Degrees

- Ph.D. in Materials Science and Engineering
- M.S. in Materials Science and Engineering
- M.Eng. in Materials Science and Engineering
- Fast Track B.S. in Physics/M.S. in Materials Science and Engineering
- Nanotechnology Certificate

Student Composition and Diversity

U.S. News and World Report rated UTA as the 5th-most diverse university in the United States in 2017. The University is an Hispanic-serving institution and is one of the 40 most popular U.S. colleges and universities for international students, based on data from the Institute of International Education's 2014-15 Open Doors Report.

How to Apply

Begin your application for graduate admission today at:

uta.edu/admissions/graduate/apply.

Please be sure to check application deadlines and include all of the required application materials and fees.

Financial Assistance

All applications for admission will be also be considered for assistantships, fellowships, and scholarships. Complete your application early to take advantage of all opportunities for financial aid.

Who Hires Our Graduates?

Our graduates find leadership positions in academia, national laboratories and companies throughout the DFW Metroplex and around the world, such as Alcon, Advanced Materials, Intel Corp., Texas Instruments, and others.

Learn More

For more information about the Materials Science and Engineering Department, visit our website at **uta.engineering/mse** or contact a graduate advisor:

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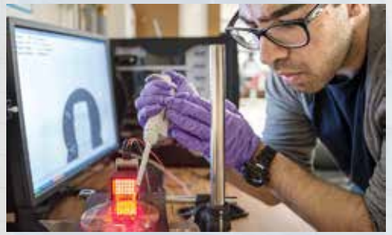
Why Pursue a Graduate Degree at UTA?

The Materials Science and Engineering Department is a university-wide, highly-interdisciplinary graduate program with seven core materials faculty and approximately 25 affiliated faculty spanning from physics and chemistry to electrical, mechanical, aerospace, civil and bioengineering. The department has one of the highest research expenditures to faculty ratios at UTA. We have courses in nanoscale materials and nanotechnology, magnetic, optical and energy materials, bio/nano materials and surface engineering and thin film technology. The department's growth is aided by high levels of research funding from NSF, DOE, ONR, NASA, DOD and other federal, industrial and state sources in the areas of electronic materials and sensors, design and development of biomaterials and devices, and sustainability and materials for environmental engineering and safety.

An Impactful Research University

The University of Texas at Arlington is rising in stature through its commitment to transforming the lives of students and pushing the boundaries of knowledge. Dramatic, measurable advancements continue to propel the University toward its goal of becoming one of the nation's premier research institutions.



UTA is designated an R-1 Carnegie "highest research activity" institution. Research activity at the university has more than tripled to more than $85 million over the past 10 years, with increasing expertise in bioengineering, medical diagnostics, micro-manufacturing, and defense and Homeland Security technologies, among other areas. With a projected total global enrollment of close to 57,000 students, UTA is one of the largest universities in Texas. UTA is a first-choice university for students seeking a vibrant college experience. In addition to receiving a first-rate education, our students participate in a multitude of activities that prepare them to become the next generation of leaders.

An Ideal Location

UTA is located in the heart of the Dallas/Fort Worth Metroplex, the fourth-largest metropolitan area in the United States. Arlington is located between the cities of Dallas and Fort Worth and is a center for sporting events, tourism and manufacturing. The Metroplex has one of the highest concentrations of corporate headquarters in the United States, with corporations such as Texas Instruments, AT&T, Ericsson, Lockheed Martin, Bell Helicopter Textron, and many more. Also, just minutes from campus, DFW International Airport and several interstate highways allow easy access to global collaboration and commerce.

Materials Science and Engineering

UNIVERSITY OF TEXAS ARLINGTON | DEPARTMENT OF MATERIALS SCIENCE AND ENGINEERING

State-of-the-Art Research Facilities

Biomaterials Laboratory
The Biomaterials Laboratory is focused on developing both soft and hard bioactive biomaterials for applications ranging from drug delivery, tissue engineering, structural and orthopedic applications.

Characterization Center for Materials and Biology
The Characterization Center for Materials and Biology (www.uta.edu/ccmb) provides state-of-the-art instrumentation for use by faculty, students and researchers from UTA, other academic institutions and industry to to foster interdisciplinary collaboration and strengthen research activities.

Electronic Materials Laboratory
Research activities in the Electronic Materials Laboratory include reliability assessment of Cu/low-k interconnects for future technology nodes, controlled grain growth of Cu interconnects, and design and development of quantum-dot embedded nanocomposite particles for bioimaging.

Metal Nanostructures Laboratory
Research in the Metal Nanostructures Laboratory involves the fabrication, characterization and applications of novel magnetic nanostructures, including multilayer films, nanorods, nanodisks and nanotubes.

