Dear Prospective Student,

Welcome to the Department of Mechanical and Industrial Engineering at the University of Illinois at Chicago. We are pleased that you are considering our program(s) to pursue your advanced studies.

Our department is one of the largest graduate departments in the College of Engineering at UIC, an acclaimed public research university that consistently ranks high among world’s young universities. We offer outstanding and well-balanced research-oriented programs leading to master’s and doctoral degrees in two disciplines: mechanical engineering and industrial engineering.

We conduct basic and applied research in a broad range of interdisciplinary topics funded by various federal agencies as well as industries. We also maintain strong research partnerships with national laboratories and industries, locally throughout the Chicago metropolitan area as well as nationally. We take pride in the state-of-the-art research laboratories, first-rate computational and experimental facilities, and the congenial atmosphere we provide for our graduate students.

We are continuously growing and expanding opportunities for training and education of our students to better prepare them for successful careers in academia, industry and research institutions. To address contemporary and emerging research issues of national and international importance, we have strengthened and structured our ongoing research efforts into several major interdisciplinary research emphasis areas – Biomedical, Computational Mechanics, Controls, Design and Manufacturing, Data-Driven Decision Making, Energy, Materials, and Micro/Nano-Scale Science and Engineering. Within each emphasis area, you will find a wide array of cutting-edge interdisciplinary topics available for graduate research.

As a graduate student in mechanical or industrial engineering programs at UIC, you will work alongside an exceptional faculty who are making discoveries, inventing new technologies, and fueling the innovations that are changing the world. Our faculty members are academic leaders in their research fields, well known nationally and internationally, and include fellows of various professional societies, editors of multiple international journals, and winners of prestigious research awards such as the National Science Foundation CAREER Award and the Office of Naval Research Young Investigator Award.

I encourage you to learn as much as you can about our programs online or in person. Visit our website at mie.uic.edu and learn about our faculty’s accomplishments and research interests. Visit our department on campus and talk to our faculty about research opportunities and meet with our students. I hope you will find our graduate program(s) to be exciting, interesting and the right fit for your academic and career goals. I invite you to consider becoming a part of this talented and dynamic community in the heart of the world-class city of Chicago.

Sincerely,

Farzad Mashayek
Professor and Department Head
The Department of Mechanical and Industrial Engineering (MIE) at the University of Illinois at Chicago is committed to excellence in research, teaching, and service to the community. Our ME and IE programs are ranked in the top 50 nationally in the latest U.S. News and World Report ranking.

MIE is one of the six departments in the UIC College of Engineering. It is made up of more than 33 core faculty members, 500 graduate students, and 750 undergraduate students. The department offers programs leading to Master of Science (MS) and Doctor of Philosophy (PhD) degrees in Mechanical Engineering (ME), Industrial Engineering (IE), and Energy Engineering (EE).

The graduate programs cover broad areas of mechanical and industrial engineering. The primary areas of concentration are mechanical analysis and design, fluids engineering, thermal sciences, nano-science/technology, manufacturing, data-driven decision making and more. Students may select basic and applied courses dealing with such topics as fluid mechanics, heat and mass transfer, thermodynamics, combustion, stress analysis, noise and vibrations, mechanisms, mechanical design, dynamics and control, computer aided design and manufacturing, materials processing, production engineering, and human factors.

ADMISSION
Students are admitted with both MS and PhD as degree objectives with an emphasis on scholarship and research. Applicants must have earned a baccalaureate degree in engineering from an American Board of Engineering Technology accredited college or university or equivalent with a grade point average of at least 3.00 (3.50 is preferred for PhD applicants) on a scale of 4.00. Although most of our PhD applicants typically have a master’s degree, a significant number of applicants pursue our doctoral programs directly after their bachelor’s degree.

FINANCIAL AID
The department, as a general policy, provides financial aid in the form of fellowships, research assistantship, and teaching assistantship to nearly all PhD students in good standing for the duration of their studies. Support for students seeking an MS degree is limited and students must be prepared to support themselves during their studies.

GRADUATE RESEARCH
The PhD programs in ME and IE are research-oriented and require a thesis. The MS bound students have the option of pursuing either a thesis or coursework-only toward their degree. The whole system of graduate study in the department is set up to give you more freedom with fewer course requirements to fulfill. You will work closely with your faculty advisor who will guide you on a course of action and best prepares you for your future career.

