

## סמינריון

הנדך מוזמנ/ת להרצאה סמינריונית של הפקולטה להנדסת מכונות שתתקיים ביום ד' 16.06.21  
(ו' בתמוז, תשפ"א), בשעה 13:30 אודיטוריום 6, בניין דן קהאן.

מרצה: ברודך רופמן

מנחה: פרופ' מורן ברקוביץ'

על הנושא:

### **Electroosmotic flow over superhydrophobic surfaces and potential application in lab-on-a-chip applications**

The seminar will be given in English

תקציר ההרצאה:

Electro-osmotic flow is a well-established and efficient method for driving microchannel flows that relies on the interaction of an externally applied electric field with charge arising at the interface between the liquid and the channel walls. However, its relatively low velocities together with its dependence on the pH of the liquid severely limit its utility.

In the first part of this talk, I will present our theoretical analysis and experimental study of EOF over superhydrophobic surfaces. Using gate electrodes placed underneath the surface to induce a charge at the liquid-air interface, we demonstrate a velocity enhancement of more than an order of magnitude, and complete pH independence. Superhydrophobic surfaces tend however to be unstable, which has led us to investigate their wetting under forced actuation, revealing new intermediate states for hierarchical superhydrophobic surfaces that were previously not reported.

Time permitting, I will also present the use of electro-osmotic flow actuation in conjunction with superhydrophobic surfaces as a valving mechanism for paper-based microfluidic devices, allowing to control the precise timing of on-chip processes, and their use in facilitating a simple home test for COVID-19.

בברכה,

רופמן איתי סאס

מרכז הסמינרים