

# Colloquium Thermo- and Fluid Dynamics

## Fluidic shaping of optical components – from the lab to the international space station

**Prof. Moran Bercovici**  
Technion – Israel Institute of Technology

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 mechanisms 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.

***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 (2000-2006) before continuing to a PhD in microfluidics at Stanford ('06-'10) and a short postdoctoral period at Stanford School of Medicine ('10-'11). He joined Technion as a faculty member in 2011, where he established the Fluidic Technologies Laboratory.*



Date: Wednesday, 18 December 2024

Time: 16:15 - 17:15 h

Place: ETH Zurich, ML F 36

Host: Prof. Filippo Coletti