

**Brookhaven National Laboratory
FY 2005 LDRD PROJECTS**

<u>LDRD Project</u>	<u>Project Title</u>	<u>P.I.</u>	<u>Dept/Bldg.</u>
03-004	High-Brightness, High-Power Electron Beams	I. Ben-Zvi	CAD/817
03-056	Structural Properties of Methane Hydrates	D. Mahajan	ES&T/815
03-064	Investigation of Neutron and Gamma Probes to Detect Explosives in Sealed Containers	M. Todosow	ES&T/475B
03-094	Structural Studies on the Integral Membrane Protein AlkB	J. Shanklin	BIO/463
03-099	The microPET Study of Gene Expression in Rodents	P. Thanos	MED/490
03-104	Hydrogen Atom Transfer from Carbon to Metal - Relevance of a Novel Reaction to Catalyzed Hydrocarbon Conversions	M. Bullock	CHEM/555A
03-105	Radioprotection in D. Radiodurans, a Radiation Resistant Bacterium	D. Cabelli	CHEM/555A
03-107	New Development of Norepinephrine Transporter Radioligands for PET Studies of Substance Abuse, Depression and ADHD	Y.-S. Ding	CHEM/555A
03-118	Condition: Green Chemistry Radiolytic Studies of Ionic Liquids in Service of Security and the Environment	J. Wishart	CHEM/555A
03-119	Exploring the Use of Powder Diffraction for Proteins	M. Allaire	NSLS/725D
03-121	Element-Resolved Dynamics of Nanoscale Ferromagnets	C.-C. Kao	NSLS/725D
03-122	Membrane Biophysics Using Model Membranes	R. Pindak	NSLS/725D
03-127	High Pressure in Strongly Correlated Materials - An Optical Investigation	C. Homes	CMP/510B
03-129	Polyoxometalate Giant Molecules: Novel Synthetic Methods, Characterizations and Potential Applications	Tianbo Liu	CMP/510B
03-138	Functional Bulk Mn-Based Nanocomposites	L. Lewis	MSD/480
03-151	Radio Wave Detection of Ultra High Energy Cosmic Rays	H. Takai	PHYS/510A
03-162	New Synthesis Techniques to Control Atomic Defects in Advanced Intermetallic Compounds	L. Cooley	MSD/480
04-011	Femtosecond Photoinitiated Nanoparticle Surface Chemistry	N. Camillone	CHEM/555
04-013	Chirped Pulse Amplification at the DUV-FEL	L.H. Yu	NSLS/725C
04-025	Overcoming Coherent Instabilities at Medium-Energy Storage Rings	J.-M. Wang	NSLS/725C
04-033	Layered Cobaltates with High Thermoelectric Power	Qiang Li	MSD/480
04-038	Complex Thin Films and Nanomaterial Properties	J. Misewich	MSD/480
04-041	Lattice QCD relevant for RHIC and AGS	P. Petreczky	PHYS/510A
04-043	Very Long Baseline Neutrino Oscillation Experiment	M. Diwan	PHYS/510E
04-046	Advanced ³ He Detectors for the Spallation Neutron Source	G. Smith	INST/535B
04-055	Genetic NanoTags	J. Hainfeld	BIO/463
04-060	The Use of Singular Point Genome Sequence Tags to Analyze Community Composition and	D. van der Lelie	BIO/463

