JOHN WHITE RETURNS AS BME CHAIRMAN

Zaman, Morgan Elected AIMBE Fellows

Professor Muhammad Zaman (BME, MSE)

Professor Elise Morgan (ME, BME, MSE)

The American Institute for Medical and Biological Engineering (AIMBE) has elected two BME faculty members to the AIMBE College of Fellows. Professors Muhammad Zaman (BME, MSE) and Elise Morgan (ME, BME, MSE) join more than 1,500 outstanding biomedical engineers in academia, industry and government around the world who have distinguished themselves through significant contributions in research, industrial practice and/or education.

Election to the College of Fellows is reserved for the top two percent of the international medical and biological engineering community. The March 16 induction of Zaman and Morgan at AIMBE's 2015 Annual Event at the National Academy of Sciences in Washington, DC, brought the number of BU faculty elected to this prestigious body to 29, placing BU among the top two universities in the country.

A College of Engineering faculty member since 2009 and the College's only Howard Hughes Medical Institute professor, Zaman engineers new experimental and computational technologies for major healthcare problems in both the developing and developed world, including probing the mechanisms of cancer metastasis. He also develops robust, cheap, portable and user-friendly diagnostics and analysis toolkits to address global health challenges. As director of the Laboratory for Engineering Education & Development (LEED), he works with BU students to advance technologies that detect counterfeit drugs, preserve biological reagents used in diagnostic tests and provide other in-demand healthcare solutions targeting the specific needs of resource-limited countries.

Since joining the College of Engineering faculty in 2003, Professor Elise Morgan (ME, BME) has worked to advance understanding of the role of the mechanical function of tissues and organs in skeletal health, repair and development, with the ultimate goal of pinpointing causes and treatments for osteoporosis, osteoarthritis and poor bone healing. As director of the Orthopaedic & Developmental Biomechanics Laboratory, Morgan draws on methods from engineering mechanics, materials science, and cell and molecular biology to investigate how mechanical factors contribute to the development, adaptation, failure and regeneration of bone and cartilage. Morgan was recognized as one of 100 Inspiring Women in STEM in the September issue of *INSIGHT Into Diversity* magazine.

AIMBE's mission is to advance public understanding of medical and biological engineering and honor significant achievements in the field. ■

Zhang Selected as ASME Fellow

RECOGNIZED FOR INTERDISCIPLINARY MEMS RESEARCH

Professor Xin Zhang (ME, MSE) has been named an American Society of Mechanical Engineers (ASME) Fellow, an honor bestowed on longtime members who have demonstrated significant engineering achievements. The award recognizes Zhang's internationally renowned research using microelectromechanical systems (MEMS) to address a wide range of important problems in advanced materials, biomedicine and energy.

In the area of advanced materials, Zhang has applied MEMS techniques to develop metamaterials, arrays of engineered structures that act like artificial atoms and exhibit unusual properties such as negative refractive indices and cloaking. She has focused on creating metamaterials in the terahertz range (wavelengths between optical and microwave frequencies) that may ultimately be used for imaging, chemical detection, surveillance and high-speed electronic circuits.

In biomedicine, she has developed a MEMS-based toolset to analyze cellular behavior, yielding knowledge that could improve our understanding of cardiovascular, liver and other diseases, and lead to novel therapies. And in the energy domain, she has developed micro gas chromatography and microfluidic communication systems designed to improve the efficiency and safety of oil and gas extraction.

Zhang is one of only 3,347 Fellows out of 110,835 ASME members. Comprising more than 140,000 members in 151 countries, ASME is a nonprofit membership organization that fosters collaboration, knowledge sharing, career enrichment and skills development across all engineering disciplines to help the global engineering community advance solutions that improve our quality of life. ■

Professor Xin Zhang (ME, MSE)

PHOTOGRAPHS BY KALMAN ZABARSKY (ZAMAN, ZHANG)

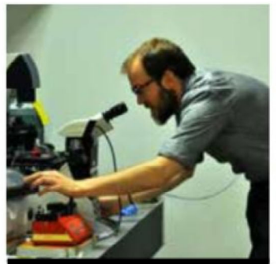
Holmes, Stepp Receive NSF CAREER Award

ASSISTANT PROFESSORS DOUGLAS Holmes (ME, MSE) and Cara Stepp (SAR, BME) have received the National Science Foundation's (NSF) prestigious Faculty Early Career Development (CAREER) award in recognition of their outstanding research and teaching capabilities. Collectively, they will net more than $1 million over the next five years to pursue high-impact projects that combine research and educational goals.

Holmes will use his NSF CAREER award to study the mechanics of how thin rods move through soft and fragile media such as tissue and granular materials. Knowledge gained from the study could enable the construction of advanced, autonomous structures capable of navigating around obstacles in such media. Thin rods and other active materials that can bend and fold on command are essential to the engineering of smart needles, soft robotic arms and other flexible devices.

Stepp, who has a joint appointment in the departments of Speech, Language & Hearing Sciences (Sargent College) and Biomedical Engineering, will develop new technology that could dramatically increase the independence of severely paralyzed individuals by empowering them to communicate as quickly and reliably as people with normal speech and motor functioning.

To date, 39 College of Engineering faculty members have received NSF CAREER awards during their service to the College. ■



Assistant Professor Douglas Holmes (ME, MSE)

Assistant Professor Cara Stepp (SAR, BME)

Grinstaff Delivers Inaugural Charles DeLisi Lecture

EXPLORES DESIGN OF BIOMATERIALS FOR CLINICAL APPLICATIONS

Professor Mark Grinstaff (BME, MSE, Chemistry) presented the inaugural Charles DeLisi Distinguished Lecture on April 2. The first named endowed lecture in the history of the College of Engineering, the Charles DeLisi Award and Lecture recognizes faculty members with extraordinary records of well-cited scholarship and outstanding alumni who have invented and mentored transformative technologies that impact our quality of life. Speaking at the Photonics Center before a packed audience of students, faculty and researchers, Grinstaff described three projects that have produced new biomaterials to improve diagnosis and treatment of major diseases and injuries: a wound sealant; a polymer film that reduces recurrence of lung cancer after surgical resection; and a joint lubricant designed to bring long-lasting pain relief for osteoarthritis patients.

PHOTOGRAPH BY DAVE GREEN (GRINSTAFF); CYDNEY SCOTT (STEPP)