## Colloquium

# Fluidic Shaping of Optical Components – From the Lab to the International Space Station

**Moran Bercovici**
Israel Institute of Technology

Host: Alexander Bronstein

I will present our theoretical and experimental work on leveraging the basic physics of liquid-fluid interfaces for fabrication of a wide range of high-quality optical components, without the need for any mechanical processing. I will discuss the theoretical and experimental aspects of several mechanism that allow such 'Fluidic Shaping' – from photoactivated Marangoni flows that enable dynamic programmable thin film deformations, to passive shaping under neutral buoyancy where pinning boundary conditions drive the liquid volume to a desired minimum energy. Finally, I will discuss our collaboration with NASA on the use of Fluidic Shaping for the creation of future giant space telescopes and present our zero-g experiments in parabolic flights and on board the international space station. Time permitting, I will also provide a short glimpse into our early stages in generalizing Fluidic Shaping for the creation of more complex three-dimensional structures on earth and in space – work which has taken also an artistic side and is on display as part of the European Cultural Center's 'Time Space Existence' exhibit in Venice's Biennale for Architecture. Moran Bercovici is a full professor of mechanical engineering at Technion – Israel Institute of Technology, and currently a visiting professor at ETH Zurich. He is equally interested in understanding basic physical mechanisms related to fluid mechanics as in leveraging them to create new tools and technologies across different disciplines including optical fabrication, in-space manufacturing, and reconfigurable microfluidics. An aerospace engineer by training, he worked for several years as an aerodynamics engineer before continuing to a PhD in microfluidics at Stanford School of Engineering, followed by a postdoctoral period at Stanford School of Medicine. He joined Technion as a faculty member in 2011, where he established the Fluidic Technologies Laboratory. He received two ERC grants and was awarded the Krill prize by the Wolf Foundation, the Blavatnik Award in Chemistry, and the Yanai prize of academic excellence.

**Monday, January 26, 2026 11:30am - 12:30pm**
Raiffeisen Lecture Hall

This invitation is valid as a ticket for the ISTA Shuttle from and to Heiligenstadt Station. Please find a schedule of the ISTA Shuttle on our webpage: https://ista.ac.at/en/campus/how-to-get-here/ The ISTA Shuttle bus is marked ISTA Shuttle (#142) and has the Institute Logo printed on the side.