SAMSUNG ADVANCED INSTITUTE OF TECHNOLOGY

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 경력사원 채용공고 → 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)

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Job Opportunity

Recruiting	Main tasks
① Future IT	□ **3D Image Sensing and Image Processing** - 3D Image Sensing · CMOS Image Sensor, CMOS Circuit Design & Development, VLSI Design & Layout, Analog Circuit Design, Sensor Signal Processing & Sensor Calibration - 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

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Recruiting	Main tasks
	· 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
① Future IT	□ **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** - Audio/Video · 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

Recruiting	Main tasks
① Future IT	□ **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

Recruiting	Main tasks
① Future IT	□ **Intelligent Computing** - Computer-aided Diagnosis · Image Segmentation, Image Registration, Neuro Image Analysis 2D/3D Image Feature Extraction - Data Mining & Large-scale Data Management · Data Mining Theory, High-dimensional Data Mining, Temporal Data Mining, Clinical Data Mining, Sensor data mining · Data Indexing, Web Search, Complex Data Management - Computational Genomics(Epigenomics background is welcomed) - Context-Aware Computing · Ontology-Based Context-Awareness, Ontology Modeling & Processing, Semantic Reasoning - Machine Learning · Large-Scale Data-Driven Learning, Statistical Relational Learning, Bayesian Analysis and Graphical Models, Event Detection and Knowledge Discovery, Pattern Recognition, Natural Language Processing, Information Retrieval, Statistical Relational Reasoning - Affective Computing · Multi-modal Emotion Recognition, Novel Human-Computer Interaction utilizing Human Emotion, Mood Detection, Stress Monitoring, User Modeling & Understanding - Personal Informatics · Human Activity Recognition, Multi-modal Situation Recognition, Analysis of Activities of Daily Living(ADL)
	□ **Distributed Storage Architecture** - Large-Scale Distributed File System · Distributed node/data management, Fault-tolerance - NoSQL Distributed Storage · Tabular store, Key-value store, Graph store, Object store - Distributed System Modeling & Simulation - NAND-Optimal System Software · NAND file system, Caching S/W, I/O virtualization
	□ **Green Communication and Networks** - Green Networks · Energy optimized on/off base station operation technology · Green network architecture design (signaling & data network separation approach) - Green Radio · Energy-efficient MIMO technology for multiple antennas system & compact antenna module technology

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Recruiting	Main tasks
① Future IT	□ **Brain IT** - Neuromorphic System research · Neural simulator developing and Capable of emulation using GPU · Spike code-based inference theory and Computer Science, Probability/Statistics Applied Physics and related fields · VLSI chip design(neuromorphic chip, analog chip design) · Sensory processing using spiking neural network (Visual/auditory pattern recognition) · Computational neuroscience in learning (Memory/Inference/Decision making) · Actor-critic model(POMDP, TD-lambda learning, etc) - Brain and cognitive engineering · Non-invasive brain-computer interface/Mind reading · Cognitive modeling and simulation/Connectome/Brain map · Non-contact bio sensor · Transcranial electromagnetic stimulation
	□ **3D Modeling in Medical Science** - Single/Multi-Modality Medical Image Segmentation/Registration (CT, MRI, US, etc) - 3D Modeling and Visualization - Solid, Fluid, and Bio-Mechanics Modeling and Simulation - Systems Biology, Data Acquisition/Analysis for Bio-Engineering
	□ **Bio-medical Engineering** - Bio signal sensing & processing 분야 · Physiological modeling · 생체 신호 전용 Analog Front End 설계 및 Digital logic 설계 · 수학 전공자로서 생체 신호 처리 알고리즘 전문가 · 생체 및 신호처리 전공 · 아나로그 및 디지털 ASIC 설계 · 생체적합용 초저전력 RF 및 IC 설계 · 초음파 영상처리 및 시스템 개발 - Biomedical Optical Imaging Research · Functional Optical Coherence Tomography(OCT) system architecture and signal Processing · Tissue vs. Light interaction modeling · OCT Image Enhancement Algorithm
	□ **Medical Robot** - Mechatronics · New Actuator (Shape Memory, Piezo, Artificial Muscle) · Bio-Mimetic System Design & Control · Ergonomic, Bio-Compatible Design - Optical System · High-Resolution Stereo Endoscope

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Recruiting	Main tasks
② Material & Device	□ **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 - Plamsmonic 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 - Nanoimprint 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

Recruiting	Main tasks
	: Ferroelectric, Multiferroics, Heterostructure - Stamp transfer printing process /Interface engineering of thin film - Solid state physics calculation
② **Material & Device**	□ **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** - 분자 설계, 모델링, 유기합성, 고분자 합성 - Device 제작, 소자 성능 평가 및 공정 - Device Physics 관련 물리 및 광학 전문가
③ **소재기술 (유무기/Film/ 기능성표면 소재)**	□ **유기화학, 물리유기화학, 고분자화학, 화학공학** - 고분자 중합, 물성평가 ·reaction kinetics, thermo-mechanical property control, electronic property control
	□ **디스플레이용 필름 소재 개발** - 광학용 고분자 합성 - 고분자 중합, 물성, 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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Recruiting	Main tasks
③ **소재기술 (유무기/Film/ 기능성표면 소재)**	□ **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 ·Material development & analysis for hydrogen permeable membrane. ·Metallurgy processing (alloying, foil process, annealing)
	□ **기능성 표면소재** - 표면 패터닝 기술 · 나노 임프린팅 리소그라피, 나노 전사 리소그라피 · 패턴 가능한 소재 - 표면 에너지 엔지니어링 · 나노 구조, 계면 화학, 불소 소재 - 표면 형태학 엔지니어링 · 분산, 유변학, 커플링 화학 - 와이어 그리드 편광, 소프트 일렉트로닉스
④ **Bio**	□ **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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Recruiting	Main tasks
④ Bio	□ **Biotherapeutics** - 암생물학 · 암세포 신호전달기작 작용 기전 분석 유경험자 · 다양한 분자생물학적 실험 기법 보유자 · 암 줄기세포 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 · 생접합 화학기술 · 의약화학 (항암제 설계/합성/변형 등) · 약물전달 (복합 항암제 관련) - 수학모델링/시스템즈바이올로지 · 메커니즘 기반 약물동력학 모델링 · 생물학 반응 네트워크, 질병 메터니즘, 약물반응 수학모델링 · 상미분방정식 기반 동력학 모델링 및 통계분석
	□ **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
⑤ Energy	□ **Battery** - 차세대 Li-ion / Post LIB (Li-Air 等)/New Energy Storage · 에너지저장용 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

Recruiting	Main tasks
⑤ Energy	□ **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, 촉매, 흡착제 等 · 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 촉매/공정 · 비균일 촉매 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/정전 소자 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

Recruiting	Main tasks
⑥ 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
⑥ 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