For your graduate research, you will find a rich array of contemporary interests grouped under topics of multidisciplinary research areas of emphasis in the departments laboratories described in the following pages.

Learn more about MIE’s graduate programs and start your application at www.mie.uic.edu.
Our mission is to provide an impactful modern engineering education to a diverse community of students so they are professionally prepared and culturally aware, to perform research that advances science and technology with applications that improve our economy, environment, and society, and to serve our community, university, and professions through participation in civic and governing institutions.

The research activity in the department is conducted in 25 laboratories, with our faculty members working in seven major research groups that reflect the department’s focus.

- Biomedical Engineering
- Computational Mechanics
- Data-Driven Decision Making
- Design, Controls and Manufacturing
- Energy
- Materials Engineering
- Micro/Nano-scale Science and Engineering
RESEARCH SPONSORS

The research in the Department of Mechanical and Industrial Engineering is supported and sponsored by federal agencies such as Argonne National Laboratory, the Federal Railroad Administration, the Gas Technology Institute, National Aeronautics and Space Administration, the National Institutes of Health, the National Science Foundation, the National Institute of Standards and Technology, the Office of Naval Research, the U.S. Army Research Office, and the U.S. Department of Energy.

Funding also comes from private foundations and industry such as the Whitaker Foundation, Caterpillar, Motorola, Ford Motors, and BF Goodrich.

Government agencies and companies hiring our graduates include:

- Abbott Laboratories
- Anheuser-Busch
- Argonne National Laboratories
- Baxter & Woodman, Inc.
- Biotechplex Corporation
- Cardinal Health
- Caterpillar, Inc.
- City of Chicago, DOT
- Cook County Highway Dept.
- Exxon Mobile
- Ford Motor Company
- Gas Technology Institute
- GE Medical Systems
- General Electric
- General Motors
- IBM
- Infrastructure Management
- Intel
- Microsoft
- Motorola
- NASA
- Orbitz
- Sargent & Lundy
- Wisdom Adhesives
- and many more!

A student works in the Micro/Nanoscale Fluid Transport Laboratory under the direction of Professor Constantine Megaridis.
Laboratory for Additive Manufacturing Research and Education
Director: Professor Yayue Pan
Areas: Manufacturing, Micro/Nano
Professor Yayue Pan’s Laboratory for Additive Manufacturing Research and Education (LAMRE) focuses on Additive Manufacturing (AM), which is also known as 3D Printing or Direct Digital Manufacturing. It is based on a class of new fabrication processes that can directly yield physical objects from Computer Aided Design (CAD) models. The research objective is to advance Additive Manufacturing through exploring the science in physics and materials, to transform how we create and work by developing and applying novel Additive Manufacturing technologies in a wide range of applications.
http://yayuepan.lab.uic.edu
Anand Laboratory
Director: Professor Sushant Anand
Areas: Energy, Micro/Nano
Professor Sushant Anand’s team is focused on understanding the fundamentals of fluid-surface interactions that can lead to new solutions to a broad range of existing challenges related to energy efficiency, water security, and human health. To solve problems in these areas, the team is looking into fundamentals of phase change, liquid-liquid interactions, and solid-liquid interactions at macro and nano scales. They are developing new techniques and materials that can influence the fluid-surface interactions to favorable outcomes.
http://anand.lab.uic.edu

Computational Biomechanics Research Laboratory
Director: Professor Hamed Hatami-Marbini
Areas: Bio, Computational
Under the direction of Professor Hamed Hatami-Marbini, the group at the Computational Biomechanics Research Laboratory are interested in employing analytical, numerical, and experimental techniques to investigate the complex mechanics of biological and non-biological composite structures such as the cytoskeleton and extracellular matrix and structural nano-composite materials.
http://cbrl.lab.uic.edu

Condensed water droplets around a salt particle from the research in Professor Sushant Anand’s laboratory.

