

**Brookhaven National Laboratory  
FY 2003 LDRD PROJECTS**

<b>LDRD Proj.</b>	<b>Project Title</b>	<b>P.I.</b>	<b>Dept./Bldg.</b>
01-13	"Functional Spectral Signature" (FSS) Method for Signal to Noise-Enhancement of Brain Patterns in PET Images	Felder C.	MED/490
01-30	Development of CZT array detector Technology for Synchrotron Radiation Applications	Siddons D.P.	NSLS/725D
01-31	New Applications of Circular Polarized VUV-light (NANO IV)	Vescovo E.	NSLS/725D
01-35	Prototype approaches for Infrared Nanospectroscopy	Carr G.L.	NSLS/725D
01-36	Pressure-Induced Protein Folding Monitored by Small Angle X-Ray Scattering and Fourier Transform Infrared Microspectroscopy	Miller Lisa	NSLS/725D
01-38	Soft Condensed Matter Probed by Low-energy Resonant Scattering	Caliebe W.	NSLS/725D
01-39	Femto-Second Transmission Electron Microscope Based on Photocathode RF Gun	Wang X.J.	PHYS
01-51	Human DNA Damage Responses: DNA-PK and p53	Anderson C.W.	BIO/463
01-87	Charge Transfer on the Nano Scale: Theory (NANO III)	Newton M. D.	CHEM/555A
01-88	Charge Transport through Dye-Sensitized Nanocrystalline Semiconductor Films (NANO III)	Brunschwig B.	CHEM/555A
01-93	High Resolution Magneto-optical Study of Magnetic Nanostructures, Nanocomposite functional and Superconducting Materials (NANO IV)	Li Qiang	MSD/480
02-02	Crystallization and X-ray Analysis of Membrane Proteins	Fu D.	BIO/463
02-03	<i>In Vitro</i> Investigation of the DNA Double Strand Break Repair Mechanism by Non-Homologous End-Joining in the context of Chromatin	Lymar E.	BIO/463
02-08	Creating a MicroMRI Facility for Research and Development	Benveniste H.	MED/490
02-09	Targeting Tin-117m to Estrogen Receptors for Breast Cancer Therapy	Kolsky K.	MED/801
02-16	Biom mineralization of Actinides: A Mechanistic Study of the Microbial Genesis of Novel and Stable Compounds	Francis A.J.	ESD/490A
02-17	Using Mini CO <sub>2</sub> -DIAL for Verification and Long-Term Monitoring of Cover Systems	Heiser J.	ESD/830

**Brookhaven National Laboratory  
FY 2003 LDRD PROJECTS**

<b>LDRD Proj.</b>	<b>Project Title</b>	<b>P.I.</b>	<b>Dept./Bldg.</b>
02-22	Electrical Systems Reliability	Bari R.	ES&T/475B
02-24	Liquid Fuel Gasifier for Combustion and Fuel Cells	Butcher T.	ES&T/526
02-31	Study of a Power Source for Nano-Devices	Lin M.	ES&T/815
02-42	Ultrafast Nonlinear Spectroscopic Studies of Model Catalytic Surfaces	Camillone N.	CHEM/555
02-45	Combined Use of Radiotracers and Positron Emission Imaging in Understanding the Integrated Response of Plants to Environmental Stress	Ferrieri R.	CHEM/901
02-46	Arranging Nanoparticles into Arbitrary Patterns with Optical Trapping	Fockenberg C.	CHEM/555A
02-48	Advanced Multidimensional Techniques to Explore the Biochemical and Behavioral Consequences of VOC Exposure	Gerasimov M. R.	CHEM/555A
02-49	Project to Detect pp and 7Be Solar Neutrinos in Real Time: LENS, the Low-Energy Neutrino Spectrometer	Hahn R.	CHEM/555A
02-53	Combined Theoretical and Experimental Study of Crystal Lattice Defects in Complex Transition Metal Oxides	Davenport J.	MSD/515
02-55	Chemical Sensors: Immobilization of Organometallic Complexes into Sol-gel Matrices	Renner M.	MSD/555
02-56	Size Dependence of Catalytic Reactivity of Iron Oxide Nanocrystals	Wong S.	MSD/480
02-58	Femtosecond Synchronization for Ultra-Short Pulse DUV-FEL Radiation	Graves W.	NSLS/725D
02-62	Rapid Wavelength Tunability for the DUV-FEL	Sheehy B.	NSLS/725D
02-66	High-Gain Harmonic-Generation at the DUV/FEL	Yu L.H.	NSLS/725C
02-67	Biom mineralization: A Route to Advanced Materials	DiMasi E.	CMP/510B
02-70	Theory of Electronic Transport in Nanostructures and Low-Dimensional Systems	Tsvelik A.	CMP/510A
02-71	Pressure in Nanopores	Vogt T.	CMP/510B
02-84a	Genomic Selex to study Protein DNA/RNA Interactions in <i>Ralstonia metallidurans</i> CH34 Regulating Heavy Metal Homeostasis and Resistance	van der Lelie U.	BIO/463

