삼성전자 종합기술원 R&D 박사 및 경력 모집

◆ 모집기간 : 2012년 9월 28일 ~ 2012년 10월 15일 23시 30분
◆ 지원자격 : 관련전공 박사학위자 또는 석사 이후 경력 6년 이상자
  (2013년 2월 박사학위 취득예정 포함)
  ※ 군필 또는 면제자로 해외여행에 결격사유가 없는 자
◆ 모집분야 : R&D (연구개발)
  ① Future IT : Medical Imaging, 3D Image, Intelligence Computing, Brain IT 등
  ② Material & Device : 3D Display, Opto-electronics, 그래핀 등
  ③ 소재기술 : 유무기/Film, 재료/소자 분석 등
  ④ Bio : Bio소재, 바이오신약 등
  ⑤ Energy : 차세대 Battery, Energy Harvesting 등
  ⑥ 모델링/시뮬레이션/분석 ※ 상세모집분야 별첨 참조
◆ 모집인원 : 00명
◆ 근무지역 : 삼성전자 종합기술원 (경기도 기흥 소재)
◆ 지원방법 : 온라인 입사지원
  - 삼성커리어스 접속(www.samsungcareers.com) → 경력사원채용공고 →
  [종합기술원]박사 및 경력사원채용공고 → 공고 하단 '지원서 작성하기' 버튼 클릭 후 작성함 (※E-mail 입사지원은 받지 않습니다.)
◆ 전형절차
  - 1차 : 서류전형
  - 2차 : 기술면접 및 세미나
  - 3차 : 임원면접
  - 4차 : 건강검진
◆ 제출서류 : 이력서 (※첨부 이력서 양식으로 작성요망)
◆ 관련문의 : 종합기술원 인사팀(jobinfo@samsung.com / 031-280-8039)

contact : jobinfo@samsung.com
# Job Opportunity

<table>
<thead>
<tr>
<th>Recruiting</th>
<th>Main tasks</th>
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</table>
| □ 3D Image Sensing and Image Processing | - 3D Image Sensing  
  - 3D Image Processing & Applications  
  - 3D Depth Reconstruction & Processing, Stereo/Multi-view  
  - 3D Reconstruction, Synthesis & Rendering, Pattern classification/Machine learning, etc.  
  - Light Field, Computer Generated Hologram Processing  
  - 3D Object Modeling & Reconstruction, Light Field Capturing/Synthesis/Reconstruction, Computational Photography  
  - Human Motion Recognition  
  - Pose Estimation (Full-body, Hands), 3D Feature Extraction & Recognition, Big Data-driven Machine Learning, 3D Vision Processing, 3D Modeling and Motion Graphics, Strong coding Skills in C/C++  
  - 3D Video Coding  
  - Design and develop multi-view video and depth compression algorithms and participate in standardization of video coding  
  - Hands on experiences on video coding standards such as H.264/AVC, MVC. Proficiency in C/C++ required |
| □ Medical Imaging and Systems | - X-ray / X-ray CT  
  - Detector: Photoconductor material, readout circuit, calibration, detector physics modeling & simulation, validation  
  - X-ray Imaging System: Imaging architecture, system integration, image processing  
  - CT Module and System: Detector, DAS, gantry/slip ring, system integration/optimization, modeling & simulation CT imaging  
  - CT Imaging, reconstruction algorithm  
  - HIFU System design and signal processing research  
  - HIFU System Arch.& Nonlinear Acoustics, HIFU Transducer Design  
  - Beam Focusing Algorithm Design and Implementation  
  - Ultrasound Imaging and System  
  - 3D Imaging, Beamforming(High Resolution, GPU, etc.), US Image Pre-Post Processing,(3D) Thermometry and elastography Imaging/monitoring, Thermal Strain  
  - MRI Imaging Technology Development  
  - Tx & Rx RF Coil Design & Fabrication  
  - Pulse Sequence Design / Development |

