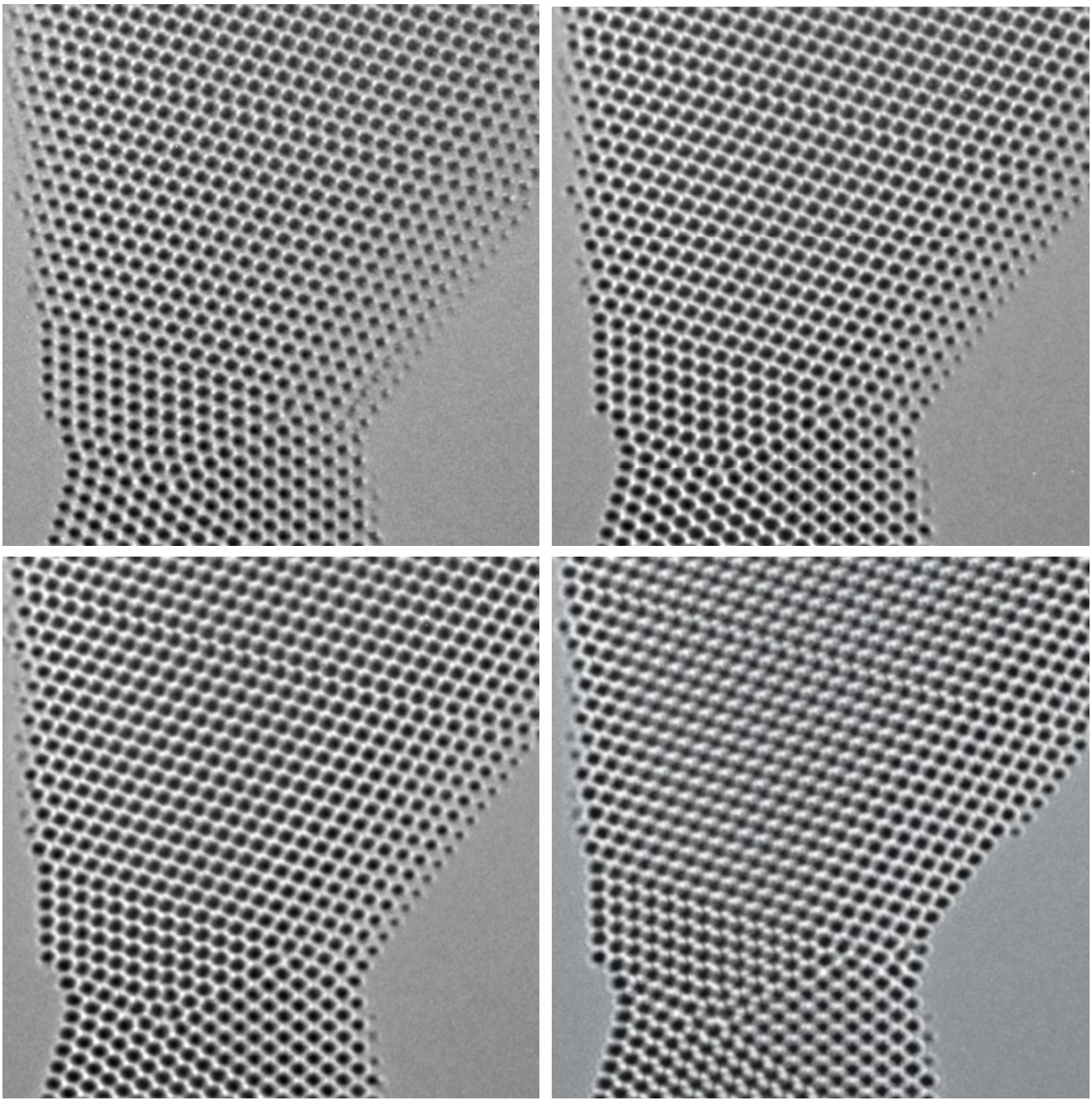
Volume 17 Number 5 2009 September

Microscopy TODAY



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JUST DUE'T.

Hitachi Focused Ion and Electron Beam System
nanoDUE'T NB5000

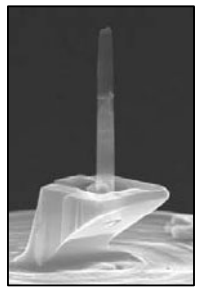
The Hitachi nanoDUE'T NB5000 Focused Ion and Electron Beam System enables high-throughput specimen preparation with high resolution imaging, analysis and precision nanofabrication. Innovations in sample loading, navigation and Micro-sampling increase analysis efficiency.

Low Cs FIB optics (patent pending) delivers 50nA or more of beam current at 40kV in a 1µm spot size. The high current enables unconventional large-area milling, hard material fabrication and multiple specimen preparation.

