HOW TO USE THE INFORMATION IN THIS PAGE

MTL Faculty and Researchers collaborate in different science areas. Using the abbreviations below you can find related abstracts by clicking in the "Abstracts by Areas" link.

List of Abbreviations:

ICS	**Integrated Circuits and Systems**
MEM	**Microelectromechanical Devices**
ED	**Electronic Devices**
QED	**Quantum Effect Devices**
SNS	**Submicron and Nanometer Structures**
MS	**Modeling and Simulation**
FT	**Fabrication Technology**
MAN	**Manufacturing**
MAT	**Materials**
OPT	**Optoelectronics**

Research Interests of Faculty and Senior Research Scientists

	Research Areas	Office	Telephone & Net Address
A. I. Akinwande MS	Flat panel displays, Vacuum Microelectronics and its application to flat panel displays, RF power sources, and sensors. Wide bandgap semiconductors and applications to flat panel displays, UV emitters and RF power sources.	39-553A	258-7974 akinwand@mtl.mit.edu
D. A. Antoniadis ED, MS	Silicon-based devices for high-speed and low-power integrated circuits including Silicon-On-Insulator, strained Si/SiGe, and double-gate CMOS. Device modeling and computer-aided device design.	39-415B	253-4693 daa@mtl.mit.edu
D. Boning MAN, MAT	Semiconductor manufacturing. Statistical metrology and modeling of spatial and temporal variation in fabrication processes, devices, and and interconnects. Modeling, monitoring, and feedback control for quality and environment in chemical-mechanical polishing and plasma etch. Software systems for distributed and collaborative computer aided design and fabrication.	39-567B	253-0931 boning@mtl.mit.edu
A. Chandrakasan ICS	Design of digital integrated circuits and systems. Emphasis on the energy efficient implementation of distributed microsensor and signal processing systems. Protocols and Algorithms for Wireless Systems. Circuits techniques for deep sub-micron technologies.	38-107	258-7619 anantha@mtl.mit.edu
J. A. del Alamo ED, FT	Gigahertz power transistors for Communications: physics, modeling, technology and design.	39-415a	253-4764 alamo@mit.edu
M. S. Dresselhaus	Electron transport properties and thermoelectricity of low dimensional systems (2D quantum well supperlattices and 1D quantum wires). Study of Josephson junctions and the superconductivity of disordered High-T_c materials. Electronic, vibrational and optical properties of carbon and related materials (nanotubes, fullerenes, disordered carbon, graphite).	13-3005	253-6864 millie@mgm.mit.edu
E. A. Fitzgerald	Electronic and optoelectronic devices based on novel materials and heterostructures; lattice-mismatched materials; defects in semiconductor materials; optoelectronic integration on Si; GeSi/Si materials and devices; visible LEDs and lasers based on InGaP alloys; infrared LEDs and laser based on InGaAs; microscopic failure mechanisms in devices	13-4053	258-7461 eafitz@mit.edu

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Research Interests of Faculty and Senior Research Scientists

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	Research Areas	Office	Telephone & Net Address
C. G. Fonstad	Compound semiconductor heterostructure materials, devices, and physics. Optoelectronics. Heteroepitaxy, bonding, and monolithic integration. Laser diodes, photodetectors, quantum well devices, optoelectronic integrated circuits. GaAs integrated circuit design. Microscale thermophotovoltaics.	13-3050	253-4634 fonstad@mtl.mit.edu
K. K. Gleason	Deposition of thin film deposition for low dielectric constant, biopassivation, and dry resist applications. Precursor gas chemistry for chemical vapor deposition (CVD). Thin film characterization including advanced solid-state Nuclear Magnetic Resonance (NMR)	56-469b	253-5066 kkgleasn@mit.edu
M. L. Gray	Microfabricated devices for use in diagnostic medicine and biological research. Particle and fluid analysis of flowing media using absorbance and fluorescence techniques as a means for understanding cell or organism metabolism and phenotypic expression.	E25-519	258-8974 mgray@mit.edu
N.W. Hagood	Active composite actuators and sensors, Solid-state motors and actuation systems, High energy density active materials, Electroceramic transducer modeling, Active aeroelastic control, Solid-state microhydraulic transducers	37-327	253-2738 nwhagood@mit.edu
J. L. Hoyt	Novel processes, materials, and device concepts for silicon technology. Epitaxial growth (chemical vapor deposition) and device physics of silicon-based heterostructures and nanostructures using semiconductors such as strained Si, SiGe, SiGeC, and $Si_{1-y}C_y$ alloys. CMOS front-end processing and three-dimensional device integration	39-427A	452-2873 jlhoyt@mtl.mit.edu
Q. Hu	Superconducting electronics, high-frequency and high-speed electronic devices, high-frequency response of quantum-effect devices, far-infrared solid state lasers.	36-465	253-1573 qhu@mit.edu
L. C. Kimerling	Si, SiGe, III-V compounds and alloys. Heterostructures, optoelectronic devices, and integrated IC materials and processes. Silicon Microphotonics. New optical and electronic phenomena, device and circuit applications, imperfection in solids. Environmentally Benign Semiconductor Manufacturing Chemical Kinetics and Equilibrium of Surfaces.	13-4118	253-5383 lckim@mit.edu