① Future IT

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|            | · Image Reconstruction and Processing  
|            | · MRI Simulation (Pulse Sequence, RF Field, etc.)  
|            | · New Technique Development  
|            | - PET System and Imaging Research  
|            | · PET System Architecture  
|            | · PET Detector and Circuit  
|            | · Image Reconstruction and Correction  
|            | □ Haptic Sensor System  
|            | - Flexible tactile sensor  
|            | · Flexible tactile sensor design using microfabrication techniques,  
|            | Front-end analog circuit design (PCB level), Sensor signal and noise  
|            | measurement using data acquisition system  
|            | · Force sensor  
|            | · Force sensor design for haptic device or robot system using fiber  
|            | optics(FBG), mechanical design and simulation, system integration using  
|            | C language  
| □ Media Computing System |  
|            | - A/V codec and its implementation on embedded processor  
|            | · 3D image/ultrasound medical image and its implementation  
|            | - Intelligent image processing  
|            | · Camera ISP(image signal processing), Computational Photography,  
|            | Object/Gesture recognition, Robot vision & embedded vision processing  
|            | - 3D Graphics  
|            | · Design expert: Computer graphics(Rasterization, programmable Shader,  
|            | Raytracing, Photon-mapping, Global illumination, Physics-based  
|            | animation, etc.), low power/ high performance GPU design, graphics  
|            | application engine  
|            | · Direct3D, OpenGL, OpenCL, GLSL, HLSL, Verilog, C/C++,  
|            | FPGA/ASIC/SoCs design/implementation/simulation/verification  
|            | · Augmented/Mixed Reality, Feature Detection, Markerless registration,  
|            | Composition  
|            | - System SW  
|            | · Heterogeneous multicore OS  
|            | · Parallel programming language for CPU+GPU  
|            | · Power/Performance estimation and prediction for CPU+GPU  
| □ RF & Power Conversion Technology |  
|            | - Passive / Active RF device, circuit, and systems  
|            | - Simulation & analytical analysis of circuits & electromagnetics  
|            | - RFIC design & measurement  
|            | - Power electronics devices & modules (H/W, S/W)  
|            | · High-power inverter/converter topology, circuit & control  
|            | - Power management / conversion technology and systems  
|            | - Design and prototyping of control and communication system  

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| □ Many-core Computing Architecture | - Processor Core Architecture and HW Implementation  
- Reconfigurable processor for multimedia/radio processing  
- 3D graphics core architecture supporting multi-threading  
- Highly parallel processor architecture  
- Many-core Processor Architecture and Implementation  
- Many-core processor supporting efficient synchronization mechanism  
- Interconnect architecture including Network-on-Chip  
- Memory architecture including hierarchy and coherency protocol  
- Data streaming architecture and HW task/thread scheduling  
- Many-core architecture supporting heterogeneous cores such as CPU+GPU  
- Heterogeneous memory architecture supporting efficient data transfer  
- Many-core Programming Model  
- Industry standard many-core programming model such as OpenCL  
- Core architecture specific programming model extension  
- 3D Graphics supporting programming model such as OpenGL  
- Software Development Tools  
- Compilers for single/many-core architecture supporting various parallelism  
- Simulators for architecture modeling and design space exploration  
- Profiler for analysis of application/architecture performance  
- Debuggers for increasing SW productivity  
- Processor Verification Framework  
- Single/Many-core processor verification tools such as random vector generator  
- Integrated verification framework from application to HW implementation  
- Automation and parallelization of verification process |

