UNSUBMITED PROPOSAL VIEW
THIS PROPOSAL HAS NOT BEEN APPROVED

Proposal ID:

GENERAL

Proposal Title:

CATEGORIZE YOUR PROPOSAL (for DOE reporting purposes):

Field of Research		Funding Agency
Materials Sciences (including condensed matter physics, materials chemistry)	Earth Sciences	DOE, BES
Physics (excluding condensed matter physics)	Environmental Sciences	DOE, BER
Chemistry (excluding materials chemistry)	Optics	DOE, Other:
Polymers	Engineering	DOD:
Medical Applications	Instrumentation, technique development	NSF
Biology, Life Sciences (excludes medical applications)	Purchase of specialty services/material	NNSA
	Other:	NIH
		NASA
		DHS
		Industry
		Foreign:
		Other:

SCIENTIFIC THEME:

Biological and Soft Nanomaterials	Nanocatalysis	Other:
Electronic Nanomaterials	Theory and Computation	

USERS

Name	Institution	PI	Proposer	On Site User	Remote User

RESOURCES

Scanning and Probing Microscopy

Environmental Closed Loop Atomic Force Microscope - Asylum MFD-3D-BIO

Ambient Scanning Probe Microscope - VEECO Multimode V

Near Field Optical/Atomic/Confocal/Confocal Raman/Scanning Probe Microscope - WiTec Alpha Combination

Low Energy Electron Microscope III (LEEM) at NSLS - Elmitec

Low Energy Electron Microscope V (LEEM) - Elmitec

Low-Temperature UHV Scanning Tunneling Microscope - Createc

Low-Temperature UHV Scanning Tunneling Microscope with laser - Createc

Variable Temperature UHV Scanning Tunneling/Atomic Force Microscope - RHK

Optical Microscopy

Low-Temperature Confocal Microscope - Attocube

Confocal fluorescence microscope and visible laser/NIR spectral & lifetime imaging multiphoton - Leica SP5

Time and Spectrally resolved single molecule fluorescence detector - Olympus

Total Internal Reflection Fluorescence System (TIRF) - Olympus IX81 with 3 colors excitation

- Epifluorescent and Polarized Microscope - Olympus BX51
- Polarized Optical Microscope - Olympus BX51
- Benchtop light microscopes - one with motorized stage & digital readout - Nikon Cleanroom
- Benchtop light microscope - Zeiss Cleanroom

Electron Microscopy

- Environmental Transmission Electron Microscope (E-TEM) - FEI Titan 80-300
- Scanning Transmission Electron Microscope (STEM) - Hitachi HD 2700C
- High Resolution Analytical Transmission Electron Microscope (HRTEM) - JEOL 2100F
- Analytical Bio/Soft Matter Transmission Electron Microscope (TEM) - JEOL 1400
- Scanning Electron Microscope (SEM) - Hitachi 4800
- High Resolution Analytical Scanning Electron Microscope (HRSEM) - JEOL 7600F
- Dual Beam Scanning Electron/Focused Ion Beam Microscope - FEI Helios NanoLab Cleanroom
    - SEM/EDX
    - STEM
    - TEM Sample Prep
- UHV Focused Ion Beam/Low Energy Electron Diffraction/Scanning Auger analyzer - Omicron Nanoprobe
- Low Energy Electron Microscope III (LEEM) at NSLS - Elmitec
- Low Energy Electron Microscope V (LEEM) - Elmitec
- Lorentz Transmission Electron Microscope - JEOL 2100M

Spectroscopic and Time-Resolved Probing

- Time-Correlated Single Photon Counting (TCSPC) - Picoquant FT200
- Femtosecond Transient Absorption Spectrometer - Helios
- Nanosecond Transient Absorption Spectrometer - EOS
- Fluorescence Up-conversion Spectrometer - Halcyone
- Amplified Ti:Sapphire Laser System/Optical Parametric Amplifier-1 kHz
    - Pump-probe
    - Zscan/Nonlinear Absorption
    - Sample Irradiation
- FTIR Spectrometer - Bruker Vertex 80V
- FTIR Spectrometer - Thermo Scientific Nicolet 6700
- Photon Counting Spectrofluorometer - ISS PC1/K2
- Circular Dichroism Spectrometer - Jasco J-815
- Uv-Vis/NIR Spectrophotometer - PerkinElmer Lambda 950
- Uv-Vis Spectrophotometer - PerkinElmer Lambda 25
- Nanosecond Transient Spectrometer - EOS
- Fluorescence Spectrometer - Halcyone
- Fluorescence Spectrometer - Varian Cary Eclipse

X-Ray and Light Scattering

- X-Ray Diffractometer - Rigaku Miniflex II
- X-Ray Diffractometer - Rigaku Ultima III
- Small and Wide Angle X-ray scattering (SAXS/WAXS/GISAXS) - X9 beamline at NSLS
- Dynamic Light Scattering with Zeta Potential - Malvern Zetasizer Nano

Solution Based and Biomolecular Methods

- Laminar Flow hoods/wet chemistry/hot plates/heating bath/diamond scriber
- Wet chemistry synthesis/functionalization of nano-scale and organic materials
- Biomolecular methods: cell culture, cold room, gel electrophoresis and DNA imaging
- Microarray scanner - GenePix 4200A