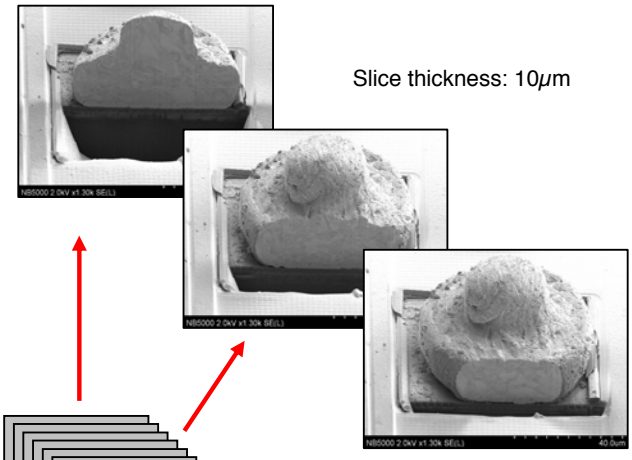
The SEM column and detector design – unmatched in the industry – allows high-resolution SEM imaging during and after FIB fabrication.

Hitachi's patented Micro-sampling (In-situ liftout) technology provides smooth probe motion. Precision end point detection with Mill & Monitor mode (M&M) complete with a user friendly template makes it a snap to reach your target step by step, picture by picture

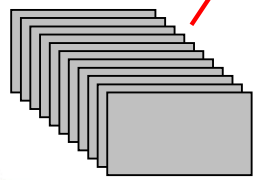
Legendary Hitachi reliability and performance in one integrated system.



3D Pillar Observation



Slice thickness: 10μm



Mill and Monitor:
SEM Acquisition while
FIB Milling

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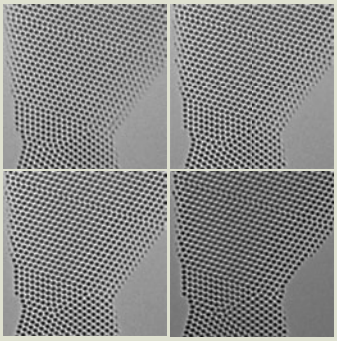

Four TEM lattice images of a gold nanobridge connecting two grains. Single atoms can be seen at the edges.

See article by Smith and Dahmen.

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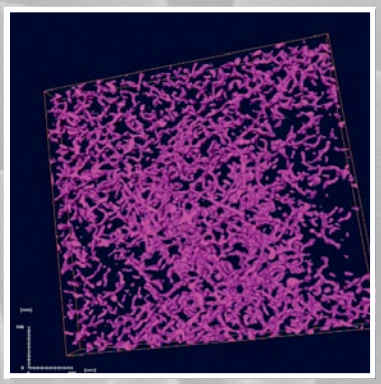
Solutions for applied Materials Research

3D NanoCharacterization

discover down to the atomic scale

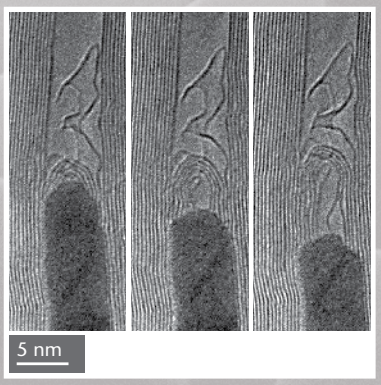


Electron tomography enables 3D visualization of nanonetworks. Such as this polymer solar cell material

Courtesy of
Joachim Loos, Eindhoven University of Technology, Netherlands

in situ NanoProcesses

experiment down to the atomic scale

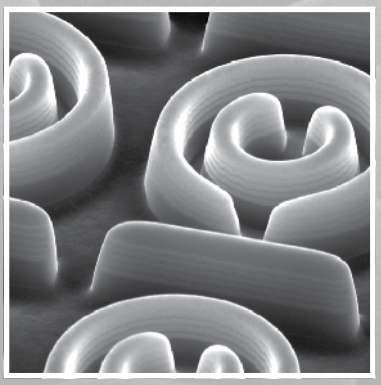


Materials confined within nanotubes provide an *in situ* atomic scale chemical reaction chamber in the TEM

Courtesy of
Julio A. Rodriguez-Manzo, and Mauricio Terrones, IPICyT, Mexico
Florian Banhart, Universitaet Mainz, Germany

3D NanoPrototyping

create down to the nanoscale



Split-ring resonator array with a critical dimension of 120nm, prepared directly by FIB

Background image: Split-ring resonator array with a critical dimension of 120nm, prepared directly by FIB. Image is darkened for artistic impression.

See beyond at fei.com/research