

**Brookhaven National Laboratory
FY 2007 LDRD PROJECTS**

<u>LDRD Project</u>	<u>Project Title</u>	<u>P.I.</u>	<u>Dept/Bldg.</u>
04-038	Complex Thin Films and Nanomaterial Properties	J. Misewich	CMPMSD/480
05-006	Heavy Ion Physics with the ATLAS Detector	H. Takai	PHYS/510A
05-028	Behavior of Water on Chemically Modified Semiconductor Surfaces: Toward Photochemical Hydrogen Production	E. Fujita	CHEM/555A
05-041	Multifunctional Nanomaterials for Biology	S. Wong	CMPMSD/480
05-044	Intense THz Source & Application to Magnetization Dynamics	G.L. Carr	NSLS/725D
05-048	Nano-Imaging of Whole Cells with Hard X-Ray Microscopy	L. Miller	NSLS/725D
05-058	Development of Methodologies for Analyzing Transcription Factor Binding in Whole Genomes	C. Anderson	BIO/463
05-068	Positron Labeled Stem Cells for Non-Invasive PET Imaging Studies of In-Vivo Trafficking and Biodistribution	S. Srivastava	MED/801
05-070	Novel Multi-Modality MRI and Transcranial Magnetic Stimulation to Study Brain Connectivity	E. de Castro Caparelli	MED/490
05-072	Feasibility of CZT for Next-Generation PET Performance	P. Vaska	MED/490
05-074	Biology on Massively Parellel Computers	J. Davenport	CSC/463B
05-104	Giant Proximity Effect in High-Temperature Superconductors	I. Bozovic	CMPMSD/480
05-114	Study of High-Tc Nanostructures	I. Bozovic	CMPMSD/480
06-001	Lattice Studies of QCD Thermodynamics on the QCDOC	F. Karsch	PHYS/510A
06-004	Detector Development for Very Long Baseline Neutrino Exp.	M. Diwan	PHYS/510E
06-012	Detector for High Quality Images of Electron Microscopy	P. Rehak	INST/535B
06-017	Transmission Photocathode Development	J. Smedley	INST/535B
06-021	Synthesis and Characterization of Band-Gap-Narrowed TiO ₂ Thin Films and Nanoparticles for Solar Energy Conversion	E. Sutter	CFN/480
06-026	Multiscale Analysis of In Vivo Nanoparticle Exposure	W.K. Schiffer	CHEM/555
06-030	Development of Gadolinium-Loaded Liquid-Scintillators with Long-Term Chemical Stability for a New High-Precision Measurement of the Neutrino Mixing Angle, Theta-13	R.L. Hahn	CHEM/555A
06-037	Electronic Properties of Carbon Nanotubes and Novel Multicomponent Nanomaterials	J.P. Hill	CMPMSD/510B
06-038	Growth and Characterization of CdZnTe Crystals for Improved Nuclear Radiation Detectors	G. Gu/A. Bolotnikov	CMPMSD/NNS/510A
06-039	Design, Synthesis and Characterization of a New Class of Hydrocarbon Polymers Containing Zwitter Ions and Nanostructured Composites for High Temperature Membrane in PEM Fuel Cells	X.Q. Yang	CMPMSD/555
06-044	New High-Resolution X-Ray Monochromators for Condensed-Matter Science Experiments	W.A. Caliebe	NSLS/725D
06-046	Novel Materials for Hard X-Ray Optics	K. Evans-Lutterodt	NSLS/725D
06-047	Nano-Crystallography of Individual Nanotubes and Nanoparticles	C. Nelson	NSLS/725D
06-052	High-Temperature Superconducting Magnet Development	T. Tanabe	NSLS/725D
06-056	Epigenetics: Mathamphetamine (MAP)-Induced Brain Dysfunction and Methylation of DNA	J. Dunn	BIO/463

