MTL FACULTY

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 organic transistors.	13-3053	617-452-5132	baldo@mit.edu
G. Barbastathis	3D optical systems, spatial 3D and spectral imaging with a single camera and without scanning, MEMS for integrated optics, Nanostructured Origami™ 3D fabrication and assembly process for nanomanufacturing.	3-461c	617-253-1960	gbarb@mit.edu
K.K. Berggren	Superconductive nanodevice physics and applications; nanofabrication methods, processes, and tool-development for application to superconductive quantum computing, single-photon detection, and reconfigurable devices.	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), 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, 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

Faculty Name	*Research Areas & Special Interests*	*Office*	*Phone*	*E-mail*
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, emphasis on the energy efficient implementation of microsensor networks and ultra-wideband systems, circuits techniques for deep sub-micron technologies and 3-D integration.	38-107	617-258-7619	anantha@mtl.mit.edu
G. Chen	Heat transfer and energy conversion at micro- and nanometer scales, including microelectronics, photonics, thermoelectrics, thermionics, and thermophotovoltaics; solid-state micro- energy conversion devices and materials, radiation transport and electromagnetic metamaterials; micro and nanofabrication.	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 MEMS 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. Technology and pedagogy of online laboratories for engineering education.	39-415a	617-253-4764	alamo@mit.edu

Faculty Name	*Research Areas & Special Interests*	*Office*	*Phone*	*E-mail*
E.A. Fitzgerald	Electronic materials, novel semiconductor heterostructures and devices, heterostructure energy devices (thermoelectrics and thin film batteries), heteromaterial integration, and commercializing fundamental technology.	13-5153	617-258-7461	eafitz@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
J.L. Hoyt	Novel processes, materials, and device concepts for silicon technology. Device physics and epitaxial growth of silicon-based heterostructures and nanostructures. Strained Si MOSFETs, heterojunction bipolar transistors, CMOS front-end processing, and silicon-germanium photodetectors.	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, thermophotovoltaic, and solid oxide fuel cells. Chemical kinetics and transport phenomena related to processing of materials for biomedical, electronic and optical applications.	66-566	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, tunable optical MEMS devices and packaging, self-cleaning RF MEMS switch, piezoelectric energy harvesting for autonomous sensors, carbon nanotube transplanting and assembly.	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

Faculty Name	*Research Areas & Special Interests*	*Office*	*Phone*	*E-mail*
J. Kong	Synthesis and characterization of carbon nanotubes, applications of nanotube electrical devices	13-3065	617-324-4068	jingkong@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	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 detection and their application to systems biology and medicine.	E15-422	617-253-5039	scottm@media.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	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
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	Novel optical and electronic devices for applications ranging from communication networks, efficient energy production, to biosensing and bioprocess development.	36-491	617-253-4182	rajeev@mit.edu
C.A. Ross	Fabrication, properties and applications of magnetic films and nanostructures; self assembly.	13-4005	617-258-0223	caross@mit.edu
R. Sarpeshkar	Bioelectronics: bio-inspired and biomedical electronics.	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	Microelectromechanical 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
A.H. Slocum	Precision machines and mechanisms from macro to nanoscale.	3-445	617-253-0012	slocum@mit.edu
H.I. Smith	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 low data rate wireless sensor systems.	39-527b	617-253-4938	sodini@mit.edu
V. Stojanović	Modeling of noise and dynamics in circuits and systems. Application of convex optimization to digital communications, and analog and VLSI circuits. Communications and signal processing architectures. High-speed electrical and optical links, on-chip signaling, and clock generation and distribution. High-speed digital and mixed-signal IC design.	38-260	617-324-4913	vlada@mit.edu
C.V Thompson	Processing and properties of thin films and nanomaterials for applications in electronic, microelectronic, and photonic micro- and nano-systems.	13-5077	617-253-7652	cthomp@mit.edu

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T.A. Thorsen	Microfluidics; microfluid rheology and device development for chemical engineering and biomedical applications	3-248	617-253-9379	thorsen@mit.edu
J. Voldman	Microtechnology for basic and applied cell biology. 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