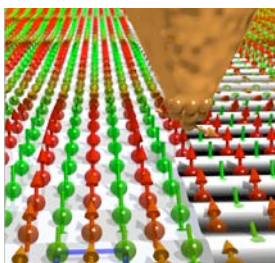


Electronic & Magnetic Materials & Devices



Major Tools

- Electron beam evaporator and sputtering deposition
- Luminescence, Perkin Elmer LS 55
- Magnetometry (QD PPMS & MPMS)
- Complex Oxide MBE (DCA R450D Custom)
- VT-AFM (Omicron XA)
- Rheometer
- Scanning probe microscope (Veeco Multimode)
- Solar simulator
- STM/SEM combined (Omicron UHV Nanoprobe)
- TGA/DSC
- UV-Vis-NIR (Perkin Elmer Lambda 950)
- X-ray diffractometer (Bruker)

Group Leader

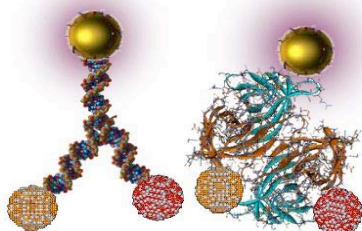
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Group Members

- Anand Bhattacharya, anand@anl.gov
- oxide MBE
- Matthias Bode, mbode@anl.gov
- spin-polarized STM
- Seth Darling, darling@anl.gov
- AFM/SPM, lithographic self-assembly
- Jeffrey Guest, jrguest@anl.gov
- STM, AFM
- Nathan Guisinger, nguisinger@anl.gov
- STM, AFM
- Axel Hoffman, hoffman@anl.gov
- magnetism
- Xiao-Min Lin, xmlin@anl.gov
- synthesis of nanocrystal building blocks

Nanobio Interfaces



Major Tools

- Field-emission SEM (JEOL JSM7500F)
- Electron paramagnetic resonance
- Functionalization, electro- & photochemical
- HPLC
- Laser Scanning Confocal Microscope (Zeiss LSM)
- PCR (date TBD)
- Post-self-assembly processing
- Schlenk Lines
- Solvent Purification
- Peptide synthesizer
- Synthesis & surface modification of nanoparticles

Group Leader

Tijana Rajh
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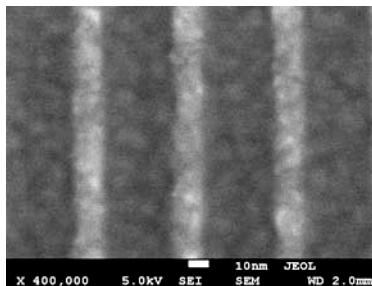


Group Members

Integrating "soft" biological molecules with "hard" inorganic nano-architectures is applied to catalysis, sensors, information storage, artificial vision, biological intervention, etc.

- Tijana Rajh, rajh@anl.gov
- EPR, quantum dots, semiconductor-bio composites
- Elena Rozhkova, rozhkova@anl.gov
- bio(in)organic, biological chemistry, synthetic biology
- Elena Shevchenko, eshevchenko@anl.gov
- 2- and 3-D nanoparticle assembly

Nanofabrication & Devices



Major Tools

- JEOL 9300 FS, 100 KV Electron Beam Lithography
- Raith 150, 30 KV Electron Beam Lithography
- FEI Nova 600 NanoLab DualBeam FIB/SEM
- Karl Suss MA6 Optical mass aligner
- Nanonex NX-3000 Step and Repeat Nanoimprint
- Direct write optical lithography
- Interferometric lithography
- Resist processing
- Plasma processing (chlorine, fluorine chambers barrel asher system)
- Wet Chemistry & Metrology
- SPM, PSIA XE-HDD
- Deposition (ebeam evaporator and sputtering, MOCVD)
- Nanocrystalline diamond deposition)

