

FY11 Approved LDRD Projects

<u>LDRD Proj. No.</u>	<u>Project Title</u>	<u>P.I.</u>	<u>Dept./Bldg.</u>	<u>Directorate</u>
08-002	Strongly Correlated Systems: From Graphene to Quark-Gluon Plasma	Kharzeev, D. & Tsvelik, A.	PHYS/CMP	NPP/BES
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	Liu, Q.	MED/490 & BIO/463	ELS
09-001	Nanoscale Anode Materials for Lithium Batteries	Graetz, J.	ES&T/ERD	GARS
09-002	Bioconversion of Lignocellulose to Ethanol and Butanol Facilitated by Ionic Liquid Preprocessing	Francis, A. J./Wishart, J.F./Dunn, J.	ES/Chem./Biology	ELS
09-003	Organic Photovoltaics: Nanostructure, Solvent Annealing and Performance	Ocko, B.	PM/510B	BES
09-004	Surface Chemistry and Electrochemistry of Ethanol	Hrbek, J.	Chem./555	BES
09-005	Synergistic Interactions Between Poplar and Endophytic Bacteria to Improve Plant Establishment and Feedstock Production on Marginal Soils	Van der Lelie, D.	BIO/463	ELS
10-001	<i>Petascale</i> Data Mining for BNL Data Intensive Sciences	Yu, Dantong	Phys/510M	NPP
10-006	Solar Energy Source Evaluation for Smart Grid Development	Yue, Meng	ES&T/130	GARS
10-007	High Throughput Quantitative Biochemical Phenotyping	Rogers, Alistair	ES/EE	ELS
10-008	Characterization of Materials in Extreme Environments for Advanced Energy Systems Using the National Synchrotron Light Source	Ecker, L/Ehm, L.	ES&T/NSLS	GARS
10-010	Development of an Ultrafast Electron Diffraction Facility for Condensed Matter Physics Challenges	Hill, J.	CMP/510B	BES
10-012	Design of Pt-free Electrocatalysts for Fuel Cell Oxygen Reduction Reactions	Khalifah, P.	Chemistry/555	BES
10-014	Charge Generation and Transport in Films of Conjugated Polymers for Organic Photovoltaics BNL Part of a	Miller, J./Cook, A.	Chemistry/555	BES
10-015	Photoelectrochemical Fuel Generation from Water and Carbon Dioxide	Muckerman, J.	Chemistry/555	BES
10-016	Structural Basis of Light Perception by Phytochrome	Li, Huilin	BIO/463	ELS
10-017	New Model Organisms for Analysis of Plant Metabolism	Schwender, J./Shanklin, J.	BIO/463	ELS
10-023	Development of Microprobe, Multichannel Optical Multimodality for Biological Tissue Imaging	Du, C	Medical	ELS
10-025	Development of Large Liquid Argon Time Projection Chambers (LArTPC) for Future Neutrino Experiments	Lanni, F.	Phys/510	NPP
10-034	Spin Waves in Artificial Magnonic Crystals: Fabrication, Imaging and Scattering	Arena, D.	NSLS	NSLS

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10-038	Atomic Structure and Bonding of Cellulose	Davenport, J.	CSC/463B	ELS
10-039	EIC Polarized Electron Gun	Ben-Zvi, I.	C-AD/817	NPP
10-040	Development of a Laser System for Driving the Photocathode of the Polarized Electron Source for the EIC	Rao, T.	IO/535	NPP
10-041	Simulation, Design, and Prototyping of an FEL, for Proof-of-Principle of Coherent Electron Cooling	Litvinenko, V.	C-AD/817	NPP
10-042	Realization of an e+A Physics Event Generator for the EIC	Ullrich, T.	Phys./510	NPP
10-043	Exploring Signatures of Saturation and Universality in e+A Collisions at eRHIC	Venugopalan, R.	Phys./510	NPP
10-044	Electroweak Physics with an Electron Ion Collider	Marciano, W.	Phys./510	NPP
10-045	LSST - Astrophysics and Cosmology Initiative	Sheldon, E.	Phys./510	NPP
10-052	Enzymatic Control of Plant Cell Properties that Impact Conversion to Biofuels	Freimuth, P.	BIO/463	ELS
11-001	Cloud and Precipitation 4D Radar Science	Giangrande, S.	ESD/ASD	ELS
11-002	A Novel Approach to Parameterized Sub-Grid Processes in Climate Models	Huang, D.	ESD/ASD	ELS
11-007	Deciphering the Molecular Mechanisms of Lignin Precursor Transportation	Liu, C.-J.	Biology	ELS
11-008	Touchless Micro-Crystallography	Soares, A. S.	Biology	ELS
11-012	Multiscale Complexity of Energy and Material Use: Integrated Assessment of Technology and Policy Alternatives	Choi, J.-K.	ES&T	GARS
11-016	Indium Iodide (InI) - A Potential Next-Generation Room-Temperature Radiation Detector	Hossain, A.	NN	GARS
11-017	Visualization Support Infrastructure for Global Climate Modeling with a Focus on the BNL FASTER Project	McGuigan, M.	CSC/463B	ELS
11-020	Single Crystal Growth of Novel Energy Materials by High Pressure Method	Gu, G.	CMP&MS	BES
11-023	Complex Networks Approach to Power Grid Design and Stability	Maslov, S.	CMP&MS	BES
11-025	Protein Microcrystal Dynamics by Coherent X-Ray Scattering	Fluerasu, A.	NSLS-II	LS
11-027	High-Resolution Biological Imaging by X-Ray Diffraction Microscopy	Lima, E.	NSLS-II	LS
11-030	Sub-10 nm Resolution Soft X-Ray Microscopy of Organic Nano-Materials by Novel Diffraction Methods	Shapiro, D.	NSLS-II	LS
11-032	2D Membrane Solution Scattering for Probing the Structures of Membrane Proteins	Yang, L.	NSLS	LS

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11-033	Exploring the Role of Glue in Hadron Structure by an Electron Ion Collider	Qiu, J.	Physics	NPP
11-036	CMOS-Pixel Vertex Detector for EIC	Aschenauer, E.-C.	Physics	NPP
11-050	Overcoming Electromagnetic Interference in Simultaneous PET and MRI for Biological and Clinical Imaging	Vaska, P.	Medical	ELS
11-051	Estrogen Biosynthesis as a Novel Imaging Target with Multiple Applications	Biegon, A.	Medical	ELS
11-052	Magnetic Nanoparticles as Tracers in Biological Systems	Schlyer, D.	Medical	ELS
11-053	High Throughput Screening in Biological Systems Using Radiometric Approaches	Ferrieri, R. A.	Medical	ELS
11-040	Study of FEL Options for eRHIC	Litvinenko, V.	C-AD	NPP
11-054	Improving Safety with a Brain-Computer Interface	Goldstein, R.	Medical	ELS
11-055	Astrophysics and Cosmology Initiative	Slosar, A.	Physics	NPP