MECHANICAL ENGINEERING SEMINAR

Monday, November 28, 2022 at 14:30, D. Dan and Betty Kahn Building, Auditorium 1

Online: https://technion.zoom.us/j/93559447393

Sustainable Power of Choice

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Hosted by: Prof. Leonid Tartakovsky

At Cummins, a global power leader with a 100-year history of innovation, we are working across a variety of commercial vehicle, non-road mobility, and stationary power applications. While serving as the backbone of the global economy by moving people and freight, and powering data centers and hospitals, this industry has a complex environmental footprint. Its impact is further shaped by a combination of various national and local regulations and incentives, economic factors, ethical supply considerations, infrastructure, and of course rapidly evolving technologies.

In this presentation we will examine some recent practical advances across the relevant specter of technologies, encompassing batteries, fuel cells, and clean internal combustion engines powered by renewable fuels or by hydrogen. We will briefly review our efforts in the areas of stationary energy storage and hydrogen production.

We will also examine some aspects of their viability and impact from the perspective of their total "wells-to-wheels" emissions of greenhouse gases and other pollutants, as well as their demand for natural resources. The resulting solutions present a nuanced mix of technologies which may be best suited for different applications in the future, which we refer to as Power of Choice, translating into a growing demand for research and education in multiple areas of engineering.

Seminars Coordinator: Assoc. Prof. Matthew Suss.

At Cummins, a global power leader, Dr. Aleksey (Alex) Yezerets leads the global Advanced Decarbonization Technologies Team in the corporate Research and Technology organization, responsible for the development of and support to electrification and emission control products across their life cycle. He also coordinates a portfolio of internal and collaborative programs with industrial and academic partners. Alex maintains currency in his field through various professional, editorial, and graduate education activities. He holds a special appointment to the graduate faculty with the Department of Chemical Engineering at Purdue University. He has co-authored 40 patents and 120 peer-reviewed publications, with over 5700 citations, including a seminal review paper that garnered 1000+ citations, and an original research publication in the Science Journal. He has presented numerous invited lectures. His contributions to a cleaner environment and to the professional community have been recognized by three innovation awards from Cummins, multiple awards from the International Society of Automotive Engineers, as well as from the American Chemical Society, the American Institute of Chemical Engineers, the Catalysis Club of Chicago, and R&D100. He is an SAE Fellow.

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