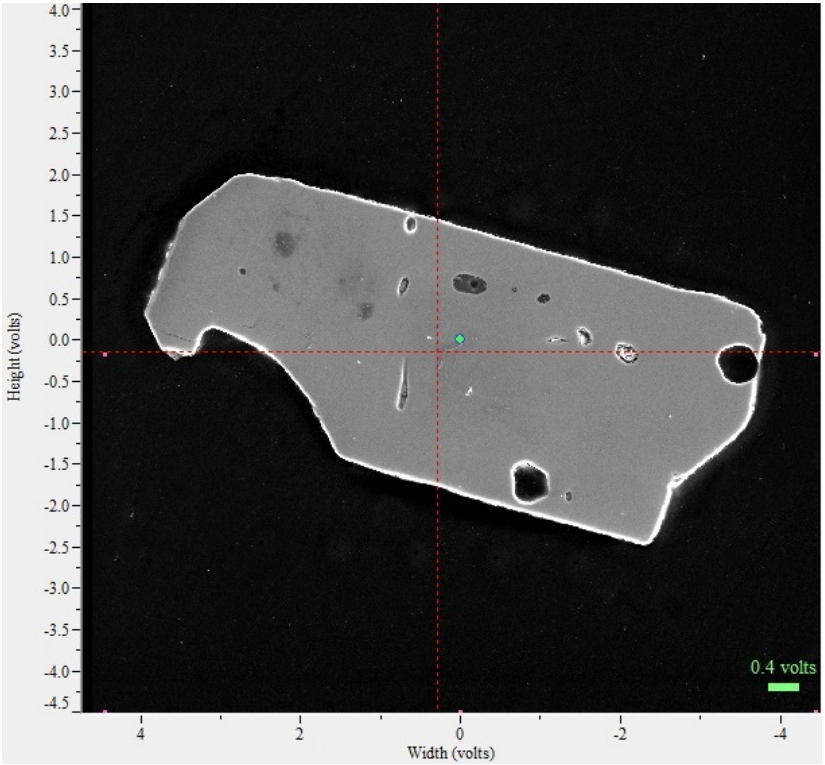


# Applications of Cathodoluminescence

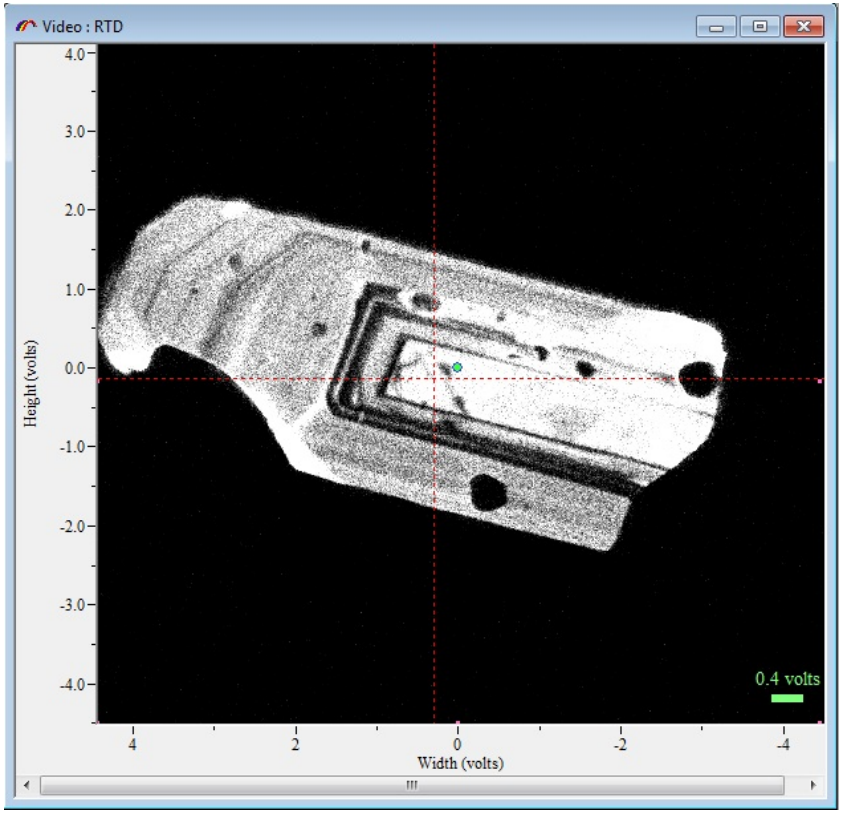
- Luminescence imaging with nanoscale spatial resolution provided by SEM.
- Illuminates structures not visible in secondary electron images.
- Gives detailed information on composition (via spectra and emission intensities) not possible by other techniques.

- Light emitting diodes
  - Gives emission spectra as a function of position on the micron scale
- Geology
  - Analysis of zircons, quartz and other luminescent materials on the deep submicron scale
  - Infer geological history

Secondary Electron Image of Zircon




All-Light CL Image of Zircon



# Zircon Emission Spectrum from 300 to 1000 nm