PRINCIPAL INVESTIGATORS

Faculty Name	*Research Areas & Special Interests*	*Office*	*Phone*	*E-mail*
A.I. Akinwande	Display devices: flexible large area electronics, organic and inorganic thin film transistors, field emission displays; high aspect ratio gated microstructure arrays: field emission devices, electrospray thrusters and gas analyzers.	39-553b	617-258-7974	akinwand@mtl.mit.edu
D.A. Antoniadis	Fabrication, measurements and modeling of silicon- and germanium-based devices for high-speed and low-power integrated circuits.	39-427b	617-253-4693	daa@mtl.mit.edu
M.A. Baldo	Molecular electronics, integration of biological materials and conventional electronics, electrical and exciton transport in organic materials, energy transfer, metal-organic contacts, nanomechanical transistors.	13-3053	617-452-5132	baldo@mit.edu
K.K. Berggren	Superconductive nanodevice physics and applications; nanofabrication methods, processes, and tool-development for application to superconductive quantum computing and single-photon detection.	36-219	617-324-0272	berggren@mit.edu
S.N. Bhatia	Micro- and nano-technologies for tissue repair and regeneration. Applications in liver tissue engineering, cell-based BioMEMS, and nanobiotechnology.	E19-502d	617-324-0221	sbhatia@mit.edu
D.S. Boning	Characterization and modeling of variation in semiconductor and MEMS manufacturing with emphasis on chemical mechanical polishing (CMP), electroplating, plasma etch, and advanced interconnect processes. Understanding the impact of process and device variation on circuit performance, and design for manufacturability.	38-435	617-253-0931	boning@mtl.mit.edu
V.M. Bove, Jr.	Sensing, display, user interface, and computation for consumer electronics applications, particularly self-organizing ecosystems of devices. Advanced data representations for multimedia.	E15-368B	617-253-0334	vmb@media.mit.edu
V. Bulović	Physical properties of organic and organic/inorganic nanocrystal composite thin films and structures; development of nanostructured electronic and optoelectronic devices.	13-3138	617-253-7012	bulovic@mit.edu
A.P. Chandrakasan	Design of digital integrated circuits and systems. Energy efficient implementation of signal processing and communication systems. Circuit design with emerging technologies.	38-107	617-258-7619	anantha@mtl.mit.edu

Faculty Name	*Research Areas & Special Interests*	*Office*	*Phone*	*E-mail*
G. Chen	Heat transfer and energy conversion at micro- and nanometer scales, such as thermoelectrics, and thermophotovoltaics and photovoltaics; hydrogen storage; development of thermally conductive polymers and liquids; nanoscale fluid flow.	3-260	617-253-0006	gchen2@mit.edu
M.J. Cima	Forming methods for complex macro and micro devices, using three dimensional printing. Development of chemically-derived epitaxial oxide films for HTSC coated conductors. Implantable devices for drug delivery and biomedical applications. Devices and processes for high throughput combinatorial screening of complex materials formulations.	12-011	617-253-6877	mjcima@mit.edu
M.L. Culpepper	Macro, micro and nano-scale machines for precision positioning, assembly and manipulation. Basic and applied research on physical principles, modeling approaches, synthesis/simulation tools, design methods and manufacturing practices. Design and manufacture of multi-scale, multi-physics mechanical systems. Hands-on education applied to the mechanical design of micro and nano-scale devices.	35-209	617-452-2395	culpepper@mit.edu
L. Daniel	Parameterized model order reduction of linear and nonlinear dynamical systems; mixed-signal, RF and mm-wave circuit design and robust optimization; power electronics, MEMs design and fabrication; parasitic extraction and accelerated integral equation solvers.	36-849	617-253-2631	luca@mit.edu
J.L. Dawson	Analog system theory and its applications. RF transceivers, power amplifier linearization, high-speed data conversion, problems in nonlinear control.	39-527a	617-324-5281	jldawson@mtl.mit.edu
J.A. del Alamo	Microelectronics device technologies for gigahertz and gigabit-per-second communication systems: physics, modeling, technology and design. InGaAs as a post-CMOS semiconductor logic technology. Technology and pedagogy of online laboratories for engineering education.	39-567a	617-253-4764	alamo@mit.edu
P.S. Doyle	Complex fluids and microfluidics: single DNA dynamics, BioMEMs, magnetic fluids, rheology.	66-270	617-253-4534	pdoyle@mit.edu
C.G. Fonstad, Jr.	Compound semiconductor heterostructure devices and physics. Optoelectronics: laser diodes, photodiodes, quantum effect devices, and OEICs. Monolithic heterogeneous integration. Microscale thermophotovoltaics.	13-3050	617-253-4634	fonstad@mit.edu
J. Han	Nanofluidic/Microfluidic technologies for advanced biomolecule analysis and sample preparation: novel nanofluidic phenomena, nanofluidic biomolecule separation and pre-concentration, Molecular transport in nano-confined space.	36-841	617-253-2290	jyhan@mit.edu

