

2013-2014 CAREER Academy

Participant Profiles

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I joined VCU in the Fall of 2012. After obtaining my Ph.D. in Mathematics from Northwestern University in 2007, I spent three years at University of California Berkeley as a Morris Assistant Professor and two years at Brandeis University as an NSF-FRG postdoc. My area of research is mathematical physics. My work focuses on dual mathematical models of physical systems. Dual models are an important tool in string theory and their study has been revolutionizing the very notion of physical law. In my experience, involving students in research is both productive and rewarding. I am interested in developing innovative strategies to engage VCU students in research and to stimulate awareness for the beauty of mathematics in pre-college students from the greater Richmond area.



Quentin Alexander, PhD

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I have been employed at VCU since fall 2011 as an assistant professor in Counselor Education. Previously, I was a doctoral student at Virginia Tech University and worked as a graduate assistant in the Multicultural Advancement Opportunities Program and as a research and teacher assistant in the Graduate office of Diversity and Inclusion Initiatives. My area of research interest includes the experiences of underrepresented, minority and special populations in graduate education in STEM fields. Because there is sparse literature on graduate education for these populations, my research has implications for their experiences, particularly on predominantly White campuses. The integration of findings from my research is important for the retention of afore mentioned populations in graduate education as well as for the education of personnel who will work with them in graduate institutions. It is my career goal to become an expert in the development, implementation and retention of evidence-based programs that lead to higher retention rates for all underrepresented, minority and special populations in graduate education, especially those in STEM fields of study.



Indika Arachchige, PhD

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Dr. Arachchige obtained his B.S. in Chemistry from University of Kelaniya, Sri Lanka. Then, he briefly was a researcher at the Institute of Fundamental Studies, Sri Lanka. He obtained his Ph.D. in Inorganic Chemistry from Wayne State University in 2007. His doctoral dissertation work was focused on the synthesis, characterization, and assembly of semiconductor nanocrystals to produce porous inorganic materials of potential interest for photovoltaic and sensing applications. After graduation, he joined the Department of Chemistry at Northwestern University as a Postdoctoral Fellow (2007-2009) and the Center for Integrated Nanotechnologies at Los Alamos National Laboratory as a Research Associate (2009-2011). His work at both institutions were focused on the design, synthesis, and characterization of chemically-challenging binary, ternary, and quaternary metal and semiconductor nanocrystal systems for application in catalytic, thermoelectric, sensing, and imaging studies. He joined VCU faculty in August 2011. The focus of his laboratory is the synthetic inorganic chemistry, nanotechnology, and materials science. The research is highly interdisciplinary, with the aim to develop a fundamental understanding of how structure, particle size, shape, atomic composition and material physical properties are related in order to advance technologies such as information storage, sensors, energy conversion, and catalysis. His educational objectives are centered on boosting the number of undergraduate student in chemical sciences at VCU and encouraging under-represented minority high school student enrollment in Science, Technology, Engineering, and Mathematics (STEM).



Tom Arodz, PhD

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I joined the Department of Computer Science at VCU in August 2010 as assistant professor. Previously, I have been assistant professor at AGH University of Science and Technology in Krakow, Poland for two years after obtaining my PhD there. My research is in bioinformatics. I'm focused on algorithms for analyzing complex, high-dimensional and multi-assay molecular data, and integrating them with repositories of existing biological knowledge. This includes methods for inferring biological networks and detecting pathways involved in disease, and thus providing biologists with new testable hypotheses. My approach for achieving this goal is using a combination of machine learning and graph theory. Bioinformatics research offers a great opportunity to undergraduate and graduate students in engineering to collaborate with biomedical experts. Through research in my lab, students can expand their educational horizons beyond a single discipline. In addition to my regular mentoring and teaching activities, I'm also a lead organizer of the VCU's Programming Contest for High School Students, which helps bring computer science thinking to the young generation even before it enters college. My immediate goals for career development include improving my ability to attract external funding for my research, and increasing my effectiveness as a teacher.



Xi Chen, PhD

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I joined the Department of Statistical Sciences and Operations Research at VCU in the fall of 2012, upon obtaining my Ph.D. degree in Industrial Engineering and Management Sciences from Northwestern University. My research interests include stochastic modeling and simulation, computer experiment design and analysis, and simulation optimization. My current research focuses on uncertainty quantification and steady-state simulation using metamodels. My goal for the next three years is to establish a systematic framework for studying the theoretical properties of the metamodeling techniques and applying them in practice. If successful, this project will generate efficient experiment designs for estimation and optimization solutions that can be directly applicable to large-scale simulation studies in a variety of industries. Research opportunities for undergraduate and graduate students will be an important component of this project which features an integrated educational plan leading to course development and restructuring as well as mentorship activities. My short-term goal is to build a solid background and establish myself in the field by my work. I will also reach out and get myself well-connected. I aim to further expand my area of interests and deepen my knowledge, and get recognized by unique contributions made to the research community ultimately.



Daniel Conway, PhD

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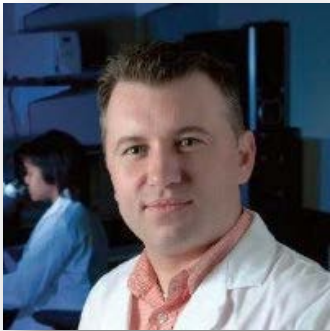
I began as an Assistant Professor at VCU in August 2013. Previously I was a post-doctoral fellow at the University of Virginia. My research lies within the field of mechanotransduction—the conversion of mechanical forces into intracellular chemical signaling events. Mechanical forces on cells regulate development, homeostasis, and disease. I am currently using biosensors designed to resolve forces across specific proteins in order to understand both how the cell regulates forces across proteins and how externally applied forces are transmitted across specific proteins within the cell. I currently have preliminary ideas as how to integrate my research into education. One idea is to work with the Department of Biomedical Engineering at VCU to incorporate more cell biology into the undergraduate curriculum. Currently the undergraduate curriculum has little to no biology in the lecture and laboratory courses. Another area of interest I have is in K-12 outreach. I have previously developed and presented cell biology lectures and demonstrations to elementary aged children. My current career goals are to develop an active externally funded research program and to work to improve the undergraduate curriculum in my department and provide research opportunities for students in the department.



