OFFICE OF ENERGY RESEARCH

	FY 1995
Office of Energy Research - Grand Total	$358,555,719
Office of Basic Energy Sciences	$295,610,365
Division of Materials Sciences	$275,708,000
Division of Chemical Sciences	$ 5,800,000
Division of Engineering and Geosciences	$ 6,559,365
Engineering Sciences Research	$ 4,114,376
Materials Properties, Behavior, Characterization or Testing	$ 4,114,376
Bounds on Dynamic Plastic Deformation	194,411
Continuous Damage Mechanics - Critical States	50,945
An Investigation of the Effects of History Dependent Damage in Time Dependent Fracture Mechanics	23,000
Micromechanical Viscoplastic Stress-Strain Model with Grain Boundary Sliding	0
Micromechanical Viscoplastic Stress-Strain Model with Grain Boundary Sliding	0
An Analytical-Numerical Alternating Method for 3-D Inelastic Fracture and Integrity Analysis of Pressure-Vessels and Piping at Elevated Temperatures	61,325
In-Flight Measurement of the Temperature of Small, High Velocity Particles	436,000
Intelligent Control of Thermal Processes	224,000
Elastic-Plastic Fracture Analysis Emphasis on Surface Flaws	687,000
Modeling of Thermal Plasma Processes	210,000
Nondestructive Evaluation of Superconductors	180,000
Stress Induced Phase Transformations	67,419
Pulse Propagation in Inhomogeneous Optical Waveguides	0
Multivariable Control of the Gas-Metal/Arc Welding Process	152,609
Metal Transfer in Gas-Metal Arc Welding	123,688
Modeling and Analysis of Surface Cracks	191,628
Thermal Plasma Processing of Materials	0
Development of Measurement Capabilities for the Thermophysical Properties of Energy-Related Fluids	416,000
Low Resistivity Ohmic Contacts Between Semiconductors and High-T_c Superconductors	86,000
Thin Film Characterization and Flaw Detection	91,537
Experiments on the Gas Dynamics of the High Velocity Oxy-Fuel (HVOF) Thermal Spray Process	94,981
Transport Properties of Disordered Porous Media from the Microstructure	101,185
Effect of Forced and Natural Convection on Solidification of Binary Mixtures	103,571
Inelastic Deformation and Damage at High Temperature	0
Flux Flow, Pinning and Resistive Behavior in Superconducting Networks	70,519
Stability and Stress Analysis of Surface Morphology of Elastic and Piezoelectric Materials	135,000
Optical Techniques for Superconductor Characterization	145,000
Degenerate Four-Wave Mixing as a Diagnostic of Plasma Chemistry	0

OFFICE OF ENERGY RESEARCH (Continued)

	FY 1995
Office of Basic Energy Sciences (continued)	
Division of Materials Sciences (continued)	
Division of Engineering and Geosciences (continued)	
Engineering Sciences Research (continued)	
Materials Properties, Behavior, Characterization or Testing (continued)	
Effective Elastic Properties and Constitutive Equations for Brittle Solids Under Compression	0
3-D Experimental Fracture Analysis at High Temperature	69,975
Simulation and Analysis of Dynamic Failure in Ductile Materials	98,919
Dynamic Failure Characterization of Ductile Steels	99,664
Geosciences Research	$ 2,444,989
Materials Preparation, Synthesis, Deposition, Growth or Forming	$ 335,679
An Investigation of Organic Anion-Mineral Surface Interactions During Diagenesis	199,500
Transition Metal Catalysis in the Generation of Petroleum and Natural Gas	136,179
Materials Structure and Composition	$ 639,587
Reaction Mechanisms of Clay Minerals and Organic Diagenesis: An HRTEM/AEM Study	125,696
Infrared Spectroscopy and Hydrogen Isotope Geochemistry of Hydrous Silicate Glasses	123,000
Biomineralization: Systematics of Organic-Directed Controls on Carbonate Growth Morphologies and Kinetics Determined by In Situ Atomic Force Microscopy	90,891
Reactions and Transport of Toxic Metals in Rock-Forming Silicates at 25°C	200,000
The Crystal Chemistry and Structural Analysis of Uranium Oxide Hydrates	100,000
Materials Properties, Behavior, Characterization or Testing	$ 1,469,723
Cation Diffusion Rates in Selected Silicate Minerals	95,000
Shear Strain Localization and Fracture Evolution in Rocks	85,404
Oxygen and Cation Diffusion in Oxide Materials	171,000
Dissolution Rates and Surface Chemistry of Feldspar Glass and Crystal	114,700
Thermodynamics of Minerals Stable Near the Earth's Surface	150,000
Three-Dimensional Imaging of Drill Core Samples Using Synchrotron-Computed Microtomography	177,200
Transport Phenomena in Fluid-bearing Rocks	139,680
Structure and Reactivity of Ferric Oxide and Oxyhydroxide Surfaces: Quantum Chemistry and Molecular Dynamics	142,500
Micromechanics of Failure in Brittle Geomaterials	184,239
Cation Chemisorption at Oxide Surfaces and Oxide-Water Interfaces: X-Ray Spectroscopic Studies and Modeling	210,000