Nanobiotechnology Laboratory
The Nanobiotechnology Laboratory focuses on integrating man-made and nature's micro/nanoscale materials, processes, and systems for engineering innovation. We work on research projects at the intersection of physical sciences and engineering and life sciences and biomedicine at the micro/nanoscale, such as biologically-inspired micro/nanoscale materials and systems, nanobiotechnology, and nano-biomanufacturing

Surface and Nano Engineering Laboratory
Research activities at SaNEL are concerned with basic and applied processing-structure-property relationship with emphasis on advanced materials, nanotechnology and small-scale materials (nano materials, surface treatments and layers, thin films, coatings). Current research includes:

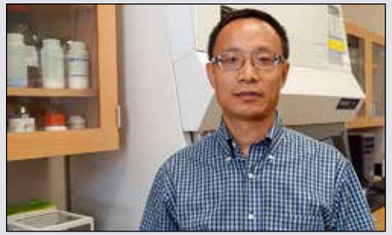
- Materials genome for high temperature oxidation-resistant coatings
- "Bottom-up" nanofabrication by self-assembly
- Multifunctional nanocomposite films
- Epitaxial oxide and composition gradient nanostructures
- Nanotribology, ultra low friction solid films
- Surface science and engineering
- Electrolytic plasma processing

Tribology, Lubrication and Coating Laboratory
Recent activity in the Tribology, Lubrication and Coating Laboratory includes development of high-performance, low-phosphorous engine oils, development of high performance universal greases, and development of conformal large area fluorinated hydrocarbon coatings.

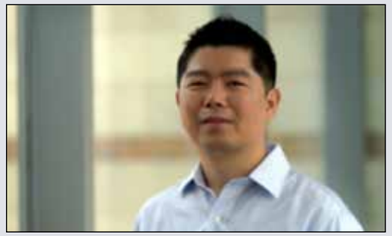
Shimadzu Institute Nanotechnology Research Center
The Nanotechnology Research Center is the preeminent university-based nanotechnology research, development and teaching facility in North Texas. It features a class 10 clean room and instrumentation for materials science, electrical, mechanical and aerospace engineering faculty and students.

Current Research

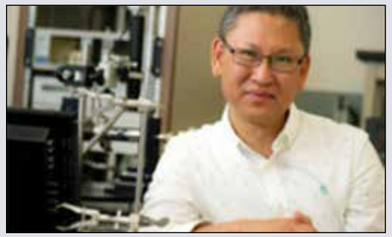
Yaowu Hao has earned a three-year, $477,000 R15 grant from the National Institutes of Health to develop radiotherapeutic nanoseeds that will work from inside inoperable solid tumors and cause less damage to healthy cells.



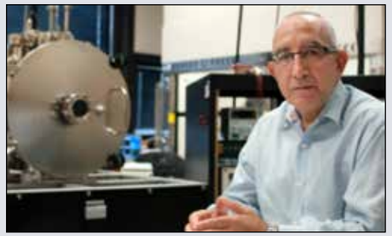
Kyungsuk Yum has earned a $100,000 grant from the National Science Foundation to develop nanocomposite hydrogel bioinks that could be used for 3-D printing of human tissues and organs. Yum is also using a $100,000 grant from the Texas Medical Research Collaborative to develop an injectable, near-infrared optical biosensor nanotube that would read a diabetic person's blood glucose constantly and an optical glucose scanner that can access the data collected by nanotube.



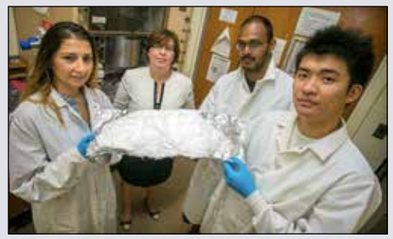
Seong Jin Koh is using a $300,000 grant from the National Science Foundation to build nanoscale pillars that will lead to more energy-efficient transistors in electronic devices and gadgets, potentially leading to a tenfold reduction in energy consumption of smart phones, laptops and tablets.



Led by Stathis Meletis, UTA engineers are assembling a computer-based "genome" that will aid in the design and development of advanced new materials that are super hard, can resist extreme heat, are highly durable and are less expensive through a $640,000 National Science Foundation grant. The work is funded through a 2011 White House "Materials Genome Initiative" intended to cut in half the time it takes to develop novel materials that can fuel advanced manufacturing.



Perena Gouma is using a $935,056 grant from the National Science Foundation to develop the continuous production of three-dimensional, self-supported, ceramic nano-fibrous materials that will act as photocatalysts for new energy production using water ponds as reactors.



Faculty and Research Interests

Efstathios "Stathis" I. Meletis
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Surface engineering, plasma processes, thin films and coatings, nanomaterials, nanotribology, biomaterials, corrosion

Pranesh Aswath
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Ceramics, titanium composites, bioactive materials, tribology, civil structures

Duane Dimos
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Processing and characterization of electronic ceramics, ferroelectric thin films, 3-D printing of metals and ceramics, high temperature superconducting films.

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Electrically conductive polymers, enhanced lubricants and coatings

Perena Gouma
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Nanomaterials, chemical sensors, breath-based diagnostics, nanomedicine, photocatalysts, nanomanufacturing processes, electron microscopy

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Metal and magnetic nanostructures

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Materials characterization, thin films and coatings, nanomaterials

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Thin-film metallurgy, phase transformation, reliability physics of microelectronics

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Growth and design of heterostructure materials for photovoltaic and nanoscale devices, physics of charge transport and magneto-conduction mechanisms in materials

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Nano-electronic devices, sensor for molecular level detection, surface science

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Biologically-inspired materials and systems, nanomaterials, nanobiotechnology