

LATEST FACULTY-TO-FACULTY EVENT HIGHLIGHTED RESEARCH ON MAKING WORLD HEALTHIER AND MORE SUSTAINABLE

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The Faculty-to-Faculty events at the NYU Tandon School of Engineering are aimed at providing the school's professors with a chance to speak to their colleagues about their latest research and advances in their respective scientific and technical fields. Despite hailing from a wide variety of departments and academic centers, Tandon's faculty members have much in common – namely, their mutual goal to use technology for the betterment of society.

The speakers at the latest event were cases in point.



Associate Professor Riccardo Lattanzi.

[Riccardo Lattanzi](#) is an associate professor of electrical and computer engineering at NYU Tandon, an associate professor of radiology and director of training at [NYU's Center for Advanced Imaging Innovation and Research](#), and a member of [NYU WIRELESS](#), a multidisciplinary center focused on developing next-generation wireless technology. His research focuses on developing new techniques and tools aimed at improving the diagnostic power of magnetic resonance imaging (MRI), which produces internal anatomical images invaluable to clinicians.

“My research contributions include the development of the dyadic Green's function (DGF) methodology for fast electrodynamic simulation of radiofrequency (RF) coil performance, the introduction of the concept of ultimate intrinsic specific absorption rate (SAR), the theoretical smallest RF power deposition for a given magnetic resonance (MR) excitation, and the description of ideal current patterns corresponding to optimal performance, which can be used as a guide for optimizing the design of many-element RF coil arrays,” he explains. “Additionally, I've developed methods to assess the quality of RF coils against ultimate intrinsic performance limits, in order to inform coil designers about how much room for improvement is available.”

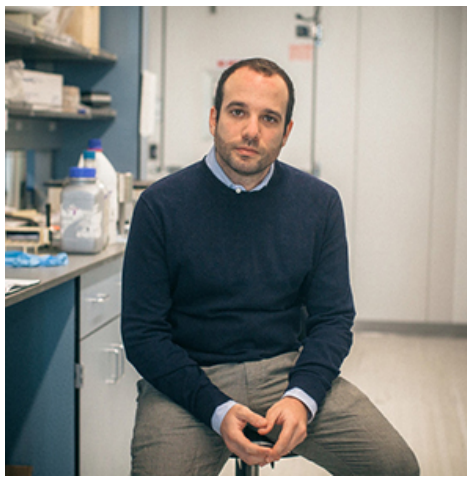
As far as what that might mean for patients, Lattanzi has been applying MR-based biochemical imaging techniques to evaluate the hip joints of patients with femoroacetabular impingement (FAI), in an effort to delay or prevent osteoarthritis, and he foresees developing innovative RF coils to improve the diagnostic power of high-field MRI in various musculoskeletal applications.

The day's other presenter was Assistant Professor of Chemical and Biomolecular Engineering [Miguel Modestino](#), who is engaged in introducing solar processes into the chemical industry, replacing fossil fuel-intensive practices with sustainable methods that rely on biomass feedstocks and solar energy. “The sun doesn't shine

all the time, so energy from renewable sources need to be stored,” he explains, “and it needs to be done in an efficient, cost-effective way.” His team’s research thus lies at the interface of multifunctional material development and electrochemical engineering, since electrochemical devices are ubiquitous in a broad range of energy conversion technologies and chemical processes.

Modestino took a few moments to explain the personal impetus behind his work’s purpose: he grew up in Venezuela, a verdant country of great natural beauty that is now being impacted greatly by climate change. While the nation is known for its lush rainforests, it is also home to the Sierra Nevada de Mérida mountain range and once boasted five glaciers. There is now just a single glacier left, and over the last few decades that one has dwindled to a tenth of its original size. It is expected to disappear entirely within the next 20 years. Displaying a photo of himself as a child bundled up during a visit to the mountains, Modestino made plain why he is devoted to advancing greener, more sustainable energy.

Both faculty members have a host of honors to their credit — Lattanzi is a [National Science Foundation CAREER Award laureate](#), for example, and Modestino recently [garnered a Global Change Award from the H&M Foundation](#) and was [named one of the world’s top young Latin American innovators by MIT Technology Review](#) — but laurels aside, it was their shared dedication to the Tandon ethos of improving the world through technology that made the latest Faculty-to-Faculty event so important and compelling.



Assistant Professor Miguel Modestino.