

2014 – 2015 ACADEMIC YEAR

# VCU SCHOOL OF ENGINEERING NEW FACULTY



**VCU** School of Engineering

VIRGINIA COMMONWEALTH UNIVERSITY

# LETTER FROM THE DEAN

# OVERVIEW



**Barbara D. Boyan,  
Ph.D.**

Dean,  
School of Engineering

VCU School of Engineering has grown this 2014 - 2015 academic year, adding 22 new members to our faculty. This strengthening of our

core faculty is a step to meeting the challenge set in our strategic plan to increase our faculty from 69 to 110 by 2020.

We are proud of our community of learners, thinkers, teachers and doers who bring their entrepreneurial spirit to VCU's research mission.

Within these pages, you will discover the accomplishments and professional successes that characterize our new faculty members as enthusiastic seekers of critical thinking and advancement of knowledge. In addition to our faculty, VCU School of Engineering has been fortunate to attract members of the community who achieved advanced positions in industry and have now committed themselves to the School's goal in becoming number one for engineering innovation and greatness in the nation. You will see some of our faculty, researchers and staff highlighted in this booklet.

We are 18 years strong, and every day we are becoming more of a leading force in local, national and global research as well as in teaching the next generation of engineers.

Thank you for your interest. I invite you to discover our latest and greatest VCU Rams.

Barbara D. Boyan  
Dean, VCU School of Engineering



22 faculty members have joined VCU School of Engineering for the 2014-2015 academic year.

## Dean's Office

- Ram Gupta, Ph.D.
- Ben Ward, Ph.D.

## Biomedical Engineering

- Anatheia Pepperl, Ph.D.

## Chemical & Life Science Engineering

- Shilpa Iyer, Ph.D.
- Nastassja Lewinski, Ph.D.
- Christina Tang, Ph.D.

## Computer Science

- Sevag Gharibian, Ph.D.
- Milos Manic, Ph.D.
- Bridget McInnes, Ph.D.

## Electrical & Computer Engineering

- Carl Elks, Ph.D.
- Yue Zhao, Ph.D.

## Mechanical & Nuclear Engineering

- |                         |                        |
|-------------------------|------------------------|
| • Charles Cartin, Ph.D. | • Supathorn            |
| • Laleh Golshahi, Ph.D. | Phongikaroon, Ph.D. PE |
| • Frank Gulla, PE       | • Jessika Rojas, Ph.D. |
| • Ibrahim Guven, Ph.D.  | • Wei-Ning Wang, Ph.D. |
| • James Miller          | • Woon-Hong Yeo, Ph.D. |
| • Reza Mohammadi, Ph.D. | • Hong Zhao, Ph.D.     |





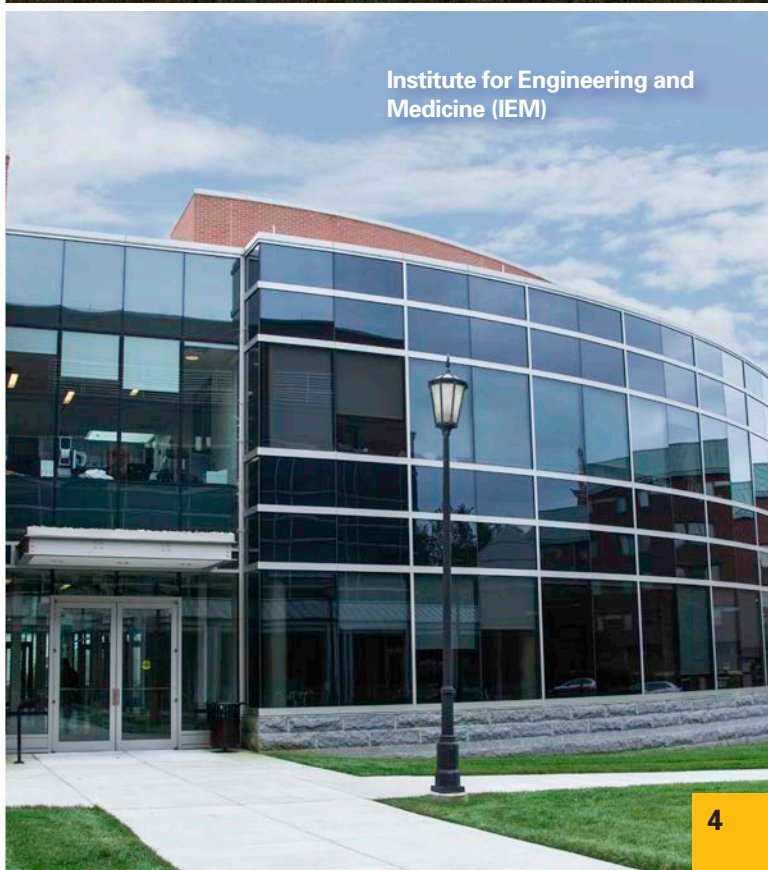
**Translational Research  
Innovation Projects (TRIP)  
Facility**, located at Biotech  
One Park