**Brookhaven National Laboratory  
FY 2003 LDRD PROJECTS**

<b>LDRD Proj.</b>	<b>Project Title</b>	<b>P.I.</b>	<b>Dept./Bldg.</b>
02-84b	Lead Resistance in <i>Ralstonia metallidurans</i> CH34	van der Lelie U.	BIO/463
02-85	Design of a <i>Ralstonia mettallidurans</i> Two-Hybrid Protein System for Studying Signaling Pathways Regulating Heavy Metal Homeostatis and Resistance	Taghavi S.	BIO/463
02-86	Ultrafast X-Ray Science	Dierker S.	NSLS/725B
02-88	X-Ray Photon Correlation Spectroscopy Studies of Nanostructured Block Copolymers	Dierker S.	NSLS/725B
02-91	Fine-Grain Gas and Silicon Detectors for Future Experiments in Nuclear Physics at High Energies	Hallman T.	PHYS/510A
03-004	High-Brightness, High-Power Electron Beams	Ben-Zvi, I.	CAD/725C
03-006	Feasibility Study of Optical Stochastic Cooling with a CO <sub>2</sub> Laser	Yakimenko, V.	PHY/820M
03-013	Proposal for Niobium/Tin Superconducting Magnet	Willen, E.	SMD/902A
03-014	Technology Development for Linear Collider Final Focus Quadrupoles with Small-Aperture High-Gradient Superconducting Coils	Parker, B.	SMD/902A
03-025	Real-Time Detection and Multi-Dimensional Characterization of Single Air-Borne Microorganism	Zelenyuk, A.	ESD/815E
03-026	Developing a New, Unified Systems Theory on Size Distributions of Atmospheric Particles	Liu, Y.	ESD/815E
03-027	Measurement of HO <sub>2</sub> Radicals by ChemiLuminescence Analysis of Atmospheric Radicals (CLAAR)	Springston, S.	ESD/815E
03-030	Chemistry of the Rhizosphere	Fuhrmann, M.	ESD/830
03-039	Integrated Analysis of Carbon and Nitrogen Metabolism in Plants and Subsequent Analysis of Photosynthetic Acclimation to Growth in Elevated pCO <sub>2</sub>	Rogers, A.	ESD/490D
03-050	Evaluation of High-Energy Radiation Effects in Materials	Finfrock, C.	ES&T/703
03-056	Structural Properties of Methane Hydrates	Mahajan, D.	ES&T/815
03-061	Dynamics of Wind Turbine-Tower-Foundation Systems	Philippacopoulos, A.	ES&T/526
03-064	Investigation of Neutron and Gamma Probes to Detect Explosives in Sealed Containers	Todosow, M.	ES&T/475B
03-065	Ultrasound and Infrared Imaging to Detect Degradation of Electric Cable Insulation	Villaran, M.	ES&T/130
03-072	Application of Compton-Suppression Gamma Spectrometry to Problems in Anti-Terrorism	Lemly, J.	NNS/197C

