

סמינריון

הנדך מוזמן/ת להרצאה סמינריונית של הפקולטה להנדסת מכונות, שתתקיים ביום ב' 28.11.16 (כז' בחשוון, תשע"ז), בבניין דן-קאהן, קומה 0, באודיטוריום 1 בשעה 14:30.

תרצה: ענבר גרינברג

מנחה: פרופ' דוד אילתה

על הנושא:

Smart Micro Structures: Directional Features for Enhancing the Performance of Micro Transducers

The seminar will be given in Hebrew

להלן תקציר ההרצאה:

Micro-actuators are miniature motors which are fabricated using the same technology used for producing microelectronic devices. Micro-actuators are not only essential in microsystems, but may also be useful in macro applications where accurate micro-scale motion is required.

The focus of my research is actuators which perform out-of-plane parallel or tilting motion, specifically suited for a variety of micromirror applications. In my research I investigated ways to enhance their functionality by adding directional stiffening elements. The objective is to enhance or manipulate the displacement in a desired direction. I rely on existing micro fabrication processes, and existing actuation techniques, and embed in them the directional elements to control the response of the actuator. The notion of increasing stiffness to achieve an enhanced response may seem like a contradiction, but each actuator has a preferred direction of motion. By constraining deformations in undesired directions it is possible to enhance deformation in desired directions.

I implemented this notion of directional elements in three different types of actuators: electrostatic, thermoelastic and piezoelectric. In electrostatic actuation we produced a mass fabrication compatible motion conversion mechanism, which converts well behaved in-plane motion to parallel or tilt out-of-plane motion. In thermoelastic actuation, we show that the natural direction of displacement of a bimorph beam can be enhanced, and even reversed, without changing the order of the bimorph layers. Finally, in piezoelectric actuation, we found a clever way to drive a piezoelectric beam in a pure twist mode.

בברכה,

פרופ' י"א שאול אולובסקי
מרכז הסמינרים