**Engineering East Hall**



**Engineering West Hall**



**Institute for Engineering and  
Medicine (IEM)**



**Ram B. Gupta, Ph.D.**  
Associate Dean for Research

Associate Dean for Research, Ram B. Gupta, Ph.D. comes to VCU from the National Science Foundation where he served as Program Director for the Energy for Sustainability Program since 2011. He was a professor of chemical engineering at Auburn University and postdoctoral fellow at the University of California, Berkeley. He received his Ph.D. from the University of Texas at Austin. He has won awards such as the Wright A. Gardner Award and the Faculty Research Award.

Gupta will teach in the department of Chemical and Life Science Engineering. “I came to VCU to be a part of the growth trajectory and to make a lasting impact,” said Gupta.

**Ben Ward, Ph.D.**  
Associate Professor



Bennett (Ben) Ward, Ph.D., joins VCU from his previous position as Vice President of Research and Development for Essentra Porous Technologies. He obtained his Ph.D. in Organic and Inorganic Chemistry from University of North Carolina, Chapel Hill.

Ward holds over 25 US patents including “Multi-Layer, Fluid Transmissive Fiber Structures Containing Nanofibers and a Method of Manufacturing Such Structures” (2014). He has served on advisory boards for the University of North Carolina Chemistry Department and the VCU Chemical and Life Sciences Engineering Department. Ward’s areas of expertise include new product development, IP development and protection, material surface science and fluidics and medical device and agrichemical validation.



**Anathea Pepperl, Ph.D.**  
Assistant Professor

Thea Pepperl, Ph.D., earned her Ph.D. in Biomedical Engineering at Virginia Commonwealth University. She teaches Intro to Engineering and Computational Methods in the Biomedical Engineering Department. Her research interests include the use of high-frequency ultrasound to investigate wound healing, automatic segmentation of pressure images to investigate the development of pressure ulcers, and the analysis and design of decision tools for the care coordination of older adults.

“My focus right now is on developing as an educator,” said Pepperl. “I hope to study what makes learning engineering principles more accessible to all students and improve the way that content is delivered in the classroom.”

ENGINEERING STUDENT STATS

**1,657**  
UNDERGRADUATE  
STUDENTS

**262**  
GRADUATE  
STUDENTS

**148**  
M.S. STUDENTS

**114**  
PH.D. STUDENTS

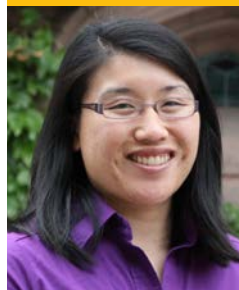
**3.96**  
AVERAGE ADMIT GPA





**Shilpa Iyer, Ph.D.**  
Assistant Professor

Shilpa Iyer, Ph.D., obtained her degree in Molecular Genetics from the University of Georgia, where she worked on a recombination pathway for telomere elongation. She completed her postdoctoral training at the University of Virginia where her research focused on development of mitochondrial gene therapy for understanding human mitochondrial and neurodegenerative diseases. "At VCU, I would like to pursue my research interests in mitochondrial genetics and bioenergetics and also develop non-linear educational programs to provide undergraduate students perspectives from different disciplines," said Iyer. Iyer is establishing research and education programs involving generation of stem cell based models for understanding mitochondrial disease and transdisciplinary undergraduate education, including the Dean's Undergraduate Research Initiative.