□ Future Networking & Security | - Wireless Sensor Network (Body Area Network/Personal Area Network)  
- Low power RF/Analog circuit design  
- Low power digital MODEM algorithm design  
- Real-time embedded system design  
- Wireless sensor platform design  
- Information-Centric Networking architecture & Prototyping  
- Network protocol design and simulation  
- Network, content, device security algorithm design  
- Network virtualization and SDN (Software Defined Networking)  
- Mobility architecture and modeling  
- Wireless Communication  
- Wireless network information theory  
- Interference Management  
- Channel coding  
- Multi-hop resource management  
- Physical-layer security |
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<tr>
<td>□ <strong>Intelligent Computing</strong>&lt;br&gt; - Computer-aided Diagnosis&lt;br&gt;   · Image Segmentation, Image Registration, Neuro Image Analysis&lt;br&gt;     2D/3D Image Feature Extraction&lt;br&gt; - Data Mining &amp; Large-scale Data Management&lt;br&gt;   · Data Mining Theory, High-dimensional Data Mining,&lt;br&gt;     Temporal Data Mining, Clinical Data Mining, Sensor data mining&lt;br&gt;   · Data Indexing, Web Search, Complex Data Management&lt;br&gt; - Computational Genomics(Epigenomics background is welcomed)&lt;br&gt; - Context-Aware Computing&lt;br&gt;   · Ontology-Based Context-Awareness, Ontology Modeling &amp; Processing,&lt;br&gt;     Semantic Reasoning&lt;br&gt; - Machine Learning&lt;br&gt;   · Large-Scale Data-Driven Learning, Statistical Relational&lt;br&gt;     Learning, Bayesian Analysis and Graphical Models, Event Detection and&lt;br&gt;     Knowledge Discovery, Pattern Recognition, Natural Language Processing,&lt;br&gt;     Information Retrieval, Statistical Relational Reasoning&lt;br&gt; - Affective Computing&lt;br&gt;   · Multi-modal Emotion Recognition, Novel Human-Computer Interaction&lt;br&gt;     utilizing Human Emotion, Mood Detection, Stress Monitoring, User&lt;br&gt;     Modeling &amp; Understanding&lt;br&gt; - Personal Informatics&lt;br&gt;   · Human Activity Recognition, Multi-modal Situation Recognition,&lt;br&gt;     Analysis of Activities of Daily Living(ADL)&lt;br&gt;</td>
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<td>□ <strong>Distributed Storage Architecture</strong>&lt;br&gt; - Large-Scale Distributed File System&lt;br&gt;   · Distributed node/data management, Fault-tolerance&lt;br&gt; - NoSQL Distributed Storage&lt;br&gt;   · Tabular store, Key-value store, Graph store, Object store&lt;br&gt; - Distributed System Modeling &amp; Simulation&lt;br&gt; - NAND-Optimal System Software&lt;br&gt;   · NAND file system, Caching S/W, I/O virtualization&lt;br&gt;</td>
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| □ **Green Communication and Networks**<br> - Green Networks<br>   · Energy optimized on/off base station operation technology<br> - Green network architecture design<br>   (signaling & data network separation approach)<br> - Green Radio<br>   · Energy-efficient MIMO technology for multiple antennas system &<br>     compact antenna module technology