OFFICE OF ENERGY RESEARCH (Continued)

	FY 1995
Office of Basic Energy Sciences (continued)	
Division of Advanced Energy Projects	$ 7,543,000
Materials Preparation, Synthesis, Deposition, Growth or Forming	$ 3,574,000
Combustion Synthesis and Engineering of Nanoparticles for Electronic, Structural and Superconductor Applications	196,000
Creation and Destruction of C_{60} and Other Fullerene Solids	302,000
Synthesis and Properties of High Strength Nanolayered Composites	330,000
Optimally Controlled Interior Manipulation of Solids	299,000
Photorefractive Liquid Crystals: New Materials for Energy-Efficient Imaging Technology	320,000
Rapid Melt and Resolidification of Surface Layers Using Intense, Pulsed Ion Beams	300,000
'Off Diagonal' Thermoelectricity for Cooling and Power Generation	170,000
Evaporation Through Tungsten to Achieve High-Rate Vapor Phase Processing of Intermetallics	291,000
Ultrasonic and Dielectric Noninvasive Diagnostics for Sintering of Ceramic Composites	342,000
Compact MeV Ion Implantation	319,000
Thermoelectric Quantum Wells	350,000
Porous Carbons: Controlling Structure, Composition and Performance	355,000
Materials Properties, Behavior, Characterization or Testing	$1,644,000
Feasibility of a Novel Approach for Fast, Economical Determination of Radiation Damage in Nuclear Reactor Cores	149,000
Hot Carrier Solar Cells	330,000
Atomic and Nanoscale Engineering of Thermophotovoltaic Semi-conductors Using Scanning Probe Microscopy Techniques	552,000
Fabrication and Characterization of Micron Scale Ferromagnetic Features	133,000
Photochemical Solar Cells	150,000
Semiconductor Broadband Light Emitters	330,000
Device or Component Fabrication, Behavior or Testing	$ 2,325,000
Energy Related Applications of Selective Line Emitters	291,000
Photo-Induced Electron Transfer From a Conducting Polymer to Buckminsterfullerene: A Molecular Approach to High Efficiency Photovoltaic Cells	446,000
Superconducting Bitter Magnets	300,000
Blue-Emitting Devices Based on Gallium Nitride	340,000
Solid State Multi-Layered Batteries	296,000
PV-Powered, Electrochromic Windows	330,000
A Novel Tandem Homojunction Solar Cell: An Advanced Technology for High Efficiency Photovoltaics	322,000

OFFICE OF ENERGY RESEARCH (Continued)

