

סמינריון

הנדך מוזמנות להרצאה סמינריונית של הפקולטה להנדסת מכונות, שתתקיים ביום ה'
28.06.2018 (ט"ו בתמוז, תשע"ח), בניין דן קאהן, אודיטוריום 1, 13:30

מרצה: נועם זריהן

מנחה: פרופ' דורון שילה

מנחה שותף: ד"ר אילון פארן

על הנושא:

Barriers, mechanisms of motion, and kinetic laws for twin wall dynamics in ferroic materials

The seminar will be given in Hebrew

תקציר ההרצאה:

Ferroic materials, including ferroelastics, ferroelectrics, and ferromagnetics typically exhibit a twinned microstructure that contains different twin variants or domains. When subjected to an external load (i.e. magnetic\electric field, mechanical stress) one twin variant may expand at the cost of the other in a process called twinning reorientation. The twinning transformation is associated with a significant strain change, which is used in a variety of sensing and actuating applications. The basic mechanism responsible for twinning reorientation is the propagation of individual twin walls (TW), which are planar defects separating adjacent twins. This motion is governed by several barriers and may exhibit different kinetic behaviors .

In the current work, I will present new experimental and theoretical aspects of TW motion in a typical ferromagnetic alloy Ni-Mn-Ga. The motion of a TW is studied under different loading conditions, rates and temperatures. Velocity values of individual walls are extracted from high-resolution force measurements taken during displacement-driven mechanical tests, as well as from force-driven pulsed magnetic tests, and cover an overall range of six orders of magnitude. In addition, acoustic emission generated by the motion of TWs is measured during mechanical tests. The results reveal the temperature effect on the lattice barrier for TW motion, as well as the complexity of this physical process. In particular, we show that TW motion includes processes that are close to criticality alongside other processes that obey a well-determined kinetic law.

בברכה,

פרופ' א"א אחי סאס

מרכז הסמינרים