**Brookhaven National Laboratory  
FY 2003 LDRD PROJECTS**

<b>LDRD Proj.</b>	<b>Project Title</b>	<b>P.I.</b>	<b>Dept./Bldg.</b>
03-077	Real-Time Consequence Assessment System for Atmospheric Terrorist Events in the Northeast Urban Corridor	Hansen, D.	NNS/355
03-081	Application of Thin Film-Like Dosimeters for Port Security and Anti-Terrorism	Kaplan, E.	NNS/197D
03-083	Novel Xenon Detector Concepts for Homeland Defense	Vanier, P.	NNS/197C
03-086	Defining New Pathways for Disarming Anthrax Toxin	Freimuth, P.	BIO/463
03-094	Structural Studies on the Integral Membrane Protein AlkB	Shanklin, J.	BIO/463
03-098	Roles of Dopamine Receptor Agonists in Brain Metastasis of Breast Cancer	Lin, X.	MED/490
03-099	The microPET Study of Gene Expression in Rodents	Thanos, P.	MED/490
03-100	Investigation of the "Early Response" in Functional MRI	Ernst, T.	MED/490
03-101	PET Imaging of Violent Behavior	Wang, G.-J.	MED/490
03-103	PET Study of Acetaldehyde Distribution and Metabolism to Better Understand Alcohol Related Diseases	Li, Zizhong	MED/490
03-104	Hydrogen Atom Transfer from Carbon to Metal - Relevance of a Novel Reaction to Catalyzed Hydrocarbon Conversions	Bullock, M.	CHEM/555A
03-105	Radioprotection in D. Radiodurans, a Radiation Resistant Bacterium	Cabelli, D.	CHEM/555A
03-107	New Development of Norepinephrine Transporter Radioligands for PET Studies of Substance Abuse, Depression and ADHD	Ding, Y.-S.	CHEM/555A
03-108	Experiments in the Short-Wavelength Regime Pertinent to the DUV-FEL Concept	DiMauro, L.	CHEM/555A
03-115	Imaging Tandem Mass Spectrometry for High-Throughput "Fingerprint" Detection of Complex Molecules in Mixtures	Suits, A.	CHEM/555A
03-118	Condition: Green Chemistry Radiolytic Studies of Ionic Liquids in Service of Security and the Environment	Wishart, J.	CHEM/555A
03-119	Exploring the Use of Powder Diffraction for Proteins	Allaire, M.	NSLS/725D
03-121	Element-Resolved Dynamics of Nanoscale Ferromagnets	Kao, C.-C.	NSLS/725D
03-122	Membrane Biophysics Using Single-Layered Lipid Membrane	Pindak, R.	NSLS/725D
03-127	High Pressure in Strongly Correlated Materials - An Optical Investigation	Homes, C.	CMP/510B
03-129	Polyoxometalate Giant Molecules: Novel Synthetic Methods, Characterizations and Potential Applications	Liu, Tianbo	CMP/510B

**Brookhaven National Laboratory  
FY 2003 LDRD PROJECTS**

<b><u>LDRD Proj.</u></b>	<b><u>Project Title</u></b>	<b><u>P.I.</u></b>	<b><u>Dept./Bldg.</u></b>
03-131	Continuous Spallation Neutron Source	Shapiro, S.	CMP/510A
03-135	Exploratory Sol-Gel Synthesis Routes for Perovskite Nanorods and Dots	Vogt, T.	CMP/510B
03-137	In Situ Soft X-Ray Absorption Spectroscopy Studies of Cathode Materials for Thin Film Lithium-Ion Batteries	Balasubramanian, M.	MSD/480
03-138	Functional Bulk Mn-Based Nanocomposites	Lewis, L.	MSD/480
03-144	Nanostructured Transition Metal Oxides	Wu, L.	MSD/480
03-151	Radio Wave Detection of Ultra High Energy Cosmic Rays	Takai, H.	PHY/510A