Quantitative Real-time PCR - Roche Lightcycler 480

Fast Protein Liquid Chromatography (FPLC) - GE AKTA Explorer 100

Circular Dichroism Spectrometer

Centrifuges/shakers/mixers/sonicators

Dynamic Light Scattering

Thermal Analysis, Annealing, and Electrochemistry

Differential Thermal Analysis (DSC) - Perkin Elmer Diamond

Constant Temperature bath (-20°C to 100°C)

Thermo Gravimetric/Differential Thermal Analyzer (TGA/DTA) - Perkin Elmer Diamond

Electrochemical workstation

Thin Film Metrology

Dektak 150 Stylus Profilometer - Dektak 150 Cleanroom

Spectroscopic Ellipsometer - J.A. Woollam M-2000

Ellipsometer - Rudolph Instruments 439 Cleanroom

Non-contact Profilometer - Zygo New View 6000 Cleanroom

X-Ray Diffractometer - Rigaku Ultima III

Etching and Ashing (would combine with Deposition)

Reactive Ion Etcher (RIE) - March Plasma

Deep Reactive Ion Etcher, available w/Bosch process (DRIE) - Oxford Plasma Lab

Plasma Asher - Technics PEIIA

Reactive Ion Etcher (RIE) - Trion Phantom III

Deposition (Evaporators/Sputterers/Pecvd/Coaters)

Desktop sputter coater for SEM analysis - Denton Cleanroom

Denton Thermal Evaporator - Denton Cleanroom

Electron Beam Deposition System - Kurt J. Lesker PVD75 Cleanroom

Physical Vapor Sputter/Thermal Evaporator - Kurt J. Lesker PVD75

Sputter Coater - Kurt J. Lesker PVD75 Cleanroom

Plasma Enhanced Chemical Vapor Deposition (PECVD) System - Trion Orion III Cleanroom

Sputter/Coater - Cressington 208HR DC

Spin Coater - Brewer Science Cee 200CB Non-Cleanroom

Suss Spin - Coater Cleanroom

Spin Coater - Brewer Science Cee 200CB Cleanroom

Electrical Probing

Cryogenic Probe Station - Lakeshore

Electrical Probe Station, with solar simulator - Rucker-Kolls

Electrical Probe Station - Signatone

Lithography

Electron Beam Lithography Tool (EBL) - JEOL JBX6300FS Cleanroom

Layout Beamer (pattern fracture & proximity effect correction)

L-EDIT (CAD)

UV Mask Aligner - Karl Suss MJB-3 Cleanroom

Nanoimprinter - Molecular Imprints Imprio 55 Cleanroom

Dual Beam Scanning Electron/Focused Ion Beam Microscope - FEI Helios Dual Beam Cleanroom

- focused ion beam
- low-kV e-beam lithography with NPGS
- ion-beam/electron-beam induced deposition of platinum

Theory, Computation & Software

Software and Computational Services

Computer Usage Options

Estimated usage during the next four-month cycle:

Provide an estimate with a brief explanation (reference software needs, system size and estimated number of production calculations):

Describe software needs for your project including specific packages (e.g. Quantum Espresso), compilers or other tools as approp

Describe experience level with Linux, specific packages required and batch computing (e.g. novice, moderate or expert for each item):

Describe any special facility needs (memory, storage, etc.) and the typical scale of parallel computations needed in units of nodes (8 cpus per node):

Computational facilities can be accessed remotely. Describe the extent to which you plan to visit the CFN on-site during your pro

MATERIALS

Name	Quantity	Concentration	Storage Requirements

Biological Materials

Will you be bringing any material of a biological nature?

Will you be performing recombinant experiments at the Center for Functional Nanomaterials?

Will any biological material be created at the Center for Functional Nanomaterials?

Please describe the biological material(s) that will be created at the Center for Functional Nanomaterials:

Will the biological material contain any live cells or active virus fractions?

The Biological Material is a:

Biological Product Name:

ATCC#:

BSL Rating:

Other Material Description:

Will the biological material be fixed or inactivated prior to arrival at the CFN?

Nanoparticles

Does the project involve working with nanoparticles?

In Solution:

In Powder Form:

Transportation of Materials

Will the project be transporting any materials or samples onsite or to/from offsite?

All hazardous material transport must meet US Department of Transportation requirements.
For guidance on Hazardous Material and Nanomaterials transport:
http://www.bnl.gov/cfn/user/TransportationOfHazMat.asp

Anticipated Wastes:

All wastes that will be generated, including anticipated quantities of each.

Risk Analysis:

Required Precautions:

OPERATIONS

UNACCEPTABLE DATES

MODE OF OPERATION

Does this project require the scientific expertise of Facility staff? Such expertise would result in collaboration with Facility staff on this project, and credits in publications produced as a result of this research work would be

EQUIPMENT REQUIREMENTS

Special Equipment. Listed below are any special equipment or facilities required to perform this research work.

All equipment that will be brought to augment the existing CFN Facility setup. If none, indicate N/A.

OPERATIONS

Description of project, including long-term goals:

Description of research to be conducted in CFN facilities:

Why a particular Facility is required, including which characteristics are important (focusing, equipment, etc.)

Scientific or technologic importance of project:

What will you work on during this 4-month cycle and which pieces of equipment will you use?

Three publication citations that will assist the Proposal Review Panel in evaluating your work:

Description of prior work at CFN (if applicable):

Publications as a result of prior work at the CFN (if applicable):