**Christina Tang, Ph.D.**  
Assistant Professor

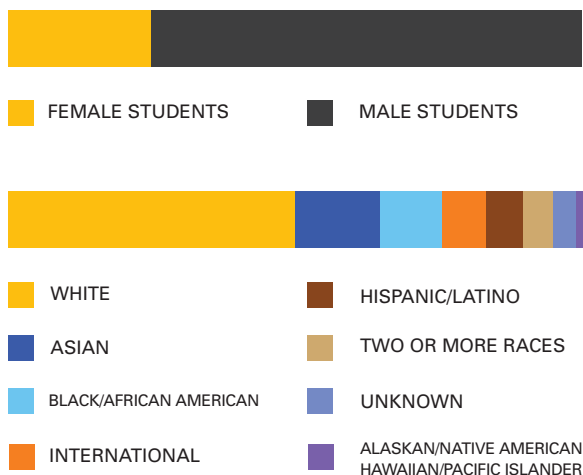
Christina Tang, Ph.D., joins VCU with the intention to guide students into an understanding of how chemical engineering concepts can be applied to real world problems. "I strive for my students to have a successful transition from the classroom to their professional career," said Tang. Tang earned her Ph.D. in Chemical Engineering from North Carolina State University in 2012 and conducted postdoctoral research at Princeton University from 2013 - 2014. Her research interests include smart polymer materials, polymer processing, hybrid materials, catalysis/biocatalysis, nanotechnology, biomaterials and biomedical imaging. "I am committed to pursuing excellence in research and innovation as well as facilitating student success," said Tang. "I enthusiastically join the Quest for Distinction."

**Nastassja Lewinski, Ph.D.**  
Assistant Professor



Nastassja Lewinski, Ph.D., a graduate of Rice University's Chemical Engineering Ph.D. Program, comes to VCU after postdoctoral work at the Institute for Work and Health in Lausanne, Switzerland. There, her research focused on occupational exposure to nanoparticle aerosols. "At VCU, my research program will support the translation of engineered nanomaterials from the lab into the clinic and industry by developing new tools and techniques for rapid hazard and exposure assessments," Lewinski said. Her interests include the biological effects of nanoparticles, in vitro to in vivo human response data correlation and identifying areas for multidisciplinary research. "I am thrilled to be joining VCU and believe my research program will flourish in this rapidly growing and interdisciplinary environment," said Lewinski.

## ENGINEERING STUDENT DIVERSITY





**Sevag Gharibian, Ph.D.**  
Assistant Professor

Sevag Gharibian, Ph.D., obtained his doctoral degree in Computer Science from the University of Waterloo, Canada and completed his postdoctoral studies as a Simons Research Fellow at the University of California, Berkeley. During this time he also held Canada’s most prestigious postdoctoral fellowship, the NSERC Banting Fellowship.

He now brings his research interests in quantum algorithms, quantum complexity and quantum entanglement and correlations to the Computer Science department at VCU Engineering. Of his hopes and research aspirations here at VCU, Gharibian had to say, “I aim to bring VCU to the world stage in the exciting area of theoretical quantum computing.”

**Milos Manic, Ph.D.**  
Professor



Milos Manic, Ph.D., joins the Computer Science department at VCU Engineering from his previous position at the University of Idaho - Idaho Falls. With over 20 years in academia and research grants with the NSF, Idaho EPSCoR, DOE, INL, DoAF and HP, Manic is bringing state of the art research in data mining applied to Energy, Cyber Security and Human-Machine Interfacing. Manic is an IEEE Officer and serves as an Associate Editor of Transactions on Industrial Electronics, Transactions on Industrial Informatics and Int. Journal of Engineering Education.

“I hope to help bring VCU to the world stage of Energy Security,” said Manic.



**Bridget McInnes, Ph.D.**  
Assistant Professor

Bridget McInnes, Ph.D., joins the VCU Engineering faculty in the Department of Computer Science. McInnes’s research interests are in the area of Natural Language Processing and Computational Linguistics with a particular interest in semantics. She has worked on topics including word sense disambiguation, semantic similarity and relatedness and the automated processing of biomedical and clinical text. McInnes received her doctoral degree in Computer Science from the University of Minnesota in 2009.

