Welcome

Central Michigan University’s Science of Advanced Materials (SAM) doctoral program in the College of Science and Technology provides an interdisciplinary environment to train effective researchers for both academic and industrial careers. Classes are small and students are immediately engaged in research with faculty mentors. The formal coursework focuses on the scientific framework for studying materials and is organized around the key methodologies employed in materials research: modeling, characterization, and synthesis.

Throughout their academic and research experiences, students will work with the vibrant and exciting field of materials science. CMU faculty members are involved in collaborative relationships with other institutions and with industry, providing valuable contacts with experts in a variety of materials areas.

Program of Study

Students may enter the program after earning a master’s degree in a related field. A minimum of 60 credit hours must be completed for the doctoral degree.

The curriculum for the SAM program includes core courses, advanced elective courses in a number of specialized areas, seminar courses focusing on current literature and developing essential scientific communication skills, and the dissertation.

Directed research with a faculty member or faculty team is a key component of the SAM program. Full-time graduate students should expect to be in residence for three to four years.

Admissions Process

Applications are considered for Fall Semester entrance primarily. Applicants should apply by February 1 to compete for financial awards but applications will continue to be reviewed until all assistantship positions are filled. See the College of Graduate Studies website at www.grad.cmich.edu for applications, fees, and other information.

Along with the graduate application which must include transcripts from undergraduate and graduate work, students must submit a statement of research interests, GRE scores, and three letters of recommendation.

Financial Support

Graduate Assistantships

SAM graduate students are supported primarily through research assistantships (RA) and teaching assistantships (TA). No separate application is necessary for this support. Both assistantships include a base stipend and tuition remission for the academic year. Research assistantships may also provide summer stipends and tuition remission.

CMU is an AA/EO institution, providing equal opportunity to all persons, including minorities, females, veterans and individuals with disabilities. See www.cmich.edu/aaeo.
Faculty

Veronica Barone, Ph.D., University of Buenos Aires. Electronic structure calculations based on density functional theory, molecular modeling of nanoscale materials for applications in hydrogen storage, molecular magnetism, electronic devices, drug delivery, and characterization methods. v.barone@cmich.edu

Oumar Rafiou Barry, Ph.D., University of Toronto. Mechanical and structural engineering, linear vibrations, non-linear vibrations, design, finite element analysis, Stockbridge dampers, conductor self-damping, material damping, piezoelectric material. barry1o@cmich.edu

Gabriel Caruntu, Ph.D., University of Orleans. Soft-solution synthesis of mesoscale materials. Ferroelectronics, magnetic and multiferroic materials. Molecular self-assemblies and nanoscale surfaces. Design of nanoscale ferroic materials. carun1g@cmich.edu

Wenjun Du, Ph.D., University of California, Davis. Organic and polymer chemistry. Design and synthesis of carboxylate-based biomaterials, construction of well-defined nanoscale materials, integrated nanomedicine. duluw@cmich.edu

Bradley D. Fahlman, Ph.D., Rice University. Materials chemistry. Design of dendrimer-based quantum dot sensitized solar cells, mild synthetic routes toward carbon nanotube/nanofiber growth, characterization of nanomaterials, chemical vapor deposition (CVD) and atomic layer deposition (ALD) of high-K dielectric thin films. fahlm1b@cmich.edu

Marco Fornari, Ph.D., University of Trieste. Theoretical and computational condensed matter physics for the functional properties of complex materials such as ferroelectrics and thermoelectrics. forn1m@cmich.edu

Waseem Haider, Ph.D., Florida International University. Mechanical and materials engineering, biomaterials, surface engineering, nanomaterials, tissue engineering, electrochemistry, material characterization. haide1w@cmich.edu

Mihai Horoi, Ph.D., Institute of Atomic Physics, Bucharest. Structure of atomic nuclei and complex many-body systems; high-performance computing simulations; properties of ground and excited states; exotic decays. mihai.horoi@cmich.edu

Bob A. Howell, Ph.D., Ohio University. Polymer science, materials chemistry. Degradation/stabilization of barrier packaging polymers, nanoscale polymer-supported platinum drugs, dual-functional and green flame retardants for polymeric materials, thermal methods of analysis, plasticizers/stabilizers from renewable sources. bob.a.howell@cmich.edu

Koblar A. Jackson, Ph.D., University of Wisconsin. Electronic structure studies of materials, structure and properties of atomic clusters. koblar.alan.jackson@cmich.edu

Tolga Kaya, Ph.D., Istanbul Technical University. Electronics engineering, Micro Electro Mechanical Systems (MEMS) design, fabrication and testing, fabrication of micro energy scavengers, design of biological sensors, circuits and systems, design and test of data converters. kaya2t@cmich.edu

Choon Lee, Ph.D., Northeastern University. Synthesis of dendrimers, development of effective bioconjugation linkers, development of benign plasticizers. leec1y@cmich.edu

Axel Mellinger, Ph.D., Technical University Munich. Dielectric polymers with emphasis on ferroelectrets (charged cellular polymers), new concepts for piezoelectric sensors and actuators. axel.mellinger@cmich.edu

Adam Mock, Ph.D., University of Southern California. Photonics. Design and analysis of microscale and nanoscale photonic devices, efficient and novel numerical methods for electromagnetic analysis, design, and characterization of microstructured optical fiber. mock1ap@cmich.edu

Dillip Mohanty, Ph.D., Virginia Polytechnic Institute. Polymer chemistry. Synthesis and characterization of toughened polymeric material for composite matrix, modifications of dendrimers, energetic materials, flame retardant polymeric materials, and nanoamphiphiles, nanocontainers, NO releasing nanomaterials. mohan1dk@cmich.edu

Juan Peralta, Ph.D., University of Buenos Aires. Study of magnetic materials and electronic phenomena at the nanometer scale using first-principles computational tools, electronic structure of magnetic materials, electronic properties of nanomaterials. peral1j@cmich.edu

George Perdikakis, Ph.D., NTU Athens. Nuclear astrophysics, nuclear structure, nuclear reactions, nuclear instrumentation, physics with rare isotope beams. perdi1g@cmich.edu

Valeri Petkov, Ph.D., University of Sofia. Applied crystallography; X-ray (synchrotron) diffraction, 3D structure determination and modeling, magnetism. petko1vg@cmich.edu

Matthew Redshaw, Ph.D., Florida State University. Experimental nuclear and atomic physics; mass spectrometry; ion trapping; precision measurement techniques; physics of rare isotopes. redsh1m@cmich.edu

Ishraq Shabib, Ph.D., Carleton University. Deformation behavior and properties of nanocrystalline materials; irradiation induced damage of structural material; atomicistic and multi-scale modeling of crystal defects. i.shabib@cmich.edu

Mary Tecklenburg, Ph.D., Texas A&M University. Raman and IR spectroscopy of materials, biominalization of bone, molecular structure and transformation. teck1mm@cmich.edu

Linlin Zhao, Ph.D., University of Connecticut. Investigations of the mutagenecity of environmental pollutants and nanomaterials. Understanding mechanisms of DNA damage-induced mutagenesis. linlin.zhao@cmich.edu

For more information on faculty expertise, see: www.cmich.edu/colleges/cst/sam/research

Apply Online

http://apply.cmich.edu

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