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한국에너지공과대학교

붙임1

참여 연구실 및 연구 주제 소개

연번	트랙	지도교수	연구실명	Research Keyword ※ 상세 내용은(https://gs.kentech.ac.kr/composition/) 참고
1	에너지 AI	김종권	TEAT (A Technique to ...)	Social network analysis, Reinforcement learning, IoT, Graph neural network, Recommender system, Video streaming
2	에너지 AI	안수명	Robust Energy AI Lab (REAL)	Machine learning / Artificial Intelligence: Robust and Trustworthy AI, Foundation Models (NLP, Multi-modal models)
3	에너지 AI	이범식	ENergy, Vision Intelligence Lab (ENVI Lab)	Image and Video Processing, Computer Vision, Artificial Intelligence for Energy, Medical Imaging and Analysis
4	에너지 AI	이석주	Visual Intelligence Energy-Wise (Viewlab)	Computer Vision; Machine Learning; Robotics; Autonomous Driving; Visual Perception; 3D Vision; Sensor Fusion
5	에너지 AI	임혁	Sustainable AI Lab	Machine learning and artificial intelligence Big data privacy and AI security AI application for cybersecurity, networks, and energy
6	에너지 신소재	곽준섭	Information & Opto-Energy Materials (IOEM) Laboratory	AlGaN/GaN Power HEMTs for EV and renewable energy devices, Low power consumption micro/nano-LEDs for AR/VR
7	에너지 신소재	서동한	Plasma Nanoscience Lab for Sustainable Energy & Environment	Plasma Nanoscience; Biomass Conversion; Advanced Material for energy storage & conversion devices; Advanced Material for water & air purification; 2D materials
8	에너지 신소재	송주현	Battery Software Group	Li-ion battery, battery management system (BMS), electrochemical modeling, multi-scaling modeling, multi-physics modeling, algorithm optimization, techno-economic evaluation
9	에너지 신소재	오상호	Electron Microscopy for Energy Materials via Environment Manipulation (eM3)	In-situ TEM/STEM, Electron holography/ptychography, Deformation mechanisms, Interface/surface structure, Switching mechanisms of devices, Strain mapping, Electron imaging
10	에너지 신소재	윤재호	NextGen Photovoltaic Materials & Devices Lab (PMDL)	Thin Film Solar cells : Chalcogenide, earth-abundant materials, CIGS, Flexible, color and semi-transparent solar cells Tandem & multi-junction solar cells :SI-based tandem cell, CIGS-based tandem cell, Perovskite vacuum deposition, Multi-junction cell Multi-functional PV modules : BIPV(Building Integrated PV), V(Vehicle)IPV, R(Road)IPV PV-based hybrid energy system : Energy sharing platform, Sector coupling
11	에너지 신소재	이승진	Hybrid Optoelectronics Laboratory	Optoelectronic device (Solar cells, LEDs, Photodetectors), Surface chemistry, Perovskite, Quantum dot
12	에너지 신소재	장재형	Microwave Integrated Device And System (MIDAS)	GaN, SiC Electron Devices, Thin Film Solar Cells, Terahertz Electronics, Active Terahertz Metamaterials, Photoconductive Semiconductor Switches (PCSS), Cryogenic ReRAM
13	에너지 신소재	정의혁	THE LAB	Organic Semiconductors, Perovskites, Photovoltaics
14	차세대 그리드	김승완	Smart Energy Network Design (SEND) Lab	Power System Planning and Operation, Electricity Market Design and Analysis, Utility and Netwotk Economics, AI-supported Decision-Making
15	차세대 그리드	김집	Electric Grid Optimization Lab	Smart Grid, Power System Optimization, Power System Economics
16	차세대 그리드	김희태	Grid Complexity Lab	Network science, power grid, synchronization stability, community detection, sustainability, greenhouse gas emissions