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Research Interests of Faculty and Senior Research Scientists

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	Research Areas	Office	Telephone & Net Address
L. Kolodziejski	Gas source molecular beam epitaxy of III-V compound semiconductors optoelectronic devices: lasers, optical switches, saturable absorber Bragg mirrors heteroepitaxy and overgrowth on patterned surfaces fabrication of 1D, 2D, and 3D photonic bandgap crystal structures.	13-3065	253-6868 leskolo@ mit.edu
J. H. Lang	Analysis, design and control of electromechanical systems. Application to traditional electromagnetic actuators, micron-scale actuators and sensors, and flexible structures.	10-176	253-4687 lang@mit.edu
H.-S. Lee	Analog and mixed signals integracted circuit design with emphasis on data converteds, amplifiers, and communication circuits.	39-553B	253-5174 hslee@mtl. mit.edu
I. Masaki	VLSI architecture. Emphasis on interrelationship among applications, systems, algorithms, and chip architectures. Major application fields include intelligent transportation systems, video, and multimedia.	38-107	253-8532 masaki@mtl. mit.edu
M. B. McIlrath	Computer aided design and fabrication of semiconductor devices and integrated circuits. Modeling and simulation of physical and engineering problems. Knowledge-based systems; software engineering; real-time systems.	36-293	253-4183 mbm@mtl. mit.edu
T. P. Orlando	Superconductivity. Superconducting Electronics. Quantum computation. Non lianear dynamics of Josephson junctions.	13-3006	253-5888 orlando@ mit.edu
R. Reif	Integrated circuit fabrication technology. New process technologies for VLSI. Environmentally conscious manufacturing. Novel interconnect technologies.	38-401	253-7317 reif@mtl. mit.edu
C. A. Ross	Magnetic properties of films made by sputtering, evaporation, electrodeposition and laser ablation, Magnetic anisotropy in films, Microstructural control of thin films, Properties of arrays of magnetic particles formed lithographically, Time-dependent magnetic properties of films and particle arrays, Materials and processes for high density magnetic recording devices.	13-4005	258-0223 caross@ mit-edu

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Research Interests of Faculty and Senior Research Scientists

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	Research Areas	Office	Telephone & Net Address
M. L. Schattenburg	Advanced lithography, including X-ray, e-beam, ion-beam, and optical. Interference lithography applied to fabricating nanometer-period gratings and grids, and as a tool for dimensional metrology. Micro and nanometer fabrication technology applied to advanced astronomical and laboratory instrumentation. MEMs structures applied to high-presicion optical assembly. X-ray optics and instrumentation.	37-487	253-3180 marks@space.mit.edu
M. A. Schmidt	Micro-Electro-Mechanical systems (MEMS). Microfabrication technologies for integrated circuits, sensors, and actuators. Design of microsensor and microactuator systems.	39-321	253-7817 schmidt@mtl.mit.edu
S. D. Senturia	Microelectromechanical CAD (MEMCAD). Microsensors and microactuators. Measurement of properties of microelectronic materials.	39-567A	253-6869 sds@mtl.mit.edu
H. I. Smith	Nanofabrication, nanostructures and metrology. Quantum-effect, short-channel, integrated-optical, and photonic-bandgap devices. E-beam, X-ray, and interferometric lithography. Nanomagnetics. Diffractive optics for photons and neutral atoms.	39-427B	253-6865 hismith@nano.mit.edu
C. G. Sodini	MOS and bipolar device physics, circuit design, and IC technology. Emphasis on their interrelationship and application to analog and digital integrated circuits and systems.	39-527B	253-4938 sodini@mtl.mit.edu
S. M. Spearing	Structural design of MEMS. Mechanical testing of microfabricated materials. Microfabricated refractory material process development. Residual stress determination and reduction. MEMS Packaging. Power producing MEMS.	33-315	253-4467 spearing@mit.edu
C. V. Thompson	New processes for control of structures, properties, and reliability of semiconductor and metallic films. Research topics include grain structure control in polycrystalline films and lines; interconnect reliability; defect control in epitaxy; ion and laser processing of lines and films; and processing of magnetic films.	13-5069	253-7652 cthomp@mtl.mit.edu
D. E. Troxel	Applications of digital systems. Computer aided fabrication of integrated circuits. Computer assisted prototyping of advanced microsystems. Remote inspection of ICs and MEMs devices.	36-287	253-2570 troxel@mtl.

Research Interests of Faculty and Senior Research Scientists

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	Research Areas	Office	Telephone & Net Address
H. L. Tuller	Semiconductor micromachining. Sensor (gas, thermal, pressure) development. Electrically active interfaces. Electroceramics.	13-3126	253-6890 hltuller@ mit.edu
J. K. White	Theoretical and practical aspects of numerical algorithms for problems in circuit, device, interconnect, packaging and micromechanical system design; parallel numerical algorithms; interaction between numerical algorithms and computer architecture.	36-617	253-2543 white@ mit.edu
I. A. Waitz	Propulsion, fluid mechanics, thermodynamics, reacting flows, reacting flows, aeroacoustics, environmental effects of aircraft and power-MEMS.	31-266	253-0618 iaw@mit.edu