The Computational Biomechanics Research Laboratory (CBRL) is involved in both experimental and numerical analysis of structural and biological materials. For example, multi-phasic material models, which are validated with experimental measurements, are developed to investigate the biomechanical properties of the cornea.
One area of research in Professor Farzad Mashayek’s Computational Multiphase Transport Laboratory focuses on Turbulent Reacting Flow. A volume plot for turbulent mixing layer is colored by streamwise velocity and opacified by the magnitude of vorticity to visualize the two-dimensional, primary spanwise vortex structures and the three-dimensional, secondary streamwise vortex structures along the mixing layer.

**Computational Multiphase Transport Laboratory (CMTL)**
**Director: Professor Farzad Mashayek**

**Areas:** Computational, Energy, Micro/Nano

The CMTL conducts research in four areas that heavily rely on high performance computing. The first area involves direct numerical simulation (DNS) and large-eddy simulation (LES) of turbulent reacting flows, with particular application to combustors. The second area is focused on simulation of low-pressure plasma reactors using both the continuum model for full device simulation as well as the particle-in-cell (PIC) method that captures all the details of ions and electrons transport. The third area concerns multiscale simulation of structural, electrochemistry and ion diffusion in both solid and flow batteries. The simulations range from atomic scale using the density functional theory (DFT) to macroscale via finite element method (FEM). The fourth area concerns a novel electrostatic atomization (EA) method for coating and combustion applications.

http://cmtl.uic.edu

**Dynamic Simulation Laboratory**
**Director: Professor Ahmed A. Shabana**

**Areas:** Computational

Professor Ahmed Shabana and his students are conducting research to develop virtual computer models for design, dynamic analysis and performance evaluation of complex mechanical, aerospace, and biomechanical systems that consist of interconnected rigid and flexible components. Examples of current projects include simulation of multi-body railroad vehicle/track dynamics, automotive applications, large deformation dynamics, and control with application to robot manipulators.

http://miedept.mie.uic.edu/lab/shabana/Laboratory-DSL.htm

Professor Ahmed Shabana’s team develops virtual computer models of vehicles in the Dynamic Simulation Laboratory.
The Engineering Design and Decision Laboratory
Director: Professor Michael J. Scott
Areas: Bio, Design
Professor Michael Scott’s research in The Engineering Design and Decision Laboratory encompasses engineering design theory, design education, and product development. It seeks to understand how to better design successful products and how to educate a diverse group of creative, innovative, and socially engaged engineers to do this well. Specific areas include product platform design to maximize consumer variety while minimizing development and manufacturing costs, reasoning about engineering functions as a fundamental design task, and analysis of intellectual property records to predict innovation success.

Flow and Combustion Simulation Laboratory
Director: Professor Suresh K. Aggarwal
Areas: Computational, Energy
The Flow and Combustion Simulation Laboratory’s research focuses on the development of physical and CFD-based numerical models for flames and multiphase reacting flows. These models are being employed to simulate and investigate a variety of fluid flow and combustion phenomena that are of direct relevance in propulsion and energy conversion devices. Detailed simulations are also being used to explore strategies for clean combustion, and investigate ‘limit phenomena’ in combustion, such as ignition and flame extinction.

http://miedept.mie.uic.edu/lab/aggarwal/index.htm

High Pressure Shock Tube Laboratory
Director: Professor Kenneth Brezinsky
Areas: Energy
Professor Kenneth Brezinsky’s research in the High Pressure Shock Tube Laboratory focuses on the experimental examination and the modeling simulation of the kinetics of combustion chemistry. The chemistry of interest is that which takes place during the pyrolysis and oxidation of hydrocarbon fuels. The fuels are either aircraft engine or ground transportation fuels, which are introduced into the high pressure shock for experimental examination of reaction products and into the low pressure shock tube when complementary studies are required.

http://kenbrez.lab.uic.edu

Juan Guzman, a student working in Professor Kenneth Brezinsky’s High Pressure Shock Tube Laboratory, prepares the equipment for testing.
Professor Prashant Banerjee demonstrates a surgical simulation on the ImmersiveTouch simulator he co-invented. The simulators are used for training all the PGY-1 and PGY-2 neurosurgery residents in the United States.

