THAYER SCHOOL OF ENGINEERING AT DARTMOUTH

ENGINEERING IN MEDICINE FACULTY

IMAGING AND DEVICES

Ian Baker, PhD
nanoparticles for magnetic hyperthermia
x-ray topography and diffraction

Jay Buckey, MD
bubble detection and sizing
smart medical systems
hearing assessment
aerospace medicine
undersea and hyperbaric medicine
motion sickness

Scott Davis, PhD
cancer diagnostics and treatment
biomedical optics
multi-modal medical imaging
molecular imaging
fluorescence molecular tomography
fluorescence guided surgery
photodynamic therapy

Solomon Diamond, PhD
biomedical imaging
functional neuroimaging
physiological modeling
heart rate variability
stroke recovery
Alzheimer's disease

Eugene Demidenko, PhD
statistical methodology
mixed models
nonlinear regression
statistical analysis of shapes and images
electrical impedance tomography
statistical image reconstruction
mathematical tumor regrowth modeling
non-convex optimization
partial differential equations with mixed boundary conditions

Jonathan Elliott, PhD
optics in medicine
molecular guided surgery
tracer kinetic modeling
multimodal imaging
photodynamic therapy
near-infrared spectroscopy
structured light scatteroscopy

Eric Fossum, PhD
advanced image sensors

David Gladstone, ScD
ultra-conformal radiation therapy
image-guided radiation therapy
biological gating of therapeutic X-ray beams
image-guided brachytherapy
Cherenkov emission during radiotherapy
EPR dosimetry

Richard Granger, PhD
brain circuit analysis
algorithm development
neuroimaging analysis
robotics
medical diagnostics

Richard Greenwald, PhD
biomechanics
injury prevention
rehabilitation
sports equipment
product development

Ryan Halter, PhD
biomedical instrumentation
electrical impedance tomography and spectroscopy
medical imaging
tissue bioimpedance
cancer detection technologies
traumatic brain injury
medical robotics

Alexander Hartov, PhD
medical imaging
electrical impedance tomography
image-guided surgery
cryosurgery
ultrasound
multi-modality imaging

P. Jack Hoopes, DVM, PhD
experimental cancer therapeutics, including radiation, chemotherapy, hyperthermia, photodynamic therapy and nanotechnology)
animal pathology
animal models
experimental surgical technology

Shudong Jiang, PhD
optical spectroscopy and imaging systems

Erik J. Kobylarz, MD PhD
clinical neurophysiology
intraoperative neurophysiologic monitoring
epilepsy
neuro-ophthalmology
brain stimulation for epilepsy

Geoffrey Luke, PhD
ultrasound imaging
photoacoustic imaging
bionanotechnology
cancer diagnostics and therapy
molecular imaging

Paul Meaney, PhD
microwave imaging
ultrasound computed tomography
microwave antenna design
thermal modeling and system design for focused ultrasound surgery applications

Kofi Odame, PhD
analog integrated circuits
low-power sensor interfaces
cochlear implants
nonlinear signal processing

Keith Paulsen, PhD
numerical methods in electromagnetics
cancer therapeutics
medical imaging methodologies
bioelectromagnetics

Brian Pogue, PhD
optics in medicine
biomedical imaging to guide cancer therapy
molecular-guided surgery
dose imaging in radiation therapy
Cherenkov light imaging
image-guided spectroscopy of cancer
photodynamic therapy
modeling of tumor pathophysiology and contrast

Laura Ray, PhD
acoustics and signal processing

Peter Robbie, MFA
human-centered design
cognitive strategies and methodologies for creative design practice

IMAGING AND DEVICES

David Roberts, MD
stereotactic and functional neurosurgery
cancer neurosurgery
intraoperative image-guidance systems
computational modeling
neuroimaging

Joseph Rosen, MD
nerve repair and human machine interfaces
microsurgery and transplantation of limbs
computer-aided surgery
virtual reality simulators
telemedicine and informatics
healthcare delivery for medical disasters
counter-measures for bio-terrorism

Kimberley Samkoe, PhD
biomedical optics
fluorescence spectroscopy and imaging
multi-photon fluorescence spectroscopy and imaging
photodynamic therapy
fluorescence lifetime
diffuse optical imaging

Rahul Sarpeshkar, PhD
analog synthetic biology
biological and bio-inspired super-computing chip design
medical devices
ultra-low-power, fault tolerant, and ultra energy-efficient systems
engineering systems that operate at the fundamental limits of physics

Fridon Shubitidze, PhD
magnetic nanoparticles hyperthermia for cancer treatment and imaging
DNA sequencing

Harold Swartz, MD
clinical imaging using magnetic resonance
measuring physiology and pathophysiology in vivo
after-the-fact dosimetry for terrorism and accidents
policy issues in the response to terrorism

Stuart Trembly, PhD
therapeutic heating of tissue
dielectric properties of tissue
biomedical engineering
antenna theory

John Weaver, PhD
medical imaging
MRI
image processing
MR elastography
magnetic nanoparticle imaging

Benjamin Williams, PhD
tissue oxygen measurement
small animal imaging
image reconstruction
biodosimetry

John Zhang, PhD
miniature imaging and biosensing systems
bio-inspired nanomaterials
lab-on-chip design
advanced nanofabrication technologies
multi-scale modeling of fundamental force, flow, and energy processes in biological interactions

PROTEIN ENGINEERING

Margie Ackerman, PhD
protein engineering
biotherapeutics
vaccine technology
engineering immune responses

Tillman Gerngross, PhD
cell-based protein purification systems
cellular engineering of protein expression hosts
glyco-engineering of proteins

Karl Griswold, PhD
protein engineering
directed evolution
biotherapeutics
applied biocatalysis
high-throughput screening

Jane Hill, PhD
infectious disease prognosis and diagnostics
aerobiological processes

SYSTEMS ANALYTICS

Vikrant Vaze, PhD
healthcare analytics
healthcare systems modeling
healthcare analytics
healthcare systems modeling

BIOMATERIALS AND IMPLANTS

Zi Chen, PhD
biomimetic materials/devices
nanofabrication
mechanics of morphogenesis
cell biomechanics
mechanics of DNA structures

John Collier, PhD
design and analysis of orthopedic prostheses
design and metallurgy of porous-metal-coated implants
study of implant/host interfaces
growth and repair of cartilage

Michael Mayor, MD
adult reconstructive orthopaedic surgery
arthroscopy
biomechanics
biomaterials
design and analysis of orthopaedic prostheses
study of joint implant/host interfaces via retrieval analysis

Douglas Van Citters, PhD
orthopaedic failure analysis and design
wear of polymers
polymer processing
biomaterials and surgical device design

Ulrike Wegst, PhD
mechanical performance of natural materials
biomaterials and tissue engineering
self-assembly
biotemplated materials
biomimetics