	FY 1995
Office of Basic Energy Sciences (continued)	
Office of Fusion Energy	$22,870,000
Materials Properties, Behavior, Characterization or Testing	$22,870,000
Structural Materials Development	1,552,000
Repair Welding of Fusion Reactor Components	100,000
Insulating Ceramics for Fusion	435,000
Modeling Irradiation Effects in Solids	100,000
Fusion Systems Materials	3,815,000
Structural Materials for Fusion Systems	1,613,000
Development of Radiation-Hardened Ceramic Composites for Fusion Applications	60,000
Radiation Effects and Micromechanics of SiC/SiC Composites	115,000
Damage Analysis and Fundamental Studies for Fusion Reactor Materials Development	225,000
Development of Lithium-Bearing Ceramic Materials for Tritium Breeding in Fusion Reactors	200,000
Post-Irradiation Examination of Lithium-Bearing Ceramic Materials for Tritium Breeding in Fusion Reactors	400,000
ITER Materials Development for Plasma Facing Components	5,500,000
ITER Structural Materials Development	250,000
ITER Ceramic Materials	335,000
Radiation Hardened Fiber Optics for ITER Fusion Diagnostic Systems	75,000
ITER Materials Evaluation	1,505,000
ITER Structural Materials Evaluation	490,000
Development of Nb_3Sn Superconducting Wire for the ITER Magnet Program	5,000,000
Structural Materials Development for the Conduit of ITER Cable-in-Conduit-Conductors	1,100,000
Small Business Innovation Research Program	$39,175,749
Materials Preparation, Synthesis, Deposition, Growth or Forming	$15,756,575
Phase I Projects	$ 3,323,903
Low Cost, Contamination-Tolerant Electrocatalysts for Low-Temperature Fuel Cells	75,000
Laser Consolidation of Silicon Carbide/Titanium Metal Composite Turbine Rings	75,000
Solid Free-Body Formed Alumina-Tungsten Electrode Insulators for Heavy Ion Fusion Accelerators	75,000
High Current Density High Temperature Superconductor Composite Conductors	75,000
Superconducting Wires for Alternating Current Magnet Applications	75,000
A Low Cost, High Temperature Superconductor Wire Manufacturing Technology	75,000
A Low Cost Receiver Plate Manfacturing Process for High Concentration Photovoltaic Systems	60,000
Gallium Phosphide Ultraviolet Diode Arrays	75,000
An Intumescent Mat Material for Joining of Ceramics to Metals at High Temperatures	75,000
A New Alloy for Refiner Plates in the Pulp and Paper Industry	75,000
Development of Modulator Quality Rubidium Titanyl Arsenate Crystals for Remote Sensing Laser Systems	74,953
Slicing of Silicon Ingots with Reduced Kerf	75,000

OFFICE OF ENERGY RESEARCH (Continued)

	FY 1995
Small Business Innovation Research Program (continued)	
Phase I Projects (continued)	
Materials Properties, Behavior, Characterization or Testing (continued)	
A Novel Method to Recycle Thin Film Semiconductor Materials	75,000
Development of Novel Iron-Chromium-Silicon Alloys for Use in Kraft Recovery Boilers	67,068
High Capacity Carbon Anodes for Lithium Ion Batteries	74,500
Refractory Coatings for Improved Papermaking	75,000
An Improved Material and Low-Cost Fabrication Options for Candle Filters	74,960
An Integrated Catalyst/Collector Structure for Regenerative Proton-Exchange Membrane Fuel Cells	75,000
Pseudo-Porous Zirconium Carbide Fiber Coating for Environmentally Durable Silicon Carbide/ Silicon Carbide Composites	68,955
A Resistive Fault Current Limiter Based on Highly Directional Superconductor Thick Film Conductors	74,953
A Low Cost, Windable Yttrium-Barium-Copper-Oxide Conductor by Continuous Ion Beam Assisted Deposition/Metal Organic Chemical Vapor Deposition on a Metallic Substrate Tape	74,921
In-Situ Removal and Recycling of Copper Indium Selenide from Thin-Film Solar Cells	75,000
Conformal Source Ion Implantation	74,796
Synthesis and Application of a Novel Electrode Material for Use in Proton-Exchange-Membrane Fuel Cells Capable of Using Simple Organic Fuels and Fuel Reformate	75,000
A Novel Tritium Collection Technology Using Fullerence Tritides	75,000
A Steam-Resistant Hydrogen Selective Ceramic Membrane for Fuel Cell Applications	74,684
Low-Cost Durable Tooling for High Production Rate Structural Reaction Injection Molding/Resin Transfer Molding Processing	75,000
Silicon Hexaboride Reinforced Aluminum Ingot Material Development for the Transportation Industry	75,000
An Advanced Scintillator for Medical Imaging	74,765
Nanostructured Interstitial Alloys as Catalysts for Direct Energy Applications	75,000
Nanostructured Thermal Barrier Coatings for Natural Gas-Fired Advanced Turbines	75,000
Aggressive, Abrasion-Resistant Cutters for Hard Rock Drill Bits	74,907
An Integrated Catalyst/Substrate for Catalytic Combustion	75,000
Cesium Iodide Bromide and Cesium Iodide Chloride Scintillators for High-Rate Applications	74,564
Environmentally Responsible Recycling of Thin-Film Cadmium Telluride Modules	75,000
Low-Cost, Large-Area, High-Resistivity Substrates for Gas Microstrip Detectors	74,800
Bonding of Ceramic Composites for Structural Applications in Fusion Energy Systems	74,517
An Energy Efficient Design for a Surface Treatment Process which Improves Wear Properties of Materials	55,597
Fabrication of a Flexible Reacted Niobium Tin Cable for Applications in React and Wind Magnets	74,979
Low Temperature Fabrication of Copper Swirl Tubes for the International Thermonuclear Experimental Reactor	75,000
Fabrication of Copper-Backed Dense Tungsten Plasma Facing Component Armor	75,000
A Novel Fabrication Process to Enable Joining of Ceramics and Intermetallics	75,000
An Economic Sorbent for the Removal of Mercury, Chlorine, and Hydrogen Chloride from Coal Combustion Flue Gases	75,000
A Discontinuous Fiber Composite Interlayer for Increased Brazed Joint Reliability	75,000
Controlled Shear Strength Oxidation-Resistant Interfacial Coatings	74,984