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<td>□ <strong>Brain IT</strong></td>
<td>- Neuromorphic System research</td>
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<td>- Neural simulator developing and Capable of emulation using GPU</td>
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<td></td>
<td>- VLSI chip design(neuromorphic chip, analog chip design)</td>
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<td>- Sensory processing using spiking neural network (Visual/auditory pattern recognition)</td>
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<td>- Computational neuroscience in learning (Memory/Inference/Decision making)</td>
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<td>- Actor-critic model(POMDP, TD-lambda learning, etc)</td>
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<td>- Brain and cognitive engineering</td>
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<td>- Non-invasive brain-computer interface/Mind reading</td>
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<td>- Cognitive modeling and simulation/Connectome/Brain map</td>
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<td>- Non-contact bio sensor</td>
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<td>- Transcranial electromagnetic stimulation</td>
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<td>□ <strong>3D Modeling in Medical Science</strong></td>
<td>- Single/Multi-Modality Medical Image Segmentation/Registration (CT, MRI, US, etc)</td>
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<td>- 3D Modeling and Visualization</td>
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<td>- Solid, Fluid, and Bio-Mechanics Modeling and Simulation</td>
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<td>- Systems Biology, Data Acquisition/Analysis for Bio-Engineering</td>
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<td>□ <strong>Bio-medical Engineering</strong></td>
<td>- Bio signal sensing &amp; processing 분야</td>
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<td>- Physiological modeling</td>
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<td>- 생체 신호 전용 Analog Front End 설계 및 Digital logic 설계</td>
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<td>- 수학 전공자로서 생체 신호 처리 알고리즘 전문가</td>
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<td>- 생체 및 신호처리 전공</td>
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<td>- 아나로그 및 디지털 ASIC 설계</td>
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<td>- 생체적합용 초저전력 RF 및 IC 설계</td>
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<td>- 초음파 영상처리 및 시스템 개발</td>
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<tr>
<td></td>
<td>- Biomedical Optical Imaging Research</td>
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<td>- Functional Optical Coherence Tomography(OCT) system</td>
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<td>- architecture and signal Processing</td>
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<td>- Tissue vs. Light interaction modeling</td>
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<td>- OCT Image Enhancement Algorithm</td>
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<td>□ <strong>Medical Robot</strong></td>
<td>- Mechatronics</td>
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<td>- New Actuator (Shape Memory, Piezo, Artificial Muscle)</td>
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<td>- Bio-Mimetic System Design &amp; Control</td>
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<td>- Ergonomic, Bio-Compatible Design</td>
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<td>- Optical System</td>
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<td>- High-Resolution Stereo Endoscope</td>
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<td>Recruiting</td>
<td>Main tasks</td>
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| □ Opto–electronics | - III-V compound semiconductor optical devices  
- Device specialists (VCSEL, DFB Laser diode, waveguide, photodetector, modulator and Mux/DeMux)  
- III-V material Thin film, optical devices , device fabrication and Measuring high-speed communications system  
- Process, material, device, simulation for GaN LED  
- Oxide sensor, device, material, physics, simulation  
- Optical system/interconnect/modulator  
- Photonic Materials & Device  
  : Energy Convertor, Photonic Crystal for Display device Photonic Crystal synthesis/device/physics/simulation  
- Plasmonic Materials & Device  
  : Sensor, detector, Laser using Plasmonic  
- Optic design for OCT(Optical Coherence Tomography)  
- Optic design for Microscope for medical  
- High Speed Optoelectronics Circuit Design |
| □ Holography 3D Display | - Holography, Optics(Nano-optical devices)  
- 3D Display optics, optical devices process and the simulation  
- Optical Design and Fabrication  
- Material/Optic/Device for 3D or 3D Holography  
- Simulation or modeling for 3D/Holography  
- Optical modulator/device  
- Material/device for 3D recording(3D image) |
| □ Nano–scale 고성능 소자 | - Quantum (Ballistic) transport, Spin transport, Non-equilibrium Green Function calculation  
- Band to band tunneling in III-V Transistor  
- Design based on modeling & simulation of high performance devices such as 3D FET, HEMT(High Electron Mobility Transistor) TFET(Tunneling FET)  
- III-V,Ge epitaxial growth  
- Nanoinprint Process / Stamp professionals  
- CMOS design professionals  
- LED /Organic image sensor material and device production  
- Nano Crossbar Electronics (such as logic device)  
- Device, material, physics, simulation for Power device  
- Flexible/Printed Electronics (Material/Device/Physics)  
- Simulation or modeling for organic material  
- Nonvolatile transistor, materials & device |
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</table>
| : Ferroelectric, Multiferroics, Heterostructure  
- Stamp transfer printing process  
- Interface engineering of thin film  
- Solid state physics calculation | |

| ☐ Micro Actuator & Sensors | - MEMS device design and fabrication  
- MEMS device evaluation and control  
- MEMS packaging design, process and evaluation | |

| ☐ Medical Device | - 수술용 로봇(Surgical robot system)  
- Surgical Robot Control & Design (teleoperation, force feedback control, surgical instrument design, etc)  
- Surgical Image Guidance (computer vision for surgical robot, visual tracking, image registration, AR for surgery, etc)  
- Ultrasonic Device | |

| ☐ Medical Optics & Imaging | - Optical system/device design & fabrication | |

| ☐ 그래핀 (Graphene research) | - Nano electronic device fabrications and process integrations  
- Graphene and other 2D material growth  
- Material and device simulations | |

| ☐ Electro Luminance Device 개발 | - 分子 설계, 모델링, 유기합성, 고분자 합성  
- Device 제작, 소자 성능 평가 및 공정  
- Device Physics 관련 물리 및 광학 전문가 | |

| ☐ 유기화학, 물리유기화학, 고분자화학, 화학공학 | - 고분자 합성, 물성평가  
- reaction kinetics, thermo-mechanical property control, electronic property control | |

