הטכניון – מכון טכנולוגי לישראל **הפקולטה להנדסת מכונות**

סמינריון

הנך מוזמן/ת להרצאה סמינריונית של הפקולטה להנדסת מכונות, שתתקיים ביום ד' 25.01.17 (כז' בטבת, תשע"ז), בניין דן-קאהן, קומה 0, אודיטוריום 1 , 13:30.

יצרה: שחף וולך

מנחה: פרופ'/ח דורון שילה

על הנושא:

התגובה המכאנית וקינטיקת מעבר פאזה של סגסוגת זוכרת צורה תחת פולס חימום מהיר

The Mechanical Response and Phase Transformation Kinetics of NiTi Under Rapid Pulse Heating

The seminar will be given in Hebrew

להלן תקציר ההרצאה:

Shape Memory Alloy (SMA) is a smart material family that "remembers" its taught original shape when sufficiently heated. The phenomenon is based on solid-solid martensitic phase transformation accompanied by very high applicable stress and strain. In this study we explore an ultra-fast one-directional actuation mode based on one-occasional megaWatt pulse of few microseconds that resistively heats a thin SMA wire. The unique experimental conditions allow studying the kinetics of the reverse martensitic phase transformation under conditions at which it is restricted neither by the kinematics of the experimental setup nor by the rate of heat transfer.

The experimental results demonstrate a unique dynamic behavior, which has not been previously observed. In particular, stress levels around 2 GPa and elastic strain rates of about 1000 1/s are obtained. Furthermore, the intrinsic characteristic times of the phase transformation were resolved and a model for the kinetics of the phase transformation was developed. A comparison of actuation performances demonstrates that rapid actuation is significantly advantageous over other fast actuation methods in almost every aspect reviewed. Our results provided design tools for developing applications based on this new actuation mode.

בברכה,

פרופ"א שאול אלטוביץ

מרכז הסמינרים