DEPARTMENT DESCRIPTION

The Department of Chemical & Biomedical Engineering (CBE), a joint department between Florida State University and Florida A&M University, provides its students with a thorough background in Materials Science and Engineering. CBE encourages students to apply the foundations of chemical and biomedical engineering to a variety of critical and timely research areas that span numerous engineering priorities in today's world, including Biomedical Imaging, Cellular & Tissue Engineering, Multi-Scale Theory, Modeling & Simulations, Nanoscale Science & Engineering, Plasma Reaction & Electrochemical Engineering, Polymers & Complex Fluids, and Renewable & Advanced Power Production.

Uniquely, students can matriculate at either Florida State University or Florida A&M University, leading to a diverse and energetic student population supported by the deep academic traditions of these two institutions.

RESEARCH AREAS AND FACULTY ALIGNMENT

- Biomedical Imaging (Drs. Sam Grant, Yan Li and Teng Ma)
- Cellular & Tissue Engineering (Drs. Hoyong Chung, Sam Grant, Jingjiao Guan, Christina Holmes, Yan Li and Teng Ma)
- Multi-Scale Theory, Modeling & Simulations (Dr. Jose Mendoza-Cortes)
- Nanoscale Science & Engineering (Drs. Jamel Ali, Hoyong Chung, Sam Grant, Jingjiao Guan, Daniel Hallinan, Egwu Kalu, Biwu Ma, Jose Mendoza-Cortes, Subramanian Ramakrishnan and Theo Siegrist)
- Plasma Reaction & Electrochemical Engineering (Drs. Eric Kalu, Bruce Locke and Jose Mendoza-Cortes; Mr. Wright Finney)
- Polymers & Complex Fluids (Drs. Rufina Alamo, Jamel Ali, Hoyong Chung, Daniel Hallinan, Jose Mendoza-Cortes, Hadi Mohammadigoushki, Subramanian Ramakrishnan and Ralm Ricarte)
- Renewable & Advanced Power Production (Drs. Daniel Hallinan, Egwu Kalu, Bruce Locke, Biwu Ma, Jose Mendoza-Cortes, Subramanian Ramakrishnan, John Telotte and Yaw Yeboah)

ADMISSION REQUIREMENTS:

University Graduate Admission Requirements

1. A baccalaureate degree from an accredited college or university;
2. Maintenance of a good standing in the institution last attended;
3. Evidence by ORIGGINAL transcript of a satisfactory prior academic record;
4. At least 3.0 grade point average on a 4.0 grading scale as an upper division undergraduate student, or a 3.0 for a master's degree from an accredited institution;
5. Evidence by the GRE; and
6. For international students, an English proficiency exam (TOEFL) for non-native English speakers (IBTOEFL: 80; TOEFL: 550).

Note: Deadlines for applications are determined by the Universities (see websites below). However, full consideration for assistantships is processed by the department, and this deadline is January 1.

DEGREE PROGRAMS:

- MS (course or thesis based): Biomedical Engineering and Chemical Engineering
- PhD (dissertation): Biomedical Engineering and Chemical Engineering

Florida A&M University application: www.famu.edu/graduatestudies
Florida State University application: www.admissions.fsu.edu/graduate
FACILITIES AND AFFILIATED LABORATORIES:
- National High Magnetic Field Laboratory
- High Performance Materials Institute
- Center for Advanced Power Systems
- Aero-Propulsion, Mechatronics and Energy Center
- Institute of Molecular Biophysics
- FSU Biomedical Research Facility - Laboratory Animal Resources

ACADEMIC PARTNERS:
- FSU Departments of Scientific Computing, Chemistry & Biochemistry, Physics and Biological Science
- FSU College of Medicine and Biomedical Sciences
- FAMU School of Pharmacy & Pharmaceutical Sciences

FACULTY HIGHLIGHTS

The 20 CBE faculty members rank among the most successful and acclaimed researchers in the engineering profession. Notable recent accomplishments include:

Dr. Rufina Alamo. The Simon Ostrach Professor of Engineering, has been named as a Fellow of the American Physical Society “for her use of well-characterized materials and performance of carefully designed experiments to address structure-property relationships in polyolefins” and accepted the Mettler-Toledo Award for outstanding achievement by the North American Thermal Analysis Society. She also has been named as a FSU Distinguished Research Professor.

Dr. Sam Grant. Associate Professor and Graduate Coordinator, has won a subcontract on an awarded National Institutes of Health R01 grant to study the origins of migraine using high field MR imaging, particularly with respect to sodium in the brain. His research uses several such MR techniques to evaluate neurodegeneration, cell therapy and pharmaceutics.

Dr. Jingjiao Guan, Associate Professor, has been awarded two National Science Foundation grants for developing advanced nanomanufacturing by “Integration of Polyelectrolyte Contact Printing and Aryldiazonium Chemistry for Nanopatterning” and biomimicking for “Development of a Universal Technique for Functionalizing Therapeutic Cells with Microdevices.”

Dr. Daniel Hallinan. Assistant Professor, testified before the Subcommittee on Energy of the U.S. House of Representatives at the hearing on Innovation and educational activities in Africa on Electrochemical Energy and hydrogen generation research.

Dr. Dr. Bruce Locke. Distinguished University Research Professor and Associate Provost, pursues current research interests that include plasma reaction engineering for chemical synthesis and environmental pollution control. He is the co-Editor-in-Chief of Plasma Chemistry and Plasma Processes, and serves on the International Advisory Board for Plasma Processes and Polymers. He recently was elected to be a Fellow of the AIChE.

Dr. Dr. Yan Li. Assistant Professor, has been awarded funds from the National Science Foundation, National Institutes of Health, and FSU (GAP, EIEG and STC). Her projects study engineering tools for the processing of pluripotent stem cells, and investigate extracellular microenvironment and cell-cell interactions.

Dr. Jose L. Mendoza-Cortes. Assistant Professor, has obtained NSF funding to study the degradation of batteries. To develop new computational methods, he also has received funding from the DOE National Energy Research Scientific Computing Center and NVIDIA, the largest GPU maker in the world.

Dr. Hadi Mohammadigoushki. Assistant Professor, joins the faculty having been trained as an experimental fluid dynamicist during his PhD at U. British Columbia under James J. Feng and postdoctoral work under Susan Miller at the U. California, Berkeley. His research is directed toward understanding the complex nature of soft materials subject to different flows.

Dr. Dr. Theo Siegrist. Professor and APS Fellow, was awarded an Alexander von Humboldt Research Fellowship to conduct research in Germany studying phase change materials for data storage applications. He also has been awarded a NSF Major Research Instrumentation grant to construct an X-ray diffractometer for the Florida Split Coil Magnet, the strongest split coil system in the world. His current work involves superconducting chalcogenides, topological insulators and quantum magnets.

Dr. Subramanian Ramakrishnan. Associate Professor, currently holds a DOD grant for composite materials and was recently awarded a DOD equipment grant for a state of the art 3D printer to print such materials in collaboration with US Army and Air Force research labs. A recent award from NSF (targeted infusion project) is helping him improve materials education. His research develops new materials but also seeks to understand structure function relationships and develop novel design rules for processing.

In total, CBE Faculty have secured over 10 patents, $6 million in research funding and numerous other awards and honors in just the last five years.