	Metabolic Potential		
04-061	3-D Electronic Wave Functions from EM Images	J. Wall	CFN/463
04-062	Functional MRI Studies in Rats using Implanted Brain Electrodes	A. Gifford	MED/490
04-063	Optimizing Functional Neuroimaging Techniques to Study Brain Function in Health and Disease States	R. Goldstein	MED/490
04-066	Technological Development of a Fluorescence Probe for Optical Detection of Brain Functional Activation <i>in vivo</i>	C. Du	MED/490
04-069	Nuclear Control Room Unfiltered Air In-Leakage by Atmospheric Tracer Depletion (ATD)	R. Dietz	ESD/815E
04-073	Perfluorocarbon Tracer Sampling, Tagging and Monitoring Techniques for use at the Urban Atmospheric Observatory	J. Heiser	ESD/830
04-079	Development of an Aerosol Mobility Size Spectrometer and an Aerosol Hygroscopicity Spectrometer	J. Wang	ESD/815E
04-086	Exploration of Thermal Diffusion Processes in CdZnTe for Improved Nuclear Radiation Detectors	A. Bolotnikov	NNS/197D
04-088	An Integrated Approach of High Power Target concept Validation for Accelerator-Driven Systems	N. Simos	EST/475B
04-104	Hydrogen Storage Using Complex Metal Hydrides for Fuel Cell Vehicles	J. Wegrzyn	EST/815
05-003	Full Power Test of the Amplifier for the Optical Stochastic Cooling using JLAB FEL	V. Yakimenko	PHYS/820M
05-005	Study of Photon Coupling to an Electromagnetic Field Gradient	C. Scarlett	PHYS/510E
05-006	Heavy Ion Physics with the ATLAS Detector	H. Takai	PHYS/510A
05-017	Superconducting Lead Photoinjector	J. Smedley	INST/535B
05-020	Controlled Formation of Nanostructured RuO ₂ Catalysts	P. Sutter	CFN/555
05-021	Hydrogen Storage in Complex Metal Hydrides	T. Vogt	CFN/510A
05-028	Behavior of Water on Chemically Modified Semiconductor Surfaces: Toward Photochemical Hydrogen Production	E. Fujita	CHEM/555A
05-030	Assembling of Biological and Hybrid Complexes on Surfaces	O. Gang & P. Freimuth	CFN/510B/463
05-033	Ultra High Resolution Photoelectron Spectrometer	P. Johnson	CMP/510B
05-038	Metal-Metal Oxide Electrocatalysts for Oxygen Reduction	M. Vukmirovic	MSD/555
05-041	Multifunctional Nanomaterials for Biology	S. Wong	MSD/480
05-042	Polariton-Enhanced FRET for Device-Integration of Plasma Membranes from Rhodobacter Sphaeroides	P. Abbamonte	NLSL/725D
05-044	Intense THz Source & Application to Magnetization Dynamics	G. L. Carr	NLSL/725D
05-048	Nano-Imaging of Whole Cells with Hard X-Ray Microscopy	L. Miller	NLSL/725D
05-050	Study to Convert NLSL VUV Ring to Coherent IR Source	B. Podobedov	NLSL/725C

05-051	Superconducting Undulator Technology	G. Rakowsky	NLSL/725D
05-057	Characterization and Imaging of Amyloid Plaques Using Diffraction Enhanced Imaging	Z. Zhong	NLSL/725D
05-058	Development of Methodologies for Analyzing Transcription Factor Binding in Whole Genomes	C. Anderson	BIO/463
05-063	Application of Endophytic Bacteria to Improve the Phytoremediation of TCE and BTEX using Hybrid Poplar	D. van der Lelie	BIO/463
05-064	Design and Build Two Dimensional Protein-Lipid Thin Film: A First Step Toward Novel Biochips	Y. Wei	BIO/463
05-068	Positron Labeled Stem Cells for Non-Invasive PET Imaging Studies of In-Vivo Trafficking and Biodistribution	S. Srivastava	MED/801
05-069	Breaking the Millimeter Resolution Barrier in fMRI	D. Tomasi	MED/490
05-070	Novel Multi-Modality MRI and Transcranial Magnetic Stimulation to Study Brain Connectivity	E. de Castro Caparelli	MED/490
05-071	Ovarian Hormone Modulation of ICP: MRI Studies	A. Biegon	MED/490
05-072	Feasibility of CZT for Next-Generation PET Performance	P. Vaska	MED/490
05-074	Biology on Massively Parallel Computers	J.W. Davenport	CDIC/463B
05-078	Ionic Liquids in Biocatalysis and Environmental Persistence	A.J. Francis	ESD/490A
05-082	Single Particle Laser Ablation Time-of-Flight Mass Spectrometer (SPLAT-MS) Enhancements: Aerosol Optical Properties and Increased Particle Detectivity	G. Senum	ESD/815E
05-088	Transition Metals in Oil and Gas Exploration	A. Vairavamurthy	ES&T/815
05-092	An Innovative Infiltrated Kernel Nuclear Fuel (IKNF) for High-Efficiency Hydrogen Production with Nuclear Power Plants	J. Saccheri & B. Bowerman	ES&T/475B/197B
05-094	Development of Green Processes: Catalytic Hydrogenation in Water Utilizing In Situ Biologically-Produced Hydrogen	D. Mahajan	ES&T/815
05-098	Fast Neutron Imaging Detector	J. Lemley	NNS/197C
05-104	Giant Proximity Effect in High-Temperature Superconductors	I. Bozovic	MSD/480
05-105	Development of an Observation-based Photochemical-Aerosol Modeling System	D. Wright	ESD/815E
05-106	Exploring Root Physiology in Relation to Uptake of Groundwater Pollutants	R. Ferrieri/M. Thorpe	CHEM/901/555
05-108	Environmental Molecular Science	J. Fitts	ESD/830
05-109	Atmospheric Science	A. Vogelmann	ESD/490D
05-110	Computational Science	J. Davenport	CSC/463B
05-111	Structural Study of γ -Secretase by Cryo-EM	H. Li	BIO/463
05-112	Structural Analysis of Bacterial Pilus Biogenesis	H. Li	BIO/463
05-114	Study of High-Tc Nanostructures	I. Bozovic	MSD/480