

**Brookhaven National Laboratory
FY 2008 LDRD PROJECTS**

<u>LDRD Project</u>	<u>Project Title</u>	<u>P.I.</u>	<u>Dept/Bldg.</u>
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
06-030	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
06-046	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
06-056	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
06-071	Development of a Cloud Condensation Nucleus Separator	J. Wang	ESD/815E
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 Roden 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
07-047	Characterization of Enzymatic O-acylation to Facilitate Biomass and Bioenergy Production	C.-J. Liu	BIO/463
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
07-101	High End Scientific Computing	J. Davenport	CSC/463B
08-001	How Does Color Flow in a Large Nucleus: Exploring the <i>Chromo</i> -Dynamics of QCD through Diffractive and Jet Measurements at eRHIC	R. Venugopalan	PHYS/510A
08-002	Strongly Correlated Systems: From Graphene to Quark-Gluon Plasma	D. Kharzeev/A. Tsvetik	PHYS/CMP/510
08-004	Getting to Know Your Constituents: Studies of Partonic Matter at the EIC	W. Vogelsang	PHYS/510A
08-005	Development of the Deuteron EDM Proposal	Y. Semertzidis	PHYS/510A
08-008	Development of Small Gap Magnets and Vacuum Chamber for eRHIC	V. Litvinenko	CAD/911B
08-022	Novel Methods for Microcrystal Structure Determination at NSLS and NSLS-II	A. M. Orville	BIO/463
08-025	Combined PET/MRI Multimodality Imaging Probe	D. Schyler	MED/490
08-028	Genomic DNA Methylation: The Epigenetic Response of <i>Arabidopsis Thaliana</i> Genome to Long-Term Elevated Atmospheric Temperature and CO ₂ in Global Warming	Q. Liu	MED/490
08-034	Fabry-Perot Interferometer & Hard X-ray Photoemission	E. Vescovo	NSLS/725D
08-037	Ultrafast Electron Diffraction for Transient Structure and Phase Transition Studies at the NSLS SDL	X. Wang	NSLS/725D

08-039	The Development of a Laser Based Photoemission Facility for Studies of Strongly Correlated Electron Systems	P. D. Johnson	CMPMSD/510B
08-042	Theory of Electronic Excited States in Heterogeneous Nanosystems	M. S. Hybertsen	CFN/480
08-043	Nanofabrication Methods Using Solution-Phase Nanomaterials	C. Black	CFN/480
08-051	Identification of Organic Aerosols and Their Effects on Radiative Forcing	Y.-N. Lee	ESD/815E
08-060	Computational Climate Science	A. Vogelmann	ESD/815E
08-062	A Novel Spintronic Room-Temperature High Purity Germanium X- and Gamma Ray Spectrometer	A. Bolotnikov/G. Camarda	NNS/197C
08-080	Tracer Development - Improving PET and MR Imaging	J. Fowler	MED/555A
08-081	New MR Technology for Studies of Human Biology	F. Henn	LIFE/490