**Industrial Virtual Reality Institute**

**Director:** Professor Prashant Banerjee  
**Areas:** Bio, Data  
Professor Prashant Banerjee’s research in the Industrial Virtual Reality Institute focuses on virtual reality technology for industrial uses in the area of design, manufacturing, processing, logistics, transportation, and distribution decision support. His group studies the manipulation of objects using sensor data and real-time control inputs, integration of factory layout, material handling, and manufacturing equipment control models, and electronic collaboration between geographically dispersed designers. A major current thrust is ImmersiveTouch Lab, which is dedicated to surgical simulation using virtual reality and haptics.

**Intelligent Systems Modeling & Development Laboratory**

**Director:** Professor David He  
**Areas:** Data, Design  
The team of researchers in the Intelligent Systems Modeling & Development Laboratory, under the direction of Professor David He, specialize in developing state-of-the-art diagnostic and prognostic methods for machine health, supporting computational methods including signal processing, data mining, and nonlinear filtering. Applications of their methodologies to a wide-variety of engineering problems including those that arise in mechanical, industrial, aerospace, and engineering.  
https://sites.google.com/a/uic.edu/ismdlab/home
Laboratory for Oxide Research and Education (LORE)
**Director:** Professor Jeremiah Abiade
**Areas:** Materials, Micro/Nano
Professor Jeremiah Abiade leads the researchers in the Laboratory for Oxide Research and Education. The LORE group is interested in various aspects of thin film growth, processing and characterization. They are particularly interested in the pulsed laser deposition growth of oxide thin films and multilayers for hydrophobicity, thermoelectric devices and other energy related research.

Laboratory for Integrated Nanosystems (LINS)
**Director:** Assistant Professor Arunkumar Subramanian
**Areas:** Energy, Materials, Micro/Nano
The LINS focuses research on coupled-physics phenomena and performance regimes, which emerge when materials and devices are condensed into ultra-small form factors and nanoscopic footprints. This new knowledge is leveraged to deliver technological advances in the application areas of energy storage and nanomanufacturing. The contributions are enabled by inter-disciplinary, experimental capabilities in the areas of electrokinetic nanoengineering, nanofabrication, advanced microscopy, electrochemistry, nanorobotics and nanomechanics.
[https://sites.google.com/uic.edu/lins/overview](https://sites.google.com/uic.edu/lins/overview)

Mechatronics Laboratory
**Director:** Professor Daniel Sabri Cetin
**Areas:** Design
As director of the Mechatronics Laboratory, Professor Cetin focuses on various aspects of motion control of mechanical systems including, autonomous controlled self-driving cars, autonomous mining vehicles, DC servo motor electric drive powertrain control, automatic transmission control, hydrostatic transmission control, electro-hydraulic servo control with earth moving equipment applications, and adaptive self-learning real time control algorithms.

Professor Jeremiah Abiade, director of the Laboratory for Oxide Research and Education, works with student Jaqueline Rojas Robles on a project.
The acoustofluidics research thrust in Professor Xu’s lab explores interesting phenomena occurring when acoustic waves meet fluids at microscale, such as microstreaming induced by oscillating bubbles as shown in the picture. This microstreaming flow can significantly enhance microscale mass transfer with applications in biosensing, biofuel production and additive manufacturing. For example, surface-based microfluidic sensors could be greatly enhanced using well-controlled microstreaming. Moreover, soundproofing metamaterials based on oscillating bubbles are also under development.

**Microfluidics Laboratory**
**Director: Professor Jie Xu**

*Areas: Energy, Micro/Nano*

Research in the Microfluidics Laboratory focuses on exploring micro interfacial sciences and creating revolutionary micro/nanofluidic systems to address pressing problems involving health, energy and environment. Current research thrusts include fundamentals and applications of acoustofluidics, biofuel cells, and biosensors.

[http://xu.uic.edu](http://xu.uic.edu)
**Micro/Nanoscale Fluid Transport Laboratory (MNFTL)**

**Director: Professor Constantine M. Megaridis**

**Areas: Energy, Materials, Micro/Nano**

The team’s research activities, which are funded by several federal and industrial sources, focus on fundamental and technological aspects of fluid and particle processes, especially at length scales ranging from the sub-millimeter regime down to the nanometer level. Specific emphasis is given to the design of multifunctional, composite coatings with low or high wettability, and their applications in microfluidics, multiphase heat transfer, oil/water separation and other areas where dynamic fluid interfaces play an important role.