Group Leader

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Group Members

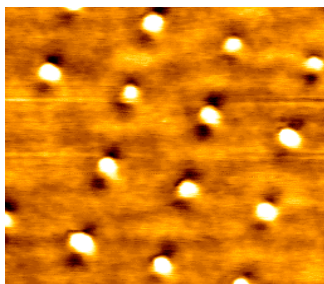
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- oxide and nanocarbon films, MEMS/NEMS
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- lithography, nanogels, MEMS/NEMS
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- nanofabrication, electron beam lithography
- Anirudha Sumant, sumant@anl.gov
- UNCD/PZT for diamond-based NEMS

Center for Nanoscale Materials

nano.anl.gov

Acting Director: Stephen K. Streiffer
Assoc. Dir. for Facilities: Derrick Mancini
Manager of User Programs: Katie Carrado
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Nanophotonics



Major Tools

- NSOM
 - CW laser excitation
 - ultrafast laser excitation
- Colloidal synthesis
- Confocal Raman microscope, Renishaw
- NSOM fiber puller
- Size-selected cluster facility
- Time-correlated single photon counting
- Ultrafast transient absorption spectroscopy
- Ultrafast microscope

Group Leader

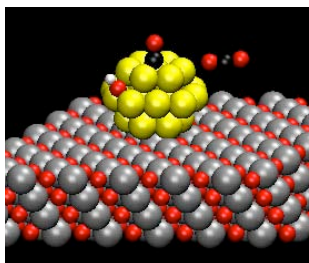
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Group Members

- David Gosztola, gosztola@anl.gov
 - laser spectroscopy and electrochemistry
- Matthew Pelton, pelton@anl.gov
 - physical phenomena of light interacting with nanomaterials
- Yugang Sun, ygsun@anl.gov
 - synthesis/fab of functional nanomaterials
 - optical, electronic, mechanical properties
- Stefan Vajda, vajda@anl.gov
 - size selected cluster facility
- Gary Wiederrecht, wiederrecht@anl.gov
 - new microscopies with spatial resolution below the diffraction limit

Theory & Modeling

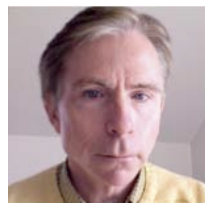


Major Tools

- Nanoscience Computational Facility:
 - 10 Tflop cluster with 144 compute nodes for:
 - Density-functional-based tight-binding (DFTB) electronic structure package
 - Time-domain nanophotonics simulation package
 - MPI-based parallel versions of the nanophotonics and tight-binding codes
 - GPaw, a real space, grid-based DFT-PAW code
- Access to Argonne computer facilities
- Support for experimental projects
- Support for theoretical projects

Group Leader

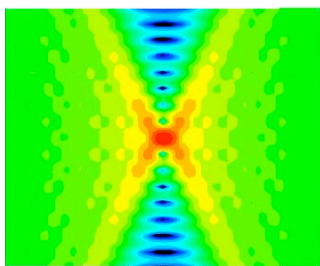
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Group Members

- Larry Curtiss, curtiss@anl.gov
 - quantum chemical studies
- Stephen Gray, gray@anl.gov
 - nanophotonics, electrodynamic simulations
- Jeff Greeley, jgreeley@anl.gov
 - nanocatalysis
- Michael Sternberg, sternberg@anl.gov
 - software development

X-ray Microscopy



Major Tools

- Hard X-ray nanoprobe beamline, sector 26 of APS
- Full field transmission microscopy (8-12 keV)
 - 2D imaging in absorption contrast and phase contrast (Zernicke)
 - Tomography
- Scanning probe microscopy (3-30 keV)
 - Nanodiffraction
 - X-ray fluorescence microscopy
 - Differential phase contrast imaging
 - Magnetic imaging
 - Time resolved experiments

Group Leader

Jorg Maser
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Group Members

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- Jorg Maser, maser@anl.gov
 - x-ray microscopy, x-ray optics
- Brian Stephenson, stephenson@anl.gov
- Robert Winarski, winarski@aps.anl.gov
 - x-ray imaging