

# Department of Materials Science and Engineering

at UCF College of Engineering and Computer Science

## ABOUT

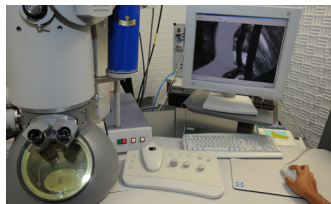
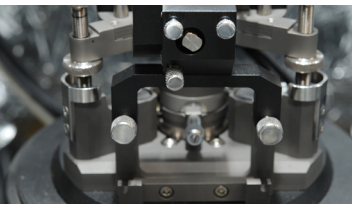
Materials science and engineering centralizes multiple disciplines: materials science, metallurgy, physics, biology, chemistry, nuclear engineering and mechanical engineering. UCF researchers in the field have contributed to scientific advances as diverse as medicine and space exploration.

The program began at UCF in 1998 when the university created the Advanced Materials Processing and Analysis Center (AMPAC) to promote research, education and economic growth in central Florida. Since then, AMPAC has contributed to a well-educated workforce, formed partnerships with private and public organizations, and built a national reputation of research excellence.

AMPAC's ongoing success led to the creation of the Department of Materials Science and Engineering (MSE) in 2012 — the fifth academic department of the UCF College of Engineering and Computer Science.

## WHAT DO MATERIALS SCIENCE ENGINEERS DO?

They are involved with creating new materials or altering known materials to improve anything engineered, from computer chips to structural materials, medicine to electronic sensors and so much more. For example, they make materials (hard and soft matter) more durable, stronger, lighter, efficient, or productive; and they discover new and innovative ways to use materials.



## DEGREE PROGRAMS

UCF offers an M.S. and a Ph.D. in Materials Science and Engineering.

## STUDENTS & FACULTY

**Student Enrollment:** 80

**Faculty/Staff:** 30 faculty (core and MSE program), 2 MSE staff, 7 AMPAC staff and research engineers.

**Faculty Honors:** MSE faculty are members and fellows of scientific societies that recognize distinguished achievement, including National Academy of Inventors, American Association for the Advancement of Science, ASM International, American Ceramic Society, SPIE, American Vacuum Society, The Electrochemical Society, and many more. Faculty have also received highly competitive NSF CAREER and ONR Young Investigator awards.

## RESEARCH STRENGTHS

MSE research at UCF is broad-based and explores a wide spectrum of topics in the properties and structure of hard and soft matter, including:

- electronic materials
- semiconductor interconnects
- nanomaterials
- magnetics
- biological materials
- organic and molecular engineering
- bioengineering
- novel materials
- shape-memory alloys
- structural materials

Faculty and students author an average of more than 140 refereed publications and conference presentations. Faculty average \$350,000 yearly in external funding.

## UCF AT A GLANCE

**The University of Central Florida**, founded in 1963, is the nation's second-largest university.

Located in Orlando, UCF and its 12 colleges provide opportunities to nearly 60,000 students, offering 177 bachelor's and master's degrees and 30 doctoral programs.

UCF is designated a "very high research activity" institution by the Carnegie Foundation, the highest rating. With this designation, UCF joins some of the nation's most prestigious universities, including Harvard, MIT, Johns Hopkins and Stanford.

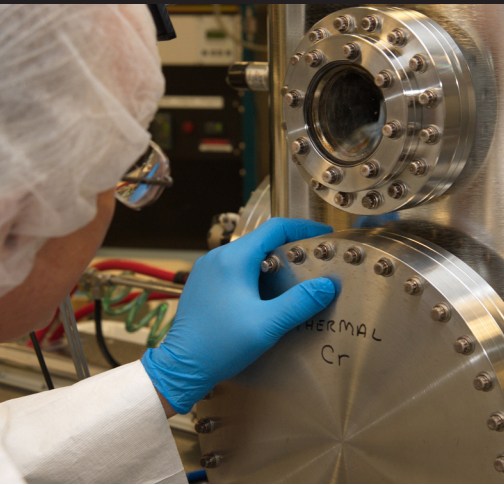
UCF ranks #16 among U.S. universities for the impact of its patents, according to IEEE, the world's leading association for the advancement of technology.

UCF external funding topped \$100 million for the ninth straight year. UCF researchers have generated \$1.4 billion in external research grants since 2000.

With UCF as a founding partner, the Florida High Tech Corridor Council has, since 1996, generated more than \$1.3 billion in downstream impact to the Florida economy and 4,000 new jobs.

## UCF'S MSE RANKING

The National Research Council, a part of the National Academy of Engineering and the National Academy of Science, ranked UCF among the top MSE programs in the country in their 2010 assessment of research doctoral programs at U.S. universities.



### MSE LABORATORIES AT UCF

Located on the main campus and in Central Florida Research Park, adjacent to UCF. They include:

- Ceramic Processing and Analysis
- Thin Films
- NanoFAB and BioMEMS
- Corrosion/Electrochemistry
- Nano-Bio-Materials
- Processing and Microstructural
- Characterization
- Biomaterials
- Computational Materials
- Surface Engineering/  
Nanomaterials Processing  
and Plasma Nanomanufacturing
- High Temperature Materials  
and Coatings
- Powder Processing

### FACILITIES

#### AMPAC

The UCF Advanced Materials Processing and Analysis Center is home to two university-wide user facilities that enable cutting-edge research. AMPAC's facilities feature state-of-the-art equipment, characterization and processing. These ultra-modern machines provide students training and education opportunities. Collaborations with other universities, government agencies and private industry are encouraged.

#### Materials Characterization Facility

The user-friendly facility occupies 7,000 square feet and is supported by three research engineers and a faculty coordinator. It houses an impressive array of materials characterization equipment.

#### Advanced Microfabrication and Clean Room Facility

The 3,000 square foot space supports research activities including miniaturization, nanomaterials fabrication and applied acoustoelectronics technology. The class 100 and 1,000 clean rooms contain assorted lithography and device fabrication equipment.



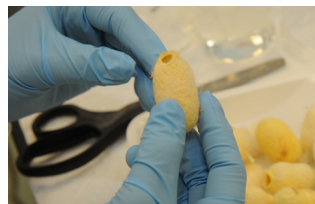
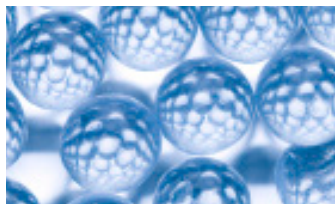
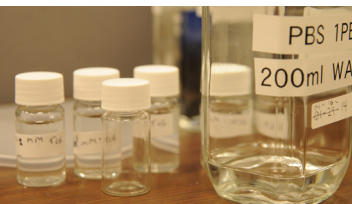
**DR. SUDIPTA SEAL**  
MSE INTERIM CHAIR

Dr. Seal was appointed interim chair in 2014. He also directs AMPAC and UCF's NanoScience Technology Center.

He joined UCF in 1998 and is renowned for his prolific research and commitment to teaching. He is a UCF Distinguished Professor and a Pegasus Professor, the highest faculty honor at UCF,

His list of professional accomplishments includes finding ways to use nanotechnology to aid in the prevention of retinal degeneration and other conditions. His recent work includes a nano-engineered material that can remove large volumes of oil from seawater in an environmentally-friendly way.

He holds 38 patents and was inducted into the National Academy of Inventors in 2013. He is also a Fellow of the American Society of Materials, American Association for the Advancement of Science, American Vacuum Society, Institute of Nanotechnology and the American Institute of Medical and Biological Engineers, and The Electrochemical Society.



### CONTACT

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