06-060	Molecular Mechanism of Chromosomal Replication Initiation in Eukaryotic System	H. Li	BIO/463
06-061	Diversification of Isoflavonoid Biosynthesis	C.-J. Liu	BIO/463
06-065	Metabolic Flux Analysis in Arabidopsis Thaliana	J. Schwender	BIO/463
06-066	Transformation and Fate of Nanomaterials in the Environment	J. Fitts	ESD/830
06-071	Development of a Cloud Condensation Nucleus Separator	J. Wang	ESD/815E
06-074	Aluminum Hydride - An Ideal Hydrogen Source for Small Fuel Cells	J. Graetz	ES&T/815
06-087	Gamma Ray Imager for National Security Applications	P.E. Vanier	NNS/197C
06-088	Neurogenomics: Collaboration Between the Biology Department and the Brookhaven Center for Translational Neuroimaging to Investigate Complex Disease States	N. Alia-Klein/J.S. Fowler	MED/490
06-092	Nanoparticle Labeled Neural Stem Cell Tracking In Vivo by Magnetic Resonance Microscopy	H. Benveniste	MED/490
06-094	MicroCT Methods of Quantitative Adipose Imaging: Development of a Long-Term Assessment Technique for Studying Obesity in a Rodent Model	G.J. Wang	MED/490
06-097	Photocatalytic Reduction of CO ₂ in Supercritical CO ₂	D. Grills	CHEM/555
07-001	QCD Thermodynamics at Non-zero Temperature and Density	F. Karsch	PHYS/510A
07-002	Lattice QCD Simulations on BlueGene/L	F. Karsch	PHYS/510A
07-004	Proof-of-Principle Laser System for ILC Positron Source	I. Pogorelsky	PHYS/820M
07-005	Sensitive Searches for CP-Violation in Hadronic Systems	Y. Semertzidis	PHYS/510A
07-006	Feasibility and Design Studies for a Detector for e+p, e+A, p+p, p+A, and A+A Collisions at BNL	T. Ullrich	PHYS/510A
07-007	A Novel and Compact Muon Telescope Detector for QCD Lab	Zhangbu Xu	PHYS510A
07-010	Design Optimization of a Reactor Neutrino Experiment	D. Jaffe	PHYS/510E
07-019	Development of Laser beam Shaper for Low Emittance Electron Beams	T. Rao	INST/535B
07-023	Surface Engineered and Core-Shell Nanowires: Nanoscale Building Blocks for Third Generation Photovoltaics	P. Sutter	CFN/555
07-025	Precision Assembly of Nano-Objects – Approaching Artificial Photosynthesis	W. Sherman	CFN/463
07-027	Photocatalytic Carbon Dioxide Reduction to Methanol using Metal Complexes with an NADH Model Ligand	E. Fujita	CHEM/555A
07-030	Structure of Mass-Size Selected Nanoparticles by Scanning Transmission Electron Microscopy	M. White	CHEM/555A
07-032	Synthesis of Conjugated Polymers for Fundamental Questions in Solar Energy	J. Miller	CHEM/555A
07-035	Ultra-thin Graphite Analog Compounds	L. Cooley	CMPMSD/480
07-036	Lipid-Coated Nanoparticles and Their Interactions with Lipid Membrane Surfaces	M. Fukuto	CMPMSD/510B
07-038	Angle-Resolved Time-of-Flight Ion Scattering Spectroscopy from MBE-Grown Oxide Thin Film Surfaces	A. Gozar	CMPMSD/480
07-040	Genome Analysis of Endophytic Bacteria that Promote Growth of Poplar for Biomass Production	S. Taghavi	BIO/463
07-041	Structural Features of the Oxygen Tolerant Hydrogenase from <i>Thermatoga neapolitana</i>	D. Van der Lelie	BIO/463
07-047	Characterization of Enzymatic O-acylation to	C.-J. Liu	BIO/463

	Facilitate Biomass and Bioenergy Production		
07-048	Functional Neurochemistry	D. Tomasi	MED/490
07-054	Miniaturized RF Coil Arrays for MicroMRI	D. Smith	MED/490
07-055	<i>Neurocomputation at BCTN</i> : Developing Novel Computational Techniques to Study Brain Function in Health and Disease	R. Goldstein	MED/490
07-059	A Non-Fermentation Route to Convert Biomass to Bioalcohols	D. Mahajan	ES&T/815
07-062	Fate and Reactivity of Carbon Nanoparticles (CNPs) Exposed to Aqueous Environmental Conditions	K. Crosson	ES&T/475C
07-073	Development of Room-temperature CdMnTe Gamma-ray Detectors	Y. Cui	NNS/535B
07-075	Developing a New Framework for Investigating Earth's Climate and Climate Change	Y. Liu	ESD/815E
07-080	A Novel Approach for Efficient Biofuel Generation	D. Chidambaram	ESD/490A
07-084	Investigations of Hygroscopic Growth and Phase Transitions of Atmospheric Particles by Noncontact Atomic Force Microscopy	S. Schwartz	ESD/815E
07-089	Chemical Imaging of Living Cells in Real Time	L. Miller	NSLS/725D
07-090	Coherent Bragg Rod Analysis of High-Tc Superconducting Epitaxial Films	R. Pindak	NSLS/725D
07-091	Development of a Planar Device Technology for Hyperpure Germanium X-ray Detectors.	D.P. Siddons	NSLS/725D
07-096	Study of Epigenetic Mechanisms in a Model of Depression	F. Henn	MED/490
07-097	Polarized Electron SRF Gun	I. Ben-Zvi	CAD/911B
07-098	New Approach to H Production, Stages and use	W. Han	CFN
07-100	Increasing the Capability and Reliability of Small Diameter Direct Wind Multi-layer Coil Magnets	J. Escallier	SMD/902A