OFFICE OF ENERGY RESEARCH (Continued)

	FY 1995
Small Business Innovation Research Program (continued)	
Materials Preparation, Synthesis, Deposition, Growth or Forming (continued)	
Phase II Projects (First Year)	$4,039,290
A Ceramic Material and Process for Use in Monolithic Ceramic Cross-Flow Filters	617,274
Jet Vapor Deposition of Multilayer and Nanocluster Thick Film Targets for Radioactive Nuclear Beams and Medical Applications	750,000
Design and Applications of Close-Spaced Thermionic Converters with Novel Isothermal Electrodes	750,000
A Multilayer Silicon Carbide Fiber Coating for Toughened, Neutron Radiation-Resistant Silicon Carbide/Silicon Carbide Composites	422,016
Economical and Reliable Niobium-Tin Conductors via Innovations in Stabilizers	750,000
Carbon-Carbon to Copper Joining for Fusion Reactor Applications	750,000
Phase II Projects (Second Year)	$8,393,382
Multi Layer, Quantum Well Layer Film Thermoelectrics	595,070
Production of Carbon Materials from Biomass	599,988
Oxide Dispersion Strengthened Silver for Use in High Temperature Superconductor Composite Wires	600,000
Low Temperature Deposition of Titanium Nitride	599,677
Coated Micrograin Carbides for Wear Resistance	599,577
Composite Plasma-Polymer Membranes	599,916
Improved Coated-Metal Hydrogen Extraction Membranes	599,314
Methods of Improving Internal-Tin Niobium-Tin for Fusion Applications	600,000
Advanced Nondestructive Evaluation for Quality Assurance of Divertor Plate Armor Tiles in Plasma Fusion Reactors	600,000
Dense, High Conductivity, Copper/Aluminum/Beryllium Functionally Gradient Plasma Facing Components	599,995
Flexible Electrochromic Window Materials Based on Poly(Diphenyl Amine) and Related Conducting Polymers	599,893
Advanced Window Materials Based on Conducting Polymer/Sol-Gel Composites	600,000
An Innovative Approach for the Formation of Silicon Carbide/Silicon Carbide Composites	599,952
Doping of Chemically Vapor Infiltrated Silicon Carbide to Enhance Thermal Conductivity	600,000
Materials Properties, Behavior, Characterization or Testing	$5,970,599
Phase I Projects	$1,195,953
Low Cost, Novel Precursors to Beta Alumina Solid Electrolyte	75,000
A Nanolayer Coating for Dry Machining	74,761
Development of a Process Management Technology for the Manufacture of High Temperature Superconductors to Improve Conductor Quality	75,000
An In-Process Quality Monitoring System for High Temperature Superconducting Wire Manufacturing	75,000
Low Cost, High Conductivity Plasma Facing Components	74,934
Structure-Property Relationships of Internal-Tin Niobium Tin	75,000
Nondestructive Characterization of Radiation Embrittlement in Fusion Structural Materials Using Laser Ultrasound	75,000

OFFICE OF ENERGY RESEARCH (Continued)