[http://mnftl.lab.uic.edu/#/home](http://mnftl.lab.uic.edu/#/home)

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**Micro/Nanosystems and Devices Laboratory**

**Director: Professor Laxman Saggere**

**Areas: Bio, Design, Micro/Nano**

Research in the Micro/Nanosystems and Devices Laboratory is focused on synthesis and applications of the MEMS/NEMS technology with a goal to enable advanced applications in biomedical, nanomanufacturing and other areas. The Saggere lab creates novel micro- and nano-scale devices with advanced functionalities through biomimetic and bioinspired design paradigms, and exploits micro/nano technology to study fundamental mechanisms in physical and biological systems at small scales. The multidisciplinary research conducted in the lab can be grouped under the following three thrust areas: neural interfaces, piezoelectric transducers, and compliant micro-robotics. A major ongoing research in the lab is devoted to the development of a biomimetic, neurotransmitter-based prosthesis to restore vision to patients blinded by neurodegenerative diseases.

[http://saggere.lab.uic.edu](http://saggere.lab.uic.edu)
The Motor Behavior Lab
Director: Professor Max Berniker
Areas: Bio, Design
The Motor Behavior Lab works on the computational basis of biological motor behavior, examining issues like motor control, motor learning and sensorimotor decision making. The group generally employs a normative framework: starting with hypotheses of the goals of the nervous system, they develop models and theory that quantify optimal behaviors and then compare these predictions with experimental evidence. Using a rich engineering framework, their goal is to explain how both the healthy and the injured nervous system control our bodies.
http://sensorimotorcontrolatorium.uic.edu/research.html

Multiscale Mechanics and Nanotechnology Laboratory
Director: Professor Alexander L. Yarin
Areas: Energy, Materials, Micro/Nano
Professor Alexander L. Yarin’s research activities in the Multiscale Mechanics and Nanotechnology Laboratory focus on fundamental and practical aspects of fluid and solid mechanics, especially at length scales ranging from a few millimeters down to the nanometer level. Experimental and theoretical aspects of fluid and solid mechanics phenomena are investigated. Such processes as electrospinning, co-electrospinning, emulsion spinning, solution blowing, and supersonic solution blowing are in focus. Among the applications targeted are the enhanced cooling of high-power microelectronics, drug release, rheological behavior of complex materials, foam stability, different aspects of fiber forming, heavy. Metal adsorption and blood spatter resulting from gunshots for forensic analysis.
http://mmnl.engr.uic.edu

UIC Distinguished Professor Alexander Yarin, director of the Multiscale Mechanics and Nanotechnology Laboratory, talks to student Wenshuo Zhang about the research she is working on in the lab.
NanoEngineering Laboratory
Director: Professor Reza Shahbazian-Yassar
Areas: Energy, Materials, Micro/Nano
Professor Reza Shahbazian-Yassar’s research in the NanoEngineering Laboratory explores functional devices with focus on new materials discovery, synthesis, advanced fabrication and manufacturing, and in situ characterization. A major thrust in the lab is on developing next generation of energy devices in solid state using 3D printing technology, hybrid nanocomposite synthesis, and micro/nanofabrication methods. Another thrust focuses on fundamental electrochemistry discovery using advanced characterization techniques such as in situ TEM, in situ AFM, and in situ optical systems. http://nanoeng.uic.edu/

Nanomaterials and Energy Systems Laboratory
Director: Professor Amin Salehi-Khojin
Areas: Energy, Materials, Micro/Nano
The Nanomaterials and Energy Systems Laboratory is an interdisciplinary research group with the mission to advance the state of the knowledge at the boundary of science and engineering. Professor Amin Salehi-Khojin’s team pursues fundamental research in the field of advanced materials synthesis, energy recovery and transport at micro/nano-scale. His special interests are to synthesize new materials for thermoelectric applications, study thermal and electrical transports in 2D nanomaterials, develop novel catalysts for carbon dioxide reduction and battery applications, and design artificial leaves for energy applications. http://nanomaterialsenergy systems.engr.uic.edu

Nanoscale Materials Science and Engineering Laboratory
Director: Professor Carmen Lilley
Areas: Energy, Computational, Micro/Nano
Professor Lilley’s research group is focused on material design, including modeling, fabrication and characterization for electronic applications with an emphasis on direct fabrication and integration of low dimensional materials, such as nanowires and 2-dimensional films, on Si platforms. Complementary to the materials research is modeling, such as the electrical properties of low dimensional materials on Si and mechanical properties of freestanding nanowires and films.

