

List of Research Field Keywords

Department of Socio-Environmental Energy Science

Group	Keywords of Research Fields
Energy Social Engineering	Social Engineering, Recycle, Eco-Materials, Eco-Education, Effective Use of Energy and Resource
Energy Economics	Energy Study, Energy Economics, Systems Design, Microscopic and Macroscopic Viewpoints, Sustainability
Energy Ecosystems	Biomass Energy, Supercritical Fluid, Pyrolysis, Bioethanol, Biodiesel
Energy and Information	Human Interface, Human-Machine System, Augmented Reality, Environmental Education, Intellectual Productivity
Energy and Environment	Energy and Environment, Atmospheric Environment, Environmental Impact Assessment, Life Cycle Assessment
Energy Policy	Energy Policy, Nuclear Energy, Energy Best-Mix, Energy Security
Societal Energy Education	Social Energy Education, Disaster Science, Hazard Evaluation, Earthquake Disaster Prevention Strategy
Energy and Communication	Communication, Group Dynamics, Social Psychology, Organizations

Department of Fundamental Energy Science

(note: Group K-2 is not applicable this year.)

Group	Keywords of Research Fields
Energy Chemistry	Energy chemistry, Electrochemistry, Molten salt, Ionic liquid, Fuel cell, Secondary battery, Hydrogen energy
Quantum Energy Processes	Solid state physics, Optical properties of solids, Amorphous semiconductors, Micro-characterization, Compound Materials
Functional and Solid State Chemistry	Inorganic Material Chemistry, Crystal Chemistry, Electrochemistry, Solid State Chemistry, Electrochemical Materials, Bio-environment adjusted material, Functional Material Chemistry
Plasma and Fusion Science	Nuclear Fusion and plasma theory, nonlinear and non-equilibrium plasma physics; Hierarchical simulation; Laser-matter interaction
Electromagnetic Energy	Fusion energy, Data analyses of plasma experiments, Measurements and diagnostics, Theory and numerical simulation
Plasma Physics	Microwave spherical torus experiment, Plasma wave physics, Equilibrium, Stability and transport, Plasma diagnostics
Fusion Energy Control	Control of high temperature plasma, Boundary plasma physics, Plasma heating and flow control
High-Temperature Plasma Physics	Confinement experiment of heliotron plasma, Monte-Carlo simulation, Development of fusion plasma diagnostics
Interfacial Energy Processes	Photo-related energy chemistry, Interfacial phenomena, Semiconductor electrochemistry, Statistical mechanics of liquids
Energy Nano Engineering	Nano-science, Nano-materials, Solar Energy, Organic Photovoltaic Cells, Theoretical Biophysics, Statistical Mechanics of Liquids
Biofunctional Chemistry	Design of Biomacromolecules, Protein Engineering, Synthetic Biology, Solar Energy Utilization, Bioenergy
Bioenergy	Bioenergy, Biomass, Structural Biology, NMR, anti-HIV Enzyme, Prion Protein, Aptamer, Bioethanol
Fundamental Neutron Science	Nuclear reactor experiment and analysis, Development of radiation detection system
Energy Transport	Energy conversion, Thermal hydraulics, Multiphase flow, Neutron radiography

Department of Energy Conversion Science

Group	Keywords of Research Fields
Thermal Energy Conversion	Thermal Engineering, Power Engineering, Internal Combustion Engine, Pollutant Emission Control, Alternative Fuels
Conversion Systems	Thermo-Fluid Science, Combustion Science and Engineering, Alternative Fuels, Laser Diagnostics and Image Analysis, Computational Fluid Dynamics
Materials Design for Energy Systems	Strength of Materials, Elastoplasticity, Macro-micro Integrated Analyses, Fatigue, Ceramics Coated Materials
Design for Functional Systems	Functional and Intelligent Materials, Computational Mechanics, Electromagnetic Materials, Nondestructive Evaluation by Ultrasonics, Micromechanics of Solids
Advanced Energy Conversion	Plasma Science and Technology, Fusion Technology, Fusion Energy Conversion, Fusion Application, Fusion Energy System Design, Socio-Economic Evaluation of Energy System, Social and Environmental Sustainability Evaluation
High Quality Energy Conversion	Plasma Physics, Microwave Technology, Accelerator Physics, Charged Particle Beam Physics, Compact Fusion Neutron/Proton Source
Functional Energy Conversion Materials	Materials Science for Environment and Energy, Fusion Reactor Materials, Nuclear Materials, Nano-oxide Particles Dispersion Strengthened Alloys, Computational Materials Science

Department of Energy Science and Technology

(note: Group O-1A is not applicable this year.)

Group	Keywords of Research Fields
Device Physics A	VLSI, Nonvolatile Semiconductor Memory, CMOS Logic, Functional Memory, Circuits Simulation
Device Physics B	Forthcoming thin film material engineering, Energy device engineering, Ecologically friendly photonics and spintronics
Process and Energy	Applied superconductivity energy apparatus, Power system Engineering, Cryogenic Engineering, Thermal hydraulics
Materials Process Science	Materials processing, Electrochemical processing, Functional materials, Recycling
Thermochemistry	Thermochemistry, Recycling of lithium battery, Environmental-friendly processes
Resources and Energy Systems	Energy-saving materials, Multi-scaling materials, Rock engineering
Advanced Processing of Resources and Energy	Computational Physics, Working Process, Thermal Fluid Engineering, Process Simulation, Advanced Processing of Eco-materials
Mineral Processing	Resources Circulation, Mineral Processing, Geochemistry, Ocean Resources and Energy
Quantum Radiation Energy Science	Quantum Radiation Beam, Accelerator Science, Laser Science, Beam Application
The Physics of Energy Materials	Physics of Energy Materials, Nuclear Fusion/Fission Engineering, Aerospace Material System, Ceramic Matrix Composites
Photon Energy Science	Laser Science, Quantum Electronics, Nonlinear Optics, Atoms;Molecules;Solid-Surfaces, Materials Control