	FY 1995
Small Business Innovation Research Program (continued)	
Materials Preparation, Synthesis, Deposition, Growth or Forming (continued)	
Silicides for Space Power and Waste Heat Applications	75,000
Rotating, In-Plane Magnetization and Magneto-Optic Imaging of Cracks under Coatings on Ferromagnetic Metals	75,000
A Modular Inspection System for Complete In-Service Examination of a Nuclear Reactor Pressure Vessel, Including the Beltline Region	74,948
Development of Laser Materials and Rugged Coatings as Components for Tunable Ultraviolet Laser Systems	71,476
A Modified Natural Clay Sorbent for Control of Mercury from Coal Fired Combustors	74,912
Improved Solid Oxide Fuel Cell Seals	74,928
A Cost Efficient Method for Producing Ceramic Composites for Coal-Fired Furnace Applications	75,000
Application of Raman Spectroscopy to Identification and Sorting of Post-Consumer Plastics for Recycling	74,994
A Sensor for Automated Plastics Sorting	75,000
Phase II Projects (First Year)	$4,174,974
An Apparatus for Structural Analysis of High Temperature Materials Using Synchrotron Radiation	750,000
A Novel High Strength Ceria-Zirconia Toughened Alumina Ceramic with Superior High Temperature Corrosion and Erosion Resistance	425,165
Improvement in the Characteristics of Ternary Niobium Titanium Tantalum Alloys	750,000
X-Ray Absorption Spectroscopy for Trace Analysis of Chemical Phase and Composition	749,809
High-Temperature Thermally-Stable Multi-Layer Quantum Well Films	750,000
A Long Life Zinc-Oxide-Titanium-Oxide Sorbent	750,000
Phase II Projects (Second Year)	$ 599,672
A Testing Process to Define Electrode Current Wear Mechanisms and Develop Improved Electrodes	599,672
Device or Component Fabrication, Behavior or Testing	$17,448,575
Phase I Projects	$2,618,188
A Highly Efficient and Low Emission Catalytic Radiant Burner	75,000
Light Emitting Devices Based on Germanium Quantum Crystals in a Direct Bandgap Matrix (Aluminum Nitride)	74,995
A Two Dimensional Semiconductor Imaging Array for Scattered Cold Neutrons	75,000
A Thermal Neutron Detector Based upon a Lanthanum Boron Germanate Scintillator	74,947
Advanced Silicon Carbide and Beryllium/Aluminum Alloy Integrally Cooled X-ray Synchrotron Mirrors	74,992
A New Type of Acoustical Sensor for Chemical Measurements	75,000

OFFICE OF ENERGY RESEARCH (Continued)

	FY 1995
Small Business Innovation Research Program (continued)	
Device or Component Fabrication, Behavior or Testing (continued)	
Phase I Projects (continued)	
Chemically Resistant Gas Separation Perfluoromembranes	75,000
Advanced Chemiresistor Devices as Micron Size Sensors for the Rapid, On-Line Measurement of Chemical Vapors	73,005
Interactive Particle Detector Teaching Aids Based on Plastic Scintillators	75,000
A Thermally Stable Iron Core Permanent Magnet Dipole Utilizing a Flux Shunt	74,972
Enhanced Flux Pinning at High Fields in Niobium-Titanium-Tantalum by Magnetic Artificial Pinning Centers	75,000
Development of Artificial Pinning Center Niobium-Titanium Superconductors with Very High Residual Resistivity Ratio Aluminum Stabilizers	75,000
A High Resolution Multi-hit Time to Digital Converter Integrated Circuit	71,402
A Segmented Deep Depletion Depth Silicon Detector and Application Specific Integrated Circuits Signal Conditioning Systems for Physics Research	75,000
Microporous Alumina Microchannel Plates	74,987
Manufacturing Technologies, Improved Performance, and Cost Reduction of Superconducting Radiofrequency Resonant Niobium Cavities	74,994
A High Brightness Cold Cathode Electron Beam Source	74,994
A High Conductance Thermal Interface	75,000
A Helium-Cooled Faraday Shield Using Porous Meatl Cooling	74,929
Low Cost Fabrication of Large Silicon Carbide/Silicon Carbide Composite Structures	74,966
Accurate Broadband Detectors for Plasma Diagnostics	74,955
Bandgap-Engineered Thermophotovoltaic Devices for High Efficiency Radioisotope Power	74,918
Ion-Selective Ceramic Membranes for Separation of Radioactive Wastes	74,981
Removal and Concentration of Heavy Metals and Radionuclides from Polluted Groundwater	75,000
Rugged, Tunable Infrared Laser Sources	75,000
A Mid-Infrared Laser for Remote Sensing of Chemicals	74,994
A Membrane-Based Process for the Removal of Nitrogen from Natural Gas	74,912
Electrochemical Activation of Natural Gas Constituents to Alcohols Using Bimetallic Anode Electrocatalysts	74,995
An Innovative Membrane and Process for Removal and Recovery of Natural Gas Liquids	75,000
A Tubular Intermediate Temperature Natural Gas Fuel Cell Incorporating a Perovskite Solid Electrolyte	74,995
A Lower Cost Molten Carbonate Matrix	74,858
Fabrication of Multi-layer Molten Carbonate Fuel Cell Composites	74,470
Low Cost Molten Carbonate Fuel Cell Anodes	74,982
Abrasive-Waterjet Machining Techniques for Ceramic-Material Coal-Based Power System Components	74,945
Advanced Hot Gas Filter Development	75,000

