



# Engineering Research Interests 2022-2023

## BIOMEDICAL ENGINEERING

- ⌘ **Biomaterials, Drug Delivery and Drug Discovery**  
Ault, Colvin, Coulombe, Darling, Desai, Hoffman-Kim, Jay, Kofron, Mathiowitz, Morgan, Shukla, Srivastava, Tripathi, Wong, Xu
- ⌘ **Biomedical Optics and Biophotonics**  
Lee, Nurmikko, Toussaint, Xu
- ⌘ **Biomolecular Engineering and Nanomedicine**  
Colvin, Dawson, Desai, Hurt, Mathiowitz, Palmore, Shukla, Tripathi
- ⌘ **Biosensors and Bioplatfroms**  
Ault, Borton, Colvin, Coulombe, Laiwalla, Lee, Morgan, Palmore, Rose, Rosenstein, Shukla, Tripathi, Wong, Xu
- ⌘ **Mechanobiology and Motion Sciences**  
Coulombe, Crisco, Darling, Dawson, Desai, Fleming, Jay, Kesari, Morgan, Srivastava, Toussaint, Wong
- ⌘ **Neuroengineering and Brain-Computer Interfaces**  
Borton, Hochberg, Laiwalla, Lee, Nurmikko, Simeral
- ⌘ **Repair and Regenerative Medicine**  
Coulombe, Darling, Dawson, Desai, Fleming, Hoffman-Kim, Kofron, Morgan, Shukla
- ⌘ **Tissue Engineering and Stem Cell Technology**  
Coulombe, Darling, Dawson, Desai, Hoffman-Kim, Kofron, Palmore, Shukla, Srivastava

## CHEMICAL AND ENVIRONMENTAL ENGINEERING

- ⌘ **Alternative and Sustainable Fuels**  
Goldsmith, Kulaots, Palmore, Peterson, Suuberg
- ⌘ **Biochemical Sensing**  
Dawson, Palmore, Shukla, Tripathi, Xu
- ⌘ **Biomaterials, Nanomaterials, and Composite Materials**  
Abriola, Colvin, Coulombe, Dawson, Desai, Hurt, Kesari, Padture, Pennell, Sheldon, Shukla, Tripathi, Wong, Xu
- ⌘ **Carbon and Graphene-Based Materials**  
Hurt, Kulaots, Padture, Sheldon, Suuberg, Xu
- ⌘ **Catalysis and Reaction Kinetics**  
Goldsmith, Kulaots, Kumar, Manz, Peterson, Suuberg
- ⌘ **Computational Chemistry and Atomistic Modeling**  
Goldsmith, Peterson, Qi, van de Walle
- ⌘ **Electrochemical Energy Conversion**  
Palmore, Peterson, Qi, Sheldon
- ⌘ **Environmental Processes and Remediation**  
Abriola, Colvin, Dawson, Goldsmith, Hurt, Kulaots, Manz, Pennell, Suuberg
- ⌘ **Environmental Exposure and Human Health**  
Abriola, Colvin, Coulombe, Hurt, Manz, Pennell, Suuberg, Wong

## ELECTRICAL AND COMPUTER ENGINEERING

- ⌘ **Computer Architecture and Embedded Systems**  
Patterson, Reda, Rosenstein, Silverman, Simeral, Taubin
- ⌘ **Computer Vision, Image and Medical Image Processing**  
Felzenszwalb, Kimia, Reda, Taubin, Toussaint, Zia
- ⌘ **Digital Fabrication**  
Gonsheer, Taubin
- ⌘ **Electronic Materials and Devices**  
Beresford, Laiwalla, Larson, Mittleman, Nurmikko, Pacifici, Padture, Paine, Qi, Xu, Zaslavsky, Zia
- ⌘ **Energy-Efficient and Thermal-Aware Computing Systems**  
Reda, Rosenstein
- ⌘ **Energy Science (inc. Energy-Efficient Computing, Energy-Harvesting & Photovoltaics)**  
S. Kim, Larson, Pacifici, Padture, Reda, Xu, Zaslavsky, Zia
- ⌘ **Integrated Circuit Design**  
Laiwalla, Larson, Patterson, Reda, Rosenstein
- ⌘ **Mixed-Signal Electronics and Analog/Digital Design**  
Larson, Patterson, Reda, Rosenstein, Silverman, Zaslavsky
- ⌘ **Molecular Informatics**  
Reda, Rose, Rosenstein
- ⌘ **Nanophotonics, Plasmonics and THz**  
Mittleman, Nurmikko, Pacifici, Toussaint, Xu, Zia
- ⌘ **Neuroengineering and Brain-Computer Interfaces**  
Borton, Hochberg, Laiwalla, Larson, Nurmikko, Simeral
- ⌘ **Robotics and Industrial Automation**  
Ayanian, Kimia, Silverman, Taubin
- ⌘ **Sensor Networks, Smart Cameras, Networked Systems, and Signal Processing**  
Ayanian, Gray, Kimia, Reda, Rose, Rosenstein,