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17	차세대 그리드	박화평	AI-PEL	Grid connected inverters and DC/DC converters for renewable energies, Fault detection and extinguishing technologies for power electronics, Reliability and safety improvement for battery related systems, Control algorithms for power conversion efficiency optimization, Power electronics for industrial applications
18	차세대 그리드	이진오	Power Systems Laboratory	DC Power Systems, Hybrid AC/DC Microgrids, Inverter-Dominated Power System, Power System Stability
19	수소 에너지	구근호	Meta Lab	Artificial Intelligence, Catalysis and Materials Science, Multiscale Modeling, Computational Chemistry
20	수소 에너지	배기호	Multiscale Structuring and Characterization (MSC) Lab.	Solid Oxide Fuel/Electrolysis Cells, Protonic Ceramic Fuel/Electrolysis Cells, Thin-Film Deposition, Multiscale Structure Fabrication, Nanoscale in-situ Characterization
21	수소 에너지	이영덕	Hybrid EneRgy systems and Optimization Laboratory (HERO Lab)	Solid oxide fuel cell, Solid oxide electrolysis, Hybrid energy system (Green/Pink/Turquoise Hydrogen production), Process simulation, Exergy analysis, Economic analysis, Life cycle assessment
22	수소 에너지	한종희	Hydrogen to Chemicals (H2X) Lab	Molten Carbonate Fuel Cells (MCFC), Molten Carbonate Electrolysis (MCEC), Hydrogen Purification Metallic Membranes, Membrane Reactors
23	수소 에너지	홍종욱	Advanced Energy Material Lab	Nanostructured catalysts, Electro(photo)chemical hydrogen production, Polymer electrolyte membrane fuel cell, Electrocatalysis for energy products
24	수소 에너지	황지현	HYdrogen Liquefaction & value chain Optimization Technologies (HYLOT)	Hydrogen Liquefaction, LH2, LNG, Ammonia, Methanol, Value Chain, Blue Hydrogen Production, LOHC, CCUS (Carbon Capture Utilization and Storage)
25	환경 기후 기술	강영수	Carbon Neutrality : Conrbon Resources ConversionTechnology	Carbon Resources Conversion Technology ; CO2 conversion into e-fuels (methanol and ethanol) and e-SAF, Degaration of waste plastics into gasoline, diesel, e-SAF and H2/CNT, Preparation of highly conductive and thermally stable CNT electrical wire at high temperature to replace pre-existing Cu wire.
26	환경 기후 기술	김경모	Nuclear Innovation & Safety Laboratory (NIS Lab)	SMR safety system design, Application of AI technique for SMR digital twin, Nuclear safety analysis, Thermal-hydraulic experiments
27	환경 기후 기술	김우열	Operando analysis for photo/electro-catalysis lab	Energy application-Solar fuel (artificial photosynthesis), Green ammonia & Water splitting Environmental applications-Wastewater & Air pollutant removal Time-resolved spectroscopy(From UV-visible to IR)
28	환경 기후 기술	김효원	Membrane-driven Energy & Environmental Technologies	Membrane-driven Technologies, Electrocatalyst-assistant Processes, Development of Integrated Systems, Energy & Environmental Applications, Engineering of Functional Materials
29	환경 기후 기술	당정증	Fusion Plasma Heating laboratory(FLASH)	Nuclear fusion engineering, Fusion plasma heating & current drive, Neutral beam injection, Negative ion source, ion beam engineering
30	환경 기후 기술	오명환	Artificial Living Systems (ALS)	Energy nanoscience, Materials synthesis, Heterogeneous catalysis, Electrochemical system, Artificial photosynthesis, Artificial living systems
31	환경 기후 기술	임병수	Nuclear Fusion & Superconductivity Technology Lab	Nuclear Fusion, Superconductor, Superconducting Magnet, ITER, KSTAR.
32	환경 기후 기술	탄제완	Technology for Achieving Net-zero (TAN) Lab	CO_2-to-fuel conversion, Water splitting, Spin-catalysis, Chiral materials