OFFICE OF ENERGY RESEARCH (Continued)

	FY 1995
Small Business Innovation Research Program (continued)	
Device or Component Fabrication, Behavior or Testing (continued)	
Phase II Projects (First Year)	$5,970,753
Economical Photochromic Films Based on Metal Oxides	736,720
A Continuous Cryopump/Pellet-Fabrication Apparatus for Fusion	748,826
Development of Expansive Cements Using Dry Flue Gas Desulfurization (FGD) Solid Wastes	748,476
Highly Selective Membranes for the Separation of Organic Vapors Using Super-Glassy Polymers	750,000
A Long Life Perovskite Oxygen Electrode for Calcium and Lithium Oxide Processing in Nuclear Fuel Cycles	749,994
Fullerene-Based Catalysts for Heavy Oil Upgrading	750,000
A Low Emission Alkali Metal Thermal to Electric Converter Automotive Power System	749,857
An Acoustic Plate Mode Sensor for Aqueous Mercury	736,880
Phase II Projects (Second Year)	$8,859,634
Glass-Ceramic Construction Tile from Coal-Fired Boiler Flyash	599,861
A High Repetition-Rate, High Power, All-Solid-State Pulsed Driver for Electrodes Inductive Thrusters	599,937
Demonstration of an Integrated Carbon Dioxide/Thermal Management System for Carbonate Fuel Cells	599,968
Porous Aluminum Nitride Part Fabrication to Support Advanced Battery Development	599,703
Capacitive Energy Storage Using High Surface Area Transition Metal Compounds	600,000
Advanced Ceramic Fibers for a Carbonate Fuel Cell Matrix	599,950
An In-Situ Particle Sensor for Metal Forming Processes	595,070
Development of a High Spatial Resolution Neutron Detector	472,688
A High Resolution Scintillator-Based Neutron Detector	600,000
On-Chip Infrared-Spectral Sensors By Superconducting Detector Arrays	592,568
Radiation Resistant Radio Frequency Feedthrough Insulators for Fusion Applications	600,000
Helium-Cooled Divertors with Low- Activation Materials and Simple Fabrication Techniques	599,918
Niobium-Tin Superconducting Wire with Built-in Niobium Surface Coating to Limit Inter-Strand Eddy Currents in Cables	599,978
Ceramic Filters for Ultrafine Particulate Separation in Combustion Gas Environments	600,000
A Carbonate Fuel Cell Monolith for Low-Cost and High Power Density Operation	599,993
Small Business Technology Transfer Program	$899,605
Materials Preparation, Synthesis, Deposition, Growth or Forming	$599,697
Phase I Projects	$599,697
Laser Processing of Thermal Sprayed Beryllium Plasma Facing Components	99,975
Amorphous Silicon/Crystalline Silicon Heterojunctions for Nuclear Radiation Detector Applications	99,786
An Investigation to Determine the Commercial Feasibility of Vanadium-Hafnium-Zirconium Laves Phase C-15 Superconductor	100,000

OFFICE OF ENERGY RESEARCH (Continued)

	FY 1995
Small Business Technology Transfer Program (continued)	
Materials Preparation, Synthesis, Deposition, Growth or Forming (continued)	
Phase I Projects (continued)	
Production of Jelly-Roll Process Niobium-Aluminum Superconducting Wire Using Low Oxygen Niobium Foils and Special Softening Techniques During Deformation	99,936
Catalysts for Heterogeneous Alkene Hydroformylation	100,000
Low Loss Sapphire Windows for High Power Microwave Transmission	100,000
Device or Component Fabrication, Behavior or Testing	$299,908
Phase I Projects	$299,908
An Advanced X-ray Detector and Detector Array	99,998
Environmentally Benign Manufacturing of Compact Disk Stampers	100,000
Improved Strained-Layer Photocathodes for Spin-Polarized Electrons	99,910