## FLUIDS AND THERMAL SCIENCES

- ⌘ **Biomechanics, Biophysics, Biocomotion and Bio-Inspired Robotics**  
Breuer, Dawson, Kesari, Powers, Rodriguez, Wilhelmus, Zenit
- ⌘ **Fluid-Structure Interaction**  
Ault, Bazilevs, Breuer, Harris, Karniadakis, Powers, Rodriguez, Wilhelmus, Zenit
- ⌘ **Interfacial Dynamics and Surface Science**  
Abriola, Desai, Harris, Kesari, Powers, Xu, Zenit
- ⌘ **Micro and Nano-scale Mechanics and Dynamics**  
Ault, Breuer, Dawson, Harris, Powers, Toussaint
- ⌘ **Soft Matter, Complex Fluids, and Colloidal Sciences**  
Ault, Dawson, Desai, Harris, Henann, Hurt, Karniadakis, Kesari, Powers, Rodriguez, Shukla, Wong, Xu, Zenit

## MATERIALS SCIENCE

- ⌘ **Biomaterials**  
Breuer, Coulombe, Dawson, Desai, Palmore, Shukla, Srivastava, Wong, Xu, Zenit
- ⌘ **Electronic Materials**  
Caretta, Chason, S. Kim, Kingon, Padture, Paine, Qi, Sheldon, van de Walle, Xu
- ⌘ **Energy Materials**  
Padture, Palmore, Paine, Peterson, Qi, Sheldon, Srivastava, van de Walle, Zia
- ⌘ **High Temperature Materials**  
Hurt, Kumar, Padture, Qi, Sheldon, van de Walle,
- ⌘ **Thin Films**  
Caretta, Chason, Desai, S. Kim, Pacifici, Padture, Paine, Qi, Sheldon, Shukla, Xu

## SOLID MECHANICS

- ⌘ **Biomaterials, Biomechanics, and Biophysics**  
Bazilevs, Blume, Breuer, Clifton, Coulombe, Dawson, Desai, Kesari, Powers, Rodriguez, Srivastava, Zenit
- ⌘ **Computational Mechanics**  
Abriola, Bazilevs, Bessa, Curtin, Henann, Kesari, Rodriguez
- ⌘ **Mechanics of Materials for Energy Storage**  
Curtin, Guduru, K.S. Kim, Qi, Padture, Sheldon, Srivastava
- ⌘ **Mechanics of Soft Materials (e.g. gels, polymers, granular matter)**  
Ault, Blume, Clifton, Harris, Henann, Kesari, K.S. Kim, Powers, Rodriguez, Srivastava, Zenit
- ⌘ **Mechanics of Thin Films and Surface Engineering**  
Caretta, Chason, Guduru, K.S. Kim, Kumar, Padture, Peterson, Qi, Sheldon, van de Walle
- ⌘ **Nano and Micro-mechanics**  
Bessa, Breuer, Chason, Clifton, Curtin, Kesari, K.S. Kim, Padture, Qi, Sheldon, Toussaint, Xu

## STRUCTURAL MATERIALS

- ⌘ **Structural Materials**  
Bazilevs, Bessa, Clifton, Curtin, Guduru, Kesari, K.S. Kim, Kumar, Padture, Sheldon, Srivastava, van de Walle, Xu

## INNOVATION MGMT. AND DESIGN ENGINEERING

- ⌘ **Appropriate Technology**  
Altringer, Breuer, Bull, Gonsheer, Hazeltine, Kofron
- ⌘ **Engineering Education**  
Altringer, Gray, Kofron
- ⌘ **Entrepreneurial Networks and Early Stage Enterprise Growth**  
Chaltas, Desai, Donohue, Harry, Kingon, Larson, McHugh, Ozkazanc-Pan, Suuberg, Warshay
- ⌘ **Social Entrepreneurship, Inclusion, and Innovation**  
Bull, Gonsheer, Hazeltine, Kingon, Kofron, Ozkazanc-Pan, Warshay