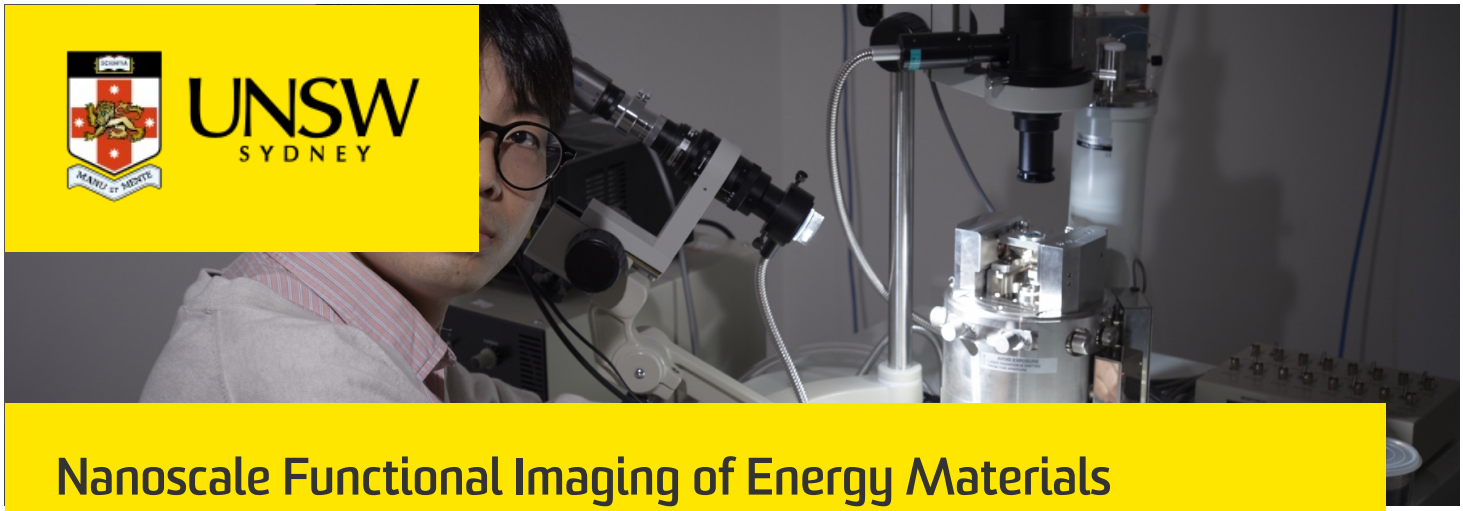

Nanoscale Functional Imaging of Energy Materials

Understanding the nanoscale properties of energy materials is critical in optimising their performance. Nanoscale functional imaging, using the atomic force microscope to measure local electrical and structural behaviour to gain deeper insight, is superbly suited for this purpose.

Competitive advantage

- World-class functional scanning probe microscope technique that has an advantage over other bulk characterisation techniques in providing spatial resolution to nanoscale breadths
- The ability to measure the structure as well as the functional data, which better brings out the correlation between the structure and characteristics
- Unique scanning probe microscopy setup that is not available anywhere else in the world

Impact

- Improving the fundamental scientific understanding of nanoscale properties and contributing to device performance improvement.

Successful applications

- Spatially resolved measurements of surface photovoltage and photocurrent in nanoscale
- 2D and 3D structured halide perovskite materials
- Revealing properties of nanoscale defects in semiconductors including CZTS, GaAs, and Si
- Investigate nanoscale properties of semiconductors for indoor solar cells

Capabilities and facilities

The scanning probe microscopy setup comprises all the necessary functions for in-depth study such as:

- Tuneable wavelength laser source (400-8500nm)
- Environmental control (vacuum, O2, N2), heating, cooling stage (-120ºC to 300ºC)
- High sensitive current sensor (1 pA to 10μA).

Our partners

- Daeyon C&I (Korea, indoor solar cell development)

More Information

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