“Research wise, I hope to continue and expand research into the processing of biomedical and clinical text,” said McInnes. “Teaching wise, I hope to establish an NLP course focusing on methods used to process natural language.”

KEY RESEARCH AREAS

SUSTAINABILITY  
& ENERGY  
ENGINEERING

MECHANOBIOLOGY  
& REGENERATIVE  
MEDICINE

MICRO &  
ELECTRONIC  
SYSTEMS

PHARMACEUTICAL  
ENGINEERING

SECURITY &  
MINING BIG DATA

DEVICE DESIGN  
& DEVELOPMENT

## ELECTRICAL & COMPUTER



**Carl Elks, Ph.D.**  
Assistant Professor

Carl Elks, Ph.D., joins the Department of Electrical and Computer Engineering from the University of Virginia where he conducted applied research on dependable systems, cyber-security

vulnerability modeling, nuclear instrumentation and control systems, modernization of power infrastructure and human factors. He is one of the co-founders of the Integrated Control and Instrumentation Lab at the Center for Advanced Engineering & Research in Lynchburg VA. "I inspire students that making a difference for society starts with making a difference for one. We build great engineering careers and lives by the greater good of our works," said Elks. Elks's recent interests also include Sustainable Energy Systems and Energy Policy. He is the author or co-author of over 60 referred papers and technical reports, including three Best Paper Awards.

**Yue Zhao, Ph.D.**  
Assistant Professor



Yue Zhao, Ph.D., comes to the Electrical and Computer Engineering department at VCU School of Engineering from the University of Nebraska-Lincoln where he received his Ph.D. in Electrical Engineering in 2014. "My research at VCU aims to develop innovative technologies on power conversion and motor control for sustainable energy and transportation electrification," Zhao said. "My research experience on power and energy systems, substantial industrial experience on vehicle electrification and commitment to teaching will allow me to achieve more at VCU." Zhao holds numerous honors and awards including the Outstanding Graduate Research Assistant Award, the Milton E. Mohr Fellowship and the Best Paper Prize from IEEE.

## MECHANICAL & NUCLEAR



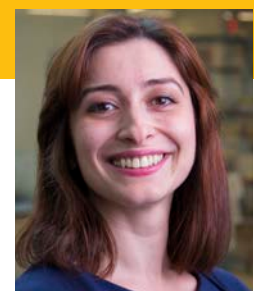
**Charles Cartin, Ph.D.**  
Assistant Professor

Charles Cartin, Ph.D., is a long-time VCU alumnus who holds a B.S. (2006) and an M.S. (2007) in Mechanical Engineering as well as a Ph.D. in engineering (2012) all from VCU.

"Currently, I would like to focus on developing a stronger undergraduate program not only in the Mechanical and Nuclear Engineering department," said Cartin, "but across multiple engineering disciplines to harness a multidisciplinary research/teaching environment." Cartin is the co-principal investigator of the Siemens Software Grant for VCU Engineering Education.

His research interests include advanced engineering mathematics, design optimization, fuel cell and hybrid technology and material engineering.

**Laleh Golshahi, Ph.D.**  
Assistant Professor



Laleh Golshahi, Ph.D., has been affiliated with Virginia Commonwealth University as a postdoctoral fellow in Pharmaceuticals since earlier in 2014. She now joins the Mechanical and Nuclear Engineering faculty as an Assistant Professor whose areas of expertise include aerosol science, respiratory drug delivery, occupational exposure control and biotherapeutics. Golshahi received her Ph.D. in Mechanical Engineering from the University of Alberta in 2012. She is the recipient of the Natural Sciences and Engineering Research Council of Canada's National Doctoral Award. "The vibrancy of the diverse university community still makes me smile every day and reminds me that choosing VCU for my tenure-track path has undoubtedly been a wise choice," said Golshahi.



**Frank Gulla, PE**  
Assistant Professor

Frank Gulla joins the VCU faculty as a full-time Assistant Professor in the Department of Mechanical and Nuclear Engineering. Gulla has 25 years of chemical manufacturing experience including manufacturing technology and process development. He is licensed as a professional engineer in process automation. This combined with degrees in Chemical and Mechanical engineering brings a unique perspective to higher education.