Student Soroosh Sharifi-Asl works on a project in the NanoEngineering Laboratory directed by Professor Reza Shahbazian-Yassar.

An image from Professor Carmen Lilley’s Nanoscale Materials Science and Engineering Laboratory, shows a) Optical microscope image of CVD graphene growth on Cu on Si(111). Cu-silicide islands can be seen on the surface. (Scale bar = 10 μm) b-d) Raman map plot centered around 2750 cm⁻¹, 1581 cm⁻¹, and 1351 cm⁻¹ wavenumbers respectively. Scale bar colors indicate arbitrary signal intensity.
**PROMINENT Laboratory**  
**Director: Professor Houshang Darabi**  
**Areas: Data, Design**  
PROMINENT, which is an acronym for Process Mining and INtelligent SystEm ANalytics Team, is a scientific group led by Professor Houshang Darabi. The team’s main research interest is focused on the theory and applications of Data-Driven Decision Making. The projects conducted by this group fall into several theoretical areas including Process Mining, Data Mining, Machine Learning and Knowledge Discovery, Discrete Event Systems, and Big Data Analytics. The team is active in several application areas such as healthcare engineering, engineering education research, and manufacturing.  
http://prominent.mie.uic.edu/Prominent

**System Modeling and Analysis Research Team (SMART)**  
**Director: Professor Mengqi Hu**  
**Areas: Data, Design, Energy**  
Professor Mengqi Hu’s research in the Complex System Analytics Laboratory concentrates on Complex System Design & Optimization, Distributed Decision Support & Analysis, Swarm Intelligence and Evolutionary Computation with applications to sustainable micro-grid and smart building, UAV swarms, and energy-water nexus.  
http://smart.lab.uic.edu/

**Sustainable Manufacturing Systems Research Laboratory**  
**Director: Professor Lin Li**  
**Areas: Data, Design, Energy**  
Professor Lin Li’s Sustainable Manufacturing Systems Research Laboratory works on various research areas including joint production and energy system modeling and control, real-time energy management of manufacturing systems, green design and environmental sustainability of additive manufacturing equipment, electricity demand response of manufacturing systems, electric vehicle battery manufacturing and reliability assessment, system-level cost evaluation for cellulosic biofuel manufacturing, and intelligent maintenance of manufacturing systems. The extension of engineering research to healthcare system also is an important research direction in the laboratory.  
http://smsrl.uic.edu/

Team members in Professor Houshang Darabi’s PROMINENT Laboratory review research data.

Student Azadeh Haghighi works on a project in Professor Lin Li’s Sustainable Manufacturing Systems Research Laboratory.
“UIC has given me an identity and helped me to become an independent thinker. The programs I associated with or my involvement as a research and teaching assistant shaped me into what I am now. Especially, as a teaching assistant, I got to interact personally with many students and all of them helped me to evolve.”

Dr. Sumit Sinha-Ray, Ph.D., 2016
Assistant Professor in School of Engineering at Indian Institute of Technology at Mandi

“The critical thinking, analytical, and communication skills I developed during my studies at UIC have been invaluable to my career. One of the most valuable tools that I gained during my studies under Professor Brezinsky is that of being able to clearly and effectively communicate complex and technical idea to both technical and non-technical audiences.”

Stephen Garner, Ph.D., 2011
Senior Engineer at Exponent

“My experience at UIC has prepared me to work under high pressure, tight deadlines, and on projects with a lot of ambiguity (just the nature of research). The most valuable experience I received was in building something from the ground up and seeing projects through from concept to publication.”

Alex Fridlyand, Ph.D., 2014
Principal Engineer at Gas Technology Institute

“I have my dream job as a faculty member at UIC. I get to shape the minds of future engineers and ensure that they are ready for the real world. I also work with brilliant people on a day to day basis.”

Jonathan Komperda, M.S., 2016
Lecturer in the Department of Mechanical and Industrial Engineering at UIC
Campus-Wide Research Facilities

MIE’s faculty and students have access to many advanced research facilities across the University. In particular, the following facilities are available for MIE researchers.