Faculty Name	*Research Areas & Special Interests*	*Office*	*Phone*	*E-mail*
J.L. Hoyt	Epitaxial growth, fabrication and device physics of silicon-based heterostructures and nanostructures. High mobility Si and Ge-channel MOSFETs, and silicon-germanium photodetectors for electronic/photonic integrated circuits.	39-427A	617-452-2873	jlhoyt@mtl.mit.edu
Q. Hu	Physics and applications of millimeter-wave, terahertz, and infrared devices.	36-465	617-253-1573	qhu@mit.edu
K.F. Jensen	Design, fabrication, testing, and integration of microsystems for chemical and biological discovery, synthesis and processing. Microsystems for energy applications, including micro-combustors,-reformers, and thermophotovoltaicsystems. Chemical kinetics and transport phenomena related to processing of materials for biomedical, electronic and optical applications.	66-350	617-253-4589	kfjensen@mit.edu
R.D. Kamm	Fluid mechanics, biomedical fluid mechanics, molecular, cell and tissue biomechanics, respiratory physiology, transport phenomena	NE47-321	617-253-5330	rdkamm@mit.edu
S.-G. Kim	Nanomanufacturing, MEMS assembly en masse, carbon nanotube transplanting assembly. self-cleaning RF MEMS switch, piezoelectric energy harvesting, printable PZT MEMS.	1-310	617-452-2472	sangkim@mit.edu
L.A. Kolodziejski	Research in integrated photonic devices and optoelectronic components. Design and fabrication of photonic crystals and III-V semiconductor devices. Electronic materials growth and characterization.	36-287	617-253-6868	leskolo@mit.edu
J. Kong	Synthesis, characterization and applications of carbon-based nanomaterials (nanotubes and graphene) and inorganic nanowires.	13-3065	617-324-4068	jingkong@mit.edu
J.H. Lang	Analysis, design and control of electromechanical systems with application to traditional electromagnetic actuators, micron-scale actuators and sensors (MEMS), and flexible structures.	10-176	617-253-4687	lang@mit.edu
H.-S. Lee	Analog and mixed-signal integrated circuits with a particular emphasis in data conversion circuits in scaled CMOS.	39-553	617-253-5174	hslee@mtl.mit.edu
C. Livermore	Microelectromechanical systems (MEMS). Design and fabrication of high power microsystems, including electrical generators and MEMS components for lasers. Self-assembly techniques for nano- and micro-scale manufacturing.	3-449C	617-253-6761	livermor@mit.edu
S.R. Manalis	Microdevices for biomolecular and single-cell detection.	E15-422	617-253-5039	scottm@media.mit.edu

Faculty Name	*Research Areas & Special Interests*	*Office*	*Phone*	*E-mail*
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	617-253-8532	imasaki@aol.com
T.P. Orlando	Our focus is on the implementation of the major components of a quantum computer using superconducting circuits. This includes the study of single and coupled qubit behavior, qubit measurement, algorithm implementation, and scalability.	13-3006	617-253-5888	orlando@mit.edu
T. Palacios	Design, fabrication and characterization of novel electronic devices in wide bandgap semiconductors; polarization and bandgap engineering; transistors for sub-mm wave power and digital applications; new ideas for power conversion and generation; interaction of biological systems with semiconductor materials and devices; nanowires and carbon nanotube –based transistors.	39-567B	617-324-2395	tpalacios@mit.edu
J.A. Paradiso	Sensor networks, ubiquitous computing, energy harvesting, power management for sensor networks, passive sensors, human-computer interfaces, localization.	E15-327	617-253-8998	joep@media.mit.edu
D.J. Perreault	Design, manufacturing, and control of power electronics and energy conversion systems,; power generation; rf and analog circuit design. Applications to industrial, commercial, scientific, transportation, and biomedical systems.	10-039	617-258-6038	djperrea@mit.edu
M.H. Perrott	Circuit and architecture design for high speed mixed-signal circuits such as phase-locked loops and A/D converters: circuit topologies, architectural approaches, design methodologies, modeling, simulation techniques. Communication system simulation software and tutorials for engineering education.	38-344b	617-452-2889	perrott@mit.edu
R.J. Ram	Photonic devices for applications in communications, computing, and biological sensing with special emphasis on fiber-to-the-home, InP photonic integration, Silicon photonics and high speed interconnects, microscale bioreactors, and biomanufacturing.	36-491	617-253-4182	rajeev@mit.edu
C.A. Ross	Fabrication, properties and applications of magnetic and magnetooptical films and nanostructures; self assembly, block copolymer lithography.	13-4005	617-258-0223	caross@mit.edu
R. Sarpeshkar	Biomedical systems, circuit modeling of biology, bio-inspired systems.	38-294	617-258-6599	rahuls@mit.edu