"VCU has given me an opportunity that ordinarily doesn't come along to those of us from industry," said Gulla. "I am able to use my industrial background to share my passion for engineering with students in all my classes."

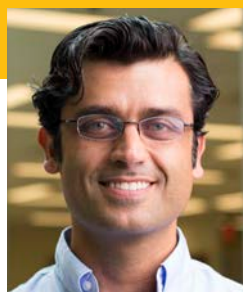


**James Miller**  
Assistant Professor

James Miller joins the engineering faculty as an Assistant Professor in the Department of Mechanical and Nuclear Engineering. Miller served as an adjunct professor, instructor and senior design team adviser for the School from 2009 – 2013. He brings to VCU over three and a half decades of industry experience in the development and maintenance of computer codes and methods for the analysis of nuclear reactors for Dominion Virginia Power.

"In teaching at VCU, I hope to impart to my students much of the knowledge I have obtained from over thirty-five years in commercial nuclear power to enable them to become more effective mechanical and nuclear engineers," said Miller.

**Ibrahim Guven, Ph.D.**  
Assistant Professor



Ibrahim Guven, Ph.D., comes to the VCU Mechanical and Nuclear Engineering department from the University of Arizona where he served as Assistant Professor from 2012 to 2014. Guven received his Ph.D. in Mechanical Engineering from the University of Arizona in 2000 and has co-authored a popular textbook "The Finite Element Method and Applications in Engineering Using ANSYS." His research interests include micro/nano-scale characterization, fracture and failure analysis using peridynamics and multi-scale modeling of physical phenomena.

"I am completely on board with the Quest for Distinction," Guven said. "When I came to visit for the interview you could feel the dynamic nature and uprising of this place."

**Reza Mohammadi, Ph.D.**  
Assistant Professor



Reza Mohammadi, Ph.D., comes to VCU from the University of California, Los Angeles where he worked as a post-doctoral fellow in Materials Science and Engineering with a focus in Materials Chemistry.

Mohammadi received his Ph.D. in Mechanical Engineering from the University of Alberta, Canada in 2008. His research includes ultra-incompressible superhard materials, thin films, superhydrophobic surfaces, wetting phenomena and tearing energy.

Mohammadi has patents pending on "Compositional Variations of Tungsten Tetraboride with Transition Metals and Light Elements," and "Nanocomposite Films". His other publications include a chapter in the *Encyclopedia of Inorganic and Bio-Inorganic Chemistry* and over 10 papers in journals such as *PNAS*, *JACS*, *PRB* and *Langmuir*.





**Supathorn Phongikaroon, Ph. D., PE**  
Associate Professor

Supathorn Phongikaroon, Ph.D., PE, is an Associate Professor in the Department of Mechanical and Nuclear Engineering with over 9 years of experience in molten salt systems for used nuclear fuel reprocessing. He is the lead PI and co-PI on the U.S. Department of Energy-Nuclear Energy University Programs projects. Phongikaroon has authored and co-authored more than 17 publications and given over 30 presentations at national and international conferences.

"I am hoping to establish a strong research program in the area of used nuclear fuel reprocessing as a support for the U.S. nuclear fuel cycle R&D missions," said Phongikaroon. "My ultimate goal is to make other people recognize VCU-MNE nationally in this research area."

**Jessika Rojas, Ph.D.**  
Assistant Professor



Jessika V. Rojas, Ph.D., joins the Mechanical and Nuclear Engineering department from Missouri University of Science and Technology where she earned her doctoral degree in Nuclear Engineering in 2014.

Alongside a variety of distinctions, publications and papers, Rojas's experience includes practical training at Oak Ridge National Laboratory, Idaho National Laboratory and a published book chapter in *Radiation Synthesis of Materials and Compounds* titled "Production of Metal Nanoparticles on Carbon Nanotubes by Gamma Irradiation."

"I am looking forward to continuing with my research in areas such as nanomaterials for applications in nuclear medicine, radiation-induced synthesis of materials etc., as well as bringing new ideas to promote interdisciplinary work at VCU," said Rojas.



