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Immediate Release

NYU Tandon Sustainable Energy Researcher Named a Top Young Innovator by MIT Technology Review

Miguel Modestino is honored for research to make chemical production processes greener

BROOKLYN, New York, Wednesday, June 17, 2020 – Miguel Modestino, an assistant professor of chemical and biomolecular engineering at the NYU Tandon School of Engineering, has been named among the *MIT Technology Review* "Innovators Under 35" for his work to integrate renewable-energy processes into the chemical industry and develop a path to environmentally sound chemical production.

Chemical manufacturing currently consumes roughly 10% of the world's energy demand, mostly in the form of fossil fuel-generated heat for thermochemical reactions, but Modestino's research is advancing organic electrosynthesis — which relies on electricity, not heat, to drive reactions — and which can be generated by solar, wind, or other renewable means, thereby reducing carbon emissions compared to current methods for thermochemical reactions, which rely on petroleum or coal.

Modestino explains that if the industry transitions from thermochemical to electrochemical processes involving clean electricity sources, the reduction in carbon dioxide emissions would be enormous. He estimates that implementing organic electrochemical processes at large scale, driven by solar or wind power, could result in the sustainable production of well over a third of all chemical products currently being manufactured.

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In 2017 Modestino, a native of Venezuela, was named to the Latin American edition of *MIT Technology Review* "Innovators Under 35" list, and that same year he garnered a Global Change Award from the H&M Foundation for his development of a process that uses photovoltaic arrays, which generate electricity from the sun, to drive the synthesis of adiponitrile (ADN), one of the existing precursors to nylon. (An estimated 6 million tons of petrochemical-based nylon is produced worldwide annually, making it a $20 billion per-year market.) He subsequently helped found the start-up Sunthetics, whose processes to produce ADN takes 50% less energy and smaller amounts of raw material while producing less waste and removing 20% of carbon emissions.

Modestino and his team also recently attracted attention for what is believed to be the one of the first uses of artificial intelligence to optimize an electrochemical process. That research was detailed in the Proceedings of the National Academy of Sciences (PNAS) and appeared in the Chemical and Engineering News feature "Year in Chemistry," in which it was deemed among the most important research of 2019.

Modestino, the recipient of a prestigious National Science Foundation CAREER Award in 2020, joined the NYU Tandon faculty in 2017, after completing his postdoctoral fellowship at École Polytechnique Fédéral de Lausanne (EPFL).

"I am very grateful and humbled to be recognized among the top young innovators by *MIT Technology Review*," Modestino said. "This recognition provides a powerful platform to reach key academic and industrial stakeholders and engage them in our transformative mission of building the sustainable chemical industry of tomorrow."

"Since he arrived at NYU Tandon, Miguel Modestino has been an inspiration to students and colleagues alike," said Dean Jelena Kovačević. "He is making impressive strides to create a cleaner, more sustainable world, and this latest recognition from *MIT Technology Review* affirms just how important and impactful his research is."

Modestino is profiled in the current issue of *MIT Technology Review* and will also be celebrated at the publication's flagship EmTech MIT event in October. Previous "Innovators under 35" include Larry Page and Sergey Brin, the cofounders of Google; Mark Zuckerberg of Facebook; Jonathan Ive, the chief designer of Apple; Helen Greiner, the cofounder of iRobot; and Max Levchin, the cofounder of PayPal.

About the New York University Tandon School of Engineering

The NYU Tandon School of Engineering dates to 1854, the founding date for both the New York University School of Civil Engineering and Architecture and the Brooklyn Collegiate and Polytechnic Institute (widely known as Brooklyn Poly). A January 2014 merger created a comprehensive school of education and research in engineering and applied sciences, rooted in a tradition of invention and entrepreneurship and dedicated to furthering technology in service to society. In addition to its main location in Brooklyn, NYU Tandon collaborates with other schools within NYU, one of the country's foremost private research universities, and is closely connected to engineering programs at NYU Abu Dhabi and NYU Shanghai. It operates Future Labs focused on start-up businesses in downtown Manhattan and Brooklyn and an award-winning online graduate program. For more information, visit http://engineering.nyu.edu.

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