| ☐ 디스플레이용 필름 소재 개발 | - 광학용 고분자 합성  
- 고분자 합성, 필름 가공, 코팅, 광학 특성 평가  
- Reaction Kinetics, thermo-mechanical property control, PI 재료개발 경험자  
- 광학용 고분자 소재 개발 유경험자 우대 | |
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| □ 무기소재 조성 설계 및 합성 | Solid state physics, intermetallic compound, 에너지 소재, 자성 소재, DOS engineering, 나노구조화  
- Development & fabrication of metal alloy powder.  
- Gas-atomizer specialist  
- Design of induction melting system in vacuum  
- Development of hard and soft magnetic materials  
- Synthesis & analysis of new intermetallic bulk materials  
- Development of rare earth free permanent magnets  
- Development of soft magnetic composite materials  
- New materials for hydrogen separation membrane  
- Metallurgy processing (alloying, foil process, annealing) |
| □ 기능성 표면소재 | 표면 패턴 기술  
- 나노 임프린팅 리소그래피, 나노 전사 리소그래피  
- 패턴 가능한 소재  
- 표면 에너지 엔지니어링  
- 나노 구조, 계면 화학, 불소 소재  
- 표면 형태학 엔지니어링  
- 분산, 유변학, 커플링 화학  
- 와이어 그리드 편광, 소프트 일렉트로닉스 |
| □ Therapeutic Antibodies | Mammalian expression vector & host cell line  
- Antibody-drug conjugates (ADC)  
- Therapeutic antibody targeting autoimmune diseases or cancer  
- Antibody engineering  
- Non-antibody protein scaffolds  
- Regulatory affairs |
| □ Biomaterials and Bio_based Products | 시스템 바이올로지  
- 오믹스 (지노믹스/프로티오믹스/메타볼로믹스/바이오정보학)  
- in silico 모델링  
- 미생물 대사공학 (분자생물학/생화학/미생물학)  
- 미생물 균주개발  
- 공정공학  
- 발효공정 설계 및 최적화  
- 화학공정 설계 및 최적화 |
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| **Bio**    | □ Biotherapeutics  
  - 암생물학  
    · 암세포 신호전달기작을 활용한 분석 유경험자  
    · 다양한 분자생물학적 실험 기법 보유자  
    · 암 종계체포 연구 경험자 우대  
    · 환자 유래 암 조직을 이용한 유전자 및 mRNA 분석 경험자 우대  
    · Bioassays의 개발, 평가 및 문제 해결이 가능한 전문가 우대  
  - 항체 약물 복합 항암제  
    · 항체약물 복합 항암제 설계/합성/공정 등  
    · 생합합 화학기술  
    · 의약화학 (항암제 설계/합성/변형 등)  
    · 약물전달 (복합 항암제 관련)  
  - 수학모델링/시스템즈바이오로지  
    · 메커니즘 기반 약물동력학 모델링  
    · 생물학 반응 네트워크, 질병 메커니즘, 약물반응 수학모델링  
    · 상미분방정식 기반 동력학 모델링 및 통계분석  |
| **Drug delivery and medical engineering** | □ Drug delivery and medical engineering  
  - Biocompatible materials engineering  
    · Drug carrier design and preparation  
    · Conjugation chemistry and purification  
    · Biocompatible surface engineering  
  - In vivo evaluation and analysis  
    · Animal test design, PK/PD, toxicity, efficacy analysis  
  - Diagnosis/therapy integration  
    · Molecular imaging, image guided therapy  |
| **Energy** | □ Battery  
  - 차세대 Li-ion / Post LIB (Li-Air 등)/New Energy Storage  
    · 에너지저감용 무기소재, 카본복합소재 및 합금소재, 고체화학, 계산고체물리  
    · 유기 및 고분자 재료 설계/합성, 이온성 액체, Molecular Dynamics  
    · 전기화학 분석 및 모델링  