**Wei-Ning Wang, Ph.D.**  
Assistant Professor

Wei-Ning Wang, Ph.D., earned his doctoral degree in Chemistry and Chemical Engineering from Hiroshima University in 2006. He joins the Mechanical and Nuclear Engineering department at VCU, bringing with him a wealth of experience reaching back to his Japan Society for the Promotion of Science postdoctoral fellowship and continuing up to his most recent position held from 2013 – 2014 as a Research Assistant Professor with the Department of Energy, Environmental and Chemical Engineering at Washington University in St. Louis. Wang's specializations include particle technology related to fine/ultrafine particle synthesis and characterization, nanomaterials self-assembly, and development of functional materials such as smart luminescent materials and efficient photocatalysts for energy and environmental applications.

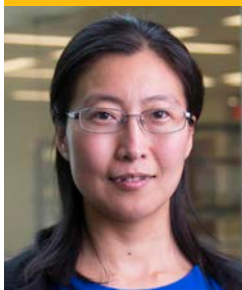
**Woon-Hong Yeo, Ph.D.**  
Assistant Professor



Woon-Hong Yeo, Ph.D., joins the Department of Mechanical and Nuclear Engineering after his postdoctoral fellowship in Materials Science and Engineering at the University of Illinois from 2011 to 2013.

Yeo received his doctoral degree from the University of Washington in 2011 and has published over 25 papers including *Nature Materials*, *Nature Communications* and *Advanced Materials*. His research focuses on Bio-interfaced Nano-Engineering, particularly in nanostructured biosensing and soft electromechanics.

"I wish to continuously develop new research in Bio-interfaced NanoEngineering at VCU. In addition, I hope to be a great educator to help learners do their own works toward 'an answer,' instead of giving them 'the answer,'" said Yeo.



### **Hong Zhao, Ph.D.**

Assistant Professor

Hong Zhao, Ph.D., joins VCU with a Ph.D. in Mechanical and Aerospace Engineering from Rutgers, The State University of New Jersey where her work focused on experimental and computational studies of flame synthesis of nanoparticles. Since 2006, Zhao has worked with Xerox Research Center Webster as a senior research scientist and has won Xerox Achievement awards in 2010 and 2012.

"I will bring my eight years of industrial research experience in thermal-fluid interactions and surface engineering to resolve challenges facing industry while exploring research frontiers," said Zhao. Zhao's areas of interest include micro/nano engineered surfaces and interfaces and thermal-fluid science combined with scalable micro/nano manufacturing.

## **UNDERGRADUATES BY DEPARTMENT**

### **BIOMEDICAL**

**300+**

UNDERGRADUATE  
STUDENTS

### **CHEMICAL & LIFE SCIENCE**

**125+**

UNDERGRADUATE  
STUDENTS

### **COMPUTER SCIENCE**

**200+**

UNDERGRADUATE  
STUDENTS

### **ELECTRICAL & COMPUTER**

**200+**

UNDERGRADUATE  
STUDENTS

### **MECHANICAL & NUCLEAR**

**500+**

UNDERGRADUATE  
STUDENTS





## ABOUT VCU SCHOOL OF ENGINEERING

Founded in 1996, the School of Engineering at Virginia Commonwealth University teaches 1,657 undergraduate and 262 graduate students. Driven to be the national model for innovation in engineering and research, the school offers B.S., M.S. and Ph.D. degrees in mechanical, nuclear, biomedical, electrical, computer and chemical and life science engineering, computer science and the country's only hybrid mechanical and nuclear engineering doctoral program. Cross-disciplinary focus areas include: Sustainability and Energy Engineering, Micro and Nano Electronic Systems, Pharmaceutical Engineering, Mechanobiology and Regenerative Medicine, Security and Mining of Big Data, and Device Design and Development.

Interdisciplinary research opportunities are offered through the school's Center for Nanomaterials and Characterization, the Institute for Engineering and Medicine, the C. Kenneth and Dianne Harris Wright Virginia Microelectronics Center, the Translational Research Innovation Projects Facility, the Dean's Undergraduate Research Initiative, and the da Vinci Center. To learn more, go to [www.egr.vcu.edu](http://www.egr.vcu.edu).