Amanda Dickinson, PhD

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Dr. Dickinson has been a member of the VCU faculty since January 2010, having come from the Whitehead institute at MIR. joined the CAREER Academy with hopes to refine and enhance her CAREER Award proposal re-submission. Her research interests lie in the molecular and cellular events that lead to embryonic mouth formation, and how its development is intimately tied to the formation of surrounding facial structures. These investigations have implications for our understanding of, for example, cleft palate. She has already made a major effort to integrate this research with education at the undergraduate, graduate and early childhood levels, including a research based undergraduate course and a techniques based graduate level course. Dickinson collaborates with Dr. Barbour, the director of research training in the Center for Health Disparities to integrate students from the minority based undergraduate programs (IMSD and HERO). She plans to work with childcare centers across the Richmond, VA to establish frog aquaria and a set of accompanied reading and art activities that promote learning about the frog life cycle and anatomy.



Christopher Lemmon, PhD

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I have been an assistant professor at VCU for 1 ½ years. I previously worked as a postdoctoral fellow at Duke University. I earned my BS in Mechanical Engineering from Lehigh University, my MS in Mechanical Engineering from University of Wisconsin, and my PhD in Biomedical Engineering from Johns Hopkins University. My research is in the areas of Mechanobiology and Cellular Engineering; my lab is focused on understanding how cells use mechanical signals to direct assembly of new tissue. We study this in both situations where we want this to occur (i.e., regenerative medicine) and situations where we want to block new tissue assembly (i.e., tumor growth). My interest in integrating research and education is focused on creating a new paradigm for biomedical engineers: many current biomedical engineers were trained in a traditional engineering discipline (electrical, mechanical, etc.) and learned biology as they moved into biomedical research projects. However, advances in the field require that students emerge with a strong background in biology and engineering. My career development goals include expanding my laboratory research so that we can position ourselves as an emerging leader in the field; increasing my involvement with local outreach groups to improve VCU's standing and impact in the Richmond area; and continuing to improve as an educator to provide better experiences for our next generation of biomedical engineers.



Daniel McGarvey, PhD

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I am a 3rd-year professor at VCU. I most recently completed a post-doc at the U.S. Environmental Protection Agency's Environmental Modeling Laboratory in Athens, GA, where I was also an adjunct faculty member in the Odum School of Ecology (University of Georgia). My research interests include: freshwater biology, fish ecology and fisheries science, biogeography, macroecology, environmental modeling, and environmental law/policy. For me, the key to effective integration of research and education will revolve around better training in science communication. I want to lay the groundwork for some game changing advances in combining science with art and journalism. My career development goals are simple: write papers, get grants, do a good job of teaching and inspiring my students. . .get tenure.



Rene Olivares-Navarrete, DDS, PhD

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I began my VCU appointment in April 2013. Before coming to VCU, I was a Senior Research Scientist in the Department of Biomedical Engineering at Georgia Institute of Technology. My research is focused on cell response to biomaterials, specifically mesenchymal stem cells and primary osteoblasts. We have also found that we are able to differentiate human mesenchymal stem cells to osteoblasts on rough biomaterial surfaces, without the addition of exogenous growth factors or additives, allowing us to study important signaling pathways without confounding the results with additional variables. The results of our studies provide evidence that surface properties influence mesenchymal stem cell fate and that developmental pathways are recapitulated in biomaterials, tissue engineering, and regenerative medicine, allowing for the improved design of materials that will be implanted in the body to precisely control its outcome. I have found that undergraduate students at every level are able to reach the goals set forth for them, even when challenging, and expand their skill set when presented with problems in an interactive way. Introducing basic concepts to students along with practical, hands-on examples allows students to retain information longer, particularly when the same concepts are incorporated continually into the lectures. Finally, engineers thrive when given the ability to learn things in an interactive simulation, allowing them to incorporate important biological concepts into their future endeavors. My goals are to continue to build my research program in Biomedical Engineering while also engaging undergraduate engineering students at VCU to produce engineers that are able to inform their engineering designs with a solid understanding of the relevant biological concepts.



Christine Trinter, PhD

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Christine Trinter is enjoying her second year at VCU. Her courses include Teaching Secondary Mathematics and Investigations/Trends in Teaching Secondary Mathematics. Trinter's research interests lie in mathematics curriculum development with a particular focus on the effective use of technology and problem solving for teaching and learning as well as factors supporting teacher development. Before joining the faculty at VCU's School of Education, Trinter was a Research Scientist at the Curry School of Education, University of Virginia where she also earned her doctorate. Prior, she taught secondary mathematics in both the northeast and overseas and earned an M.A. from Columbia University and a B.A. from Fordham University. Trinter believes that as a faculty member in the School of Education, research and education are closely entwined in her everyday practice. Her CAREER project links research and education on multiple levels; it focuses on teaching and learning secondary mathematics with practices that are embedded in the mathematics methods courses that she teach at VCU. The CAREER Academy bridges her desire to develop strong grant writing skills with her interest in submitting a CAREER proposal. Furthermore, she believes that exposure to colleagues' ideas from across University grounds would enhance her teaching and research agendas.