MIT Industrial Liaison Program Faculty Knowledgebase Report

2022 MIT Paris Symposium

December 5, 2022 2:00 pm - 7:00 pm

1:30 PM – 2:00 PM	Registration
2:00 PM – 2:15 PM	Welcome & Introduction?
2:15 PM – 2:55 PM	The Promise of a Sustainable Future Roberto Rigobon Society of Sloan Fellows Professor of Management Professor of Applied Economics Sloan School of Management
2:55 PM – 3:35 PM	Turning CO2 Into Valuable Products Ariel L. Furst Paul M. Cook Career Development Professor, MIT Department of Chemical Engineering  Ariel L. Furst Paul M. Cook Career Development Professor MIT Department of Chemical Engineering Ariel L. Furst is the Paul M. Cook Career Development Assistant Professor of Chemical Engineering at MIT. Her work centers on inventing technologies to improve human and environmental health by making access to resources more equitable. Her lab develops transformative technologies to solve important problems related to healthcare and sustainability by harnessing the inherent capabilities of biological molecules and cells. She is also a co-founder of the regenerative agriculture company, Seia Bio. She completed her Ph.D. at Caltech developing non-invasive diagnostics for colorectal cancer and was then an A. O. Beckman Postdoctoral Fellow at UC Berkeley, where she developed sensors to monitor environmental pollutants. She is a 2023 Marion Milligan Mason Awardee, a CIFAR Azrieli Global Scholar for Bio-Inspired Solar Energy, and an ARO Early Career Grantee. She was recently awarded the MIT UROP Outstanding Faculty Mentor Award for her work with undergraduate researchers. She is passionate about STEM outreach and increasing participation of underrepresented groups in engineering.

3:35 PM – 4:15 PM

99% Air: Nano-Architected Materials
Carlos Portela
d'Arbeloff Career Development Assistant Professor, MIT Department of Mechanical Engineering

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MIT Department of Mechanical Engineering

Carlos Portela is the d'Arbeloff Career Development Assistant Professor in MIT's Department of Mechanical Engineering.

Portela's research lies at the intersection of materials science, mechanics, and nano-to-macro fabrication with the objective of designing and testing novel materials -- with features spanning from nanometers to centimeters -- that yield unprecedented mechanical, optical, and acoustic properties.

View full bio

Architected materials—i.e., materials whose three-dimensional (3D) micro- or nanostructure has been engineered to attain a specific purpose—are ubiquitous in nature and have enabled properties that are unachievable by all other existing materials. Their concept relies on maximizing performance while requiring a minimal amount of material. Several human-made 3D architected materials have been reported to enable novel mechanical properties such as high stiffness-to-weight ratios or extreme resilience, especially when nanoscale features present. However, most architected materials have relied on advanced additive manufacturing techniques that are not yet scalable and yield small sample sizes. Additionally, most of these nano- and micro-architected materials have only been studied in controlled laboratory conditions, while our understanding of their performance in real-world applications requires attention.

In this talk, we will explain the concept of architected materials, providing various examples that we routinely fabricate and test in our laboratory at MIT, and we will discuss how nanoscale features significantly enhance their performance. We will also discuss ongoing research directions that will not only allow us to scale-up their fabrication, but also understand how they perform in realistic conditions outside the laboratory—towards contributing to more efficient material solutions.

4:15 PM - 4:35 PM

Networking Break

4:35 PM – 5:05 PM

Panel Discussion?: Innovating for Sustainability in a Transforming World?

Vincent Maret
Corporate Innovation director
Bouygues Group

Corine De Bilbao
President
Microsoft France

Félicie Burelle
Deputy CEO
Plastic Omnium

Marie-Luce GODINOT
Senior Vice President
Bouygues Group

5:05 PM – 5:35 PM	Startups Lightning Talks? John E. Fernández Professor, Architecture, Building Technology and Engineering Systems Director, MIT Environmental Solutions Initiative CSO and Co-Founder Lamarr.ai Diana Nielsen Head Of Business Development Swift Solar Borja Soriano COO and Partner Woho Justine Bonnot Founder & CEO Yubik Jaikrishnan R Pillai Founder & Director Bovlabs
5:35 PM - 5:45 PM	Closing Remarks?
5:45 PM – 7:00 PM	Networking Reception