NANOTECHNOLOGY CORE FACILITY (NCF)
The Nanotechnology Core Facility is a comprehensive Micro/Nano fabrication facility providing access to advanced equipment and tools, training, service to all campus researchers, as well as users from local non-profit institutions and private industries. NCF is housed in the same building as the MIE department and has cleanrooms with ratings of Class 100 and Class 1,000 encompassing an area of 4,000 square feet. NCF has very versatile equipment for photolithography, e-beam lithography/SEM, thin film deposition (PVD, CVD, and PECVD), wet and dry etching including RIE and DRIE for silica and silicon, surface characterization, mask generation, sample characterization, dicing, and lead attachment. In addition, CAD stations with specialized software for MEMS design are also available.
http://www.rrc.uic.edu/ncf
The Research Resources Center provides equipment, training, and a variety of research support services for campus investigators. Its research support services consist of confocal microscopy, flow cytometry, electron microscopy including scanning (SEM), transmission (TEM) microscopy, surface analysis (XPS), oxide film growth (MBE) and vibrational.

Graduate student Soroosh Sharifi-Asl researches the thermal stability of battery materials in one of the labs.

The Advanced Cyberinfrastructure for Education and Research (ACER) facility provides UIC with supercomputing solutions. This shared resource distributed-memory computing cluster is composed of 160 nodes with 16 cores in each node, adding up to 2560 cores with 20.5TB of memory. Individual node specs are: Intel(R) Xeon(R) CPU E5-2670 v0 @ 2.60GHz, 16 Cores, Cache Size: 20MB, Manufacturer model number: DELL PowerEdge R620, Chipset: Intel Corporation C600/X79 series, 128GB RAM, 1TB on-board hard drive. The operating system is CentOS 6.3. It has 288TB of fast scratch storage communicating with the nodes over QDR infiniband as well as 1.14PB of raw persistent storage. The cluster also contains three large memory compute nodes, each with 32 cores and 1TB of RAM per node, yielding 31.25GB per core on these nodes.

Assistant Director for Research Technology Himanshu Sharma and MIE Department Head Frazad Mayshayek are two leaders maintaining a high-performance research network at UIC.

http://www.rrc.uic.edu/

RESEARCH RESOURCES CENTER (RRC)

The Research Resources Center, a division of the Office of the Vice Chancellor for Research at the University of Illinois at Chicago, maintains and supports high-technology scientific equipment for use by research faculty and staff. RRC personnel provide user access to the instruments, training on use of the instruments, and their own service and expertise in the application of the equipment for the purpose of solving of a wide range of problems for chemical, biological and structural characterization. In addition, the availability of computational and statistical services for data handling, interpretation of experimental results and data transfer, together with the accessibility of electronic and mechanical shops further enhance the RRC’s mission of contributing to the research endeavor at UIC.

http://www.rrc.uic.edu/
Chicago is a world-class city known for its cultural diversity. The city has one of the world’s most iconic skylines, more than 25 miles of beautiful beaches along Lake Michigan, and an abundance of shopping in its vibrant downtown and throughout its 77 neighborhoods. As America’s third-largest city, Chicago has some of the world’s best museums, innovative and accessible art, music and theater scenes, and diverse dining choices. Its cultural offerings are second to none.

For the sports enthusiast, the city has several professional sports teams. The Blackhawks in the NHL, the Bears in the NFL, Bulls in the NBA, Fire in the MLS, and the White Sox and Cubs in the MLB.

The Chicago Marathon has been held each year since 1977, and it is one of six World Marathon Majors, and attracts runners from around the world.

The University of Illinois at Chicago is Chicago’s largest public research university. The campus is located in the heart of the city, just west of the Loop, and it is readily accessible by plane, train, bus, car, bike or on foot. UIC provides access to a vast network of expressways, parking, public transit and other transportation options to save money and reduce stress.

The greater Chicago area is home to many small and large-scale industries, and the Department of Mechanical and Industrial Engineering has strong relationships with these companies and institutions, which present numerous opportunities for internships and full-time employment.

Learn more about life in Chicago and what it has to offer UIC students and faculty throughout the year by visiting www.uic.edu/chicago.