Technion-Israel Institute of Technology
Faculty of Mechanical Engineering

הטכניון-מכון טכנולוגי לישראל
הפקולטה להנדסת מכונות

סמינריון

הנך מוזמן/ת להרצאה סמינריונית של הפקולטה להנדסת מכונות, שתתקיים ביום ב׳ 2.07.2018 (יט׳ בתמוז, תשע״ח), בניין דן קאהן, אודיטוריום 1, 14:30.

מרצה: אמיל ברונשטיין

מנחה: פרופ׳ דורון שילה

מנחה שותף: ד״ר אילון פארן

על הנושא:

Experimental investigation of Austenite-Martensite phase boundary motion in shape memory alloys

The seminar will be given in Hebrew

תקציר ההרצאה :

Martensitic and reverse martensitic phase transformations are the physical processes that are responsible for the unique shape memory and superelasticity properties of shape memory alloys (SMA). The martensitic phase transformation in SMA can be described by stress-temperature phase diagram, which provides fundamental scientific and applications-related information on this important process. In this work we present a new method which allows the direct measurement of the full phase diagram in a single experiment. Moreover, the developed experimental setup enables simultaneous visualization of the microstructure evolution throughout the stress-temperature measurements via an optical microscope. The proposed method provides continuous stress-temperature-microstructure data that enable detecting local and temporary events, which are typical to the jerky nature of the phase transformation. The method is demonstrated on a SMA Ni-Mn-Ga single crystal, and the values of the Clausius-Clapeyron relation along with the latent heat of the transformation are extracted. The combination of a theoretical analysis and optical measurements of the microstructure close to the phase boundary allows evaluation of atomistic properties of a twin boundary, e.g. the energy of a twinning dislocation.

בברכה,

פרופ"א מתי סאס
מרכז הסמינרים