



סמינר - SEMINAR

הנך מוזמנת/ת להרצאה סמינריונית של הפקולטה להנדסת מכונות, שתתקיים ביום ב' 12.12.16 (יב' בכסלו, תשע"ז), בבניין דן-קאהן, קומה 0, אודיטוריום 1, 14:30.

ירצה:

ד"ר שמעון רובין

הפקולטה להנדסת מכונות

על הנושא:

**Electrokinetic response of elastic surfaces and porous particles to electric fields: from basic principles to applications**

The seminar will be given in English

להלן תקציר ההרצאה:

The study of electrokinetic effects encompasses the interaction between ions, fluid flows, electrical fields, and suspended particles. In the past two decades renewed interest in electrokinetics led to discoveries of novel physical regimes at the micro/nano-scale, and constructions of novel micro- and nano-fluidic systems for a wide range applications ranging from bioanalysis to energy storage.

In this talk I will discuss two different problems in which the properties of an electric double layer (EDL) at the solid-fluid interface play a central role. First, I will present our study of the flow and pressure fields arising from spatially non-uniform EDLs in a microscale Hele-Shaw cell, enabling the creation of arbitrary flow patterns. I will then present our study of elastic deformations driven by such non-uniform electroosmotic flows, and their potential use towards the implementation of configurable microstructures. In the second part of the talk I will discuss the time-dependent effect of EDL formation in a porous particle (with large surface to mass ratio) via an induced charge capacitive charging mechanism. In this novel regime an external electric field induces an electric dipole in the porous solid which leads to electrosorption of both cations and anions within the particle, and large scale effects on the concentration field surrounding it.

Throughout the talk I will review key governing principles and results, and discuss possible ways to leverage them for novel applications in life-sciences, water desalination and adaptive optics.

בברכה,

פרופ' י"א שאול אולובסקי  
מרכז הסמינרים