Faculty Name	*Research Areas & Special Interests*	*Office*	*Phone*	*E-mail*
M.L. Schattenburg	Advanced lithography, including x-ray, electron-beam, ion-beam, and optical. Nanotechnology and nanofabrication. Precision engineering and nano-accuracy dimensional metrology. Advanced interference lithography technology for high-accuracy patterning of general grating and grid patterns. Micro and nanometer fabrication technology applied to advanced astronomical and laboratory instrumentation. Silicon micromachined structures applied to high-precision optical assembly. X-ray optics and instrumentation.	37-487	617-253-3180	marks@space.mit.edu
M.A. Schmidt	Micromechanical systems (MEMS). Microfabrication technologies for integrated circuits, sensors, and actuators; design of micromechanical sensor and actuator systems; mechanical properties of microelectronic materials with emphasis on silicon wafer bonding technology; integrated microsensors, and microfluidic devices. Novel applications of MEMS and nanotechnologies to a variety of fields, including miniature gas turbines, miniature chemical reactors, miniature gas analyzers, microswitches, biological applications, and sensors monolithically integrated with electronics.	39-521	617-253-7817	schmidt@mtl.mit.edu
Y. Shao-Horn	Fundamental science and engineering of materials used in electrochemical conversion and storage systems such as fuel cells and batteries to provide high efficiency and low environmental impact energy sources. Characterizing and design of electronic, crystal and surface structures of materials for lithium storage and electrocatalysis of small molecules of energy consequence.	3-158	617-253-2259	shaohorn@mit.edu
A.H. Slocum	Precision machines and mechanisms from macro to nanoscale.	3-445	617-253-0012	slocum@mit.edu
H.I. Smith	Co-director, NanoStructures Lab. Development of nanofabrication tools and techniques aimed at reaching molecular dimensions and sub-1nm positional accuracy; nanophotonics; templated self assembly.	36-225	617-253-6865	hismith@mit.edu
C.G. Sodini	Design of technology-intensive Microsystems, emphasizing integrated circuit design at the device level, including organic integrated circuits, high data rate wireless LANs, and mm-wave imaging systems.	39-527b	617-253-4938	sodini@mit.edu
F.R. Stellacci	Study and use of large supramolecular assemblies of molecules, with particular interest in situations where these assemblies can develop collective properties that are uniquely determined by their structure and molecular functions.	13-4053	617-324-2500	frstella@mit.edu

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V. Stojanović	On-chip interconnects and high-speed off-chip interfaces (electrical, photonic). Modeling and analysis of noise and dynamics in circuits and systems. Application of optimization techniques to digital communications, analog and digital circuits. Digital communications and signal-processing architectures, clock generation and distribution, high-speed digital circuit design, VLSI and mixed-signal IC design.	38-260	617-324-4913	vlada@mit.edu
C.V Thompson	Processing and property optimization for thin films and nanostructures for applications in electronic and electromechanical integrated device systems. Advanced, reliable integrated circuit interconnects.	13-5069	617-253-7652	cthomp@mit.edu
H.L. Tuller	Resonant and chemoresistive sensors, micro-fuel cells, high K dielectrics, electro-optic and piezoelectric thin films, solid state ionics, thin film transistors, MEMS structures and devices.	13-3126	617-253-6890	tuller@mit.edu
J. Voldman	Microtechnology for basic and applied cell biology; Microfluidic perfusion culture, patterning, and manipulation of stem cells. Electrostatics at the microscale, especially dielectrophoresis.	36-824	617-253-2094	voldman@mit.edu
B.L. Wardle	Nano-engineered composites, MEMS Power devices and energy harvesting, advanced composite materials and systems, structural health monitoring (SHM), fracture, fatigue and damage mechanics, durability modeling/ testing, finite-element modeling, structural response and testing, buckling mechanics, project design and management, business strategy and growth, cost modeling.	33-314	617-252-1539	wardle@mit.edu