    · 전극 및 cell level 에서의 반응 및 열/유체 거동 해석  
    · BMS(Battery Management System) 및 PCS(Power Control System) 관련 설계 및 평가  |
<table>
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<th>Recruiting</th>
<th>Main tasks</th>
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| **Fuel Cell** | - 고체산화물형 연료전지 (Solid Oxide Fuel Cell)  
· 연료전지용 전극 및 전해질 소재 설계 및 합성  
· 연결재 및 밀봉재 소재 개발 및 셀 제조공정  
· SOFC 셀 설계, 제조 및 평가  
· SOFC 스택 설계, 제조 및 평가  
· 전극, cell level 및 stack level에서의 전기화학반응, 열/유체 거동 및 열응력 해석 |
| **Environment** | - 멤브레인, 전기화학, 센서, 측량, 흡착제 등  
· 수처리 및 가스 분리 관련 멤브레인 기술  
· 유무기재료 설계 및 합성  
· Water/air quality monitoring sensor  
· CO2 포집 및 저장, 응용, CO2/O2 분리기술  
· CO2 전환 및 관련 측량/공정  
· 비균일 측량 합성 및 첨단 분석 |
| **Energy Harvesting** | - 기계공학 기반의 진동(압전) 에너지 하베스팅 설계, 기구적 구조 설계 및 모델링(시뮬레이션) 기술  
· Mechanical Impedance/Frequency Matching, wide-bandwidth 기술  
· 전력전자 기반의 회로 설계 및 제작(SOC,integrated circuit)기술  
· Low power를 고려한 rectification, Maximum power tracking용 DC/DC 컨버터제어, 발전/저장 효율향상을 위한 Wake-up 회로기술  
· 재료공학 기반의 압전 재료 개발 및 압전체 제작 평가  
· Lead/Lead-free piezo material / 후막, 박막  
· 나노 또는 플렉서블 기반 진동 에너지 하베스팅 소재 및 구조 기술  
· 나노 유무기 복합 압전/전전 전자 설계, 제작 및 시스템 기술 |
| **Hybrid Energy System** | - 대용량 고효율 인버터/컨버터/충전기 등 전력회로 및 제어기 설계  
· 다중 입력 신재생 에너지 시스템 전력관리 알고리즘 설계  
· 스마트 그리드 관련 전력관리 및 분배기 설계 평가  
· 신재생 에너지 하이브리드 시스템 설계 및 제작 평가  
· 연료전지/배터리/태양전지/풍력/지열 등 에너지 시스템  
· 고효율 에너지 기기(가스터빈, 히트펌프 등) 및 스마트 그리드 HILLS 기반 하이브리드 에너지 시스템 플랫폼 구성 및 평가 분석  
· 신재생 에너지 하이브리드 시스템 모델링 및 수치해석  
· 전력변환 및 저장 시스템 전산모사 및 시뮬레이션  
· 일반 열/유체 기기 모델링 및 수치해석  
· EV, HEV, FCV 시스템 모델링 및 Powertrain 동력분포 해석 |
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| Computational Science (Modeling/ Simulation) | □ Physical Modeling & Simulation  
- 계산 모델링 및 이론에 기반한 물성 분석 연구  
  · 제일원리 (물리,화학) 계산, 분자 동역학, 몬테 카를로 기반 시뮬레이션 연구  
  · multi-scale/multi-physics 모델링/시뮬레이션 연구  
  · transport (electronic/thermal) 현상 모델링, 반도체 광학 특성, alloy 물성 연구 |
|                                        | □ Theory & Simulation for Systems and Devices  
- 소자 특성 시뮬레이션 및 분석 연구  
- 계산 기반 고체/광학/통계 물리, 화학 등 기초 이론 연구  
- 전산 기반 학습/알고리즘/최적화/데이터 시스템 모델링 및 관련 수학 연구 |
| Analytical Science (재료/소자 분석분야) | □ 물리기반의 XPS/UPS, STM, SPM 표면분석 기술 연구  
- 유/무기 재료 및 device의 In-situ 표면분석 |
|                                        | □ X-ray/중성자 산란을 이용한 신분석 기술(EXAFS, XANES, SAXS) 연구  
- Catalysts, Energy 재료 등의 In situ 구조 분석, 유기 박막의 결정구조 및 배향성 분석 |
|                                        | □ 유기 재료/박막의 구조 및 극미량 불순물 분석기술 연구  
- 유기전자소자용 재료/박막의 분자구조 및 반응동력학 해석  
- 극미량 불순물 정량분석 기술 |
|                                        | □ 전자기장 분포 및 구조 해석 기술 연구  
- Local 영역에서의 전자기장 imaging 및 구조해석 기술  
- 초고분해능 광학/분광 이미징 기술 |