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 **במסגרת הדוקטורט**,
שתתקיים ביום ב׳ 15.01.2018 (כ״ח בטבת, תשע״ח), בניין דן-קאהן, אודיטוריום 1 , 14:30.

מרצה: לונגהוי צ׳אנג

מנחה: פרופ׳ דניאל ריטל

מנחה שותף: פרופ״מ שמוליק אוסובסקי

על הנושא:

Thermo-mechanical Characterization and Dynamic Failure of Metals

The seminar will be given in English

להלן תקציר ההרצאה:

Dynamic (“adiabatic”) shear failure is a well-documented failure mechanism resulting from intense shear-strain localization in a narrow plane which is associated with a definite temperature rise, as a result of thermomechanical coupling effects. During the last decade, our group has proposed a new approach to the phenomenon, based on the dynamically stored energy of cold work and dynamic recrystallization (DRX), which are identified as key factors for the onset of shear localization. The deeper identification of the toughening-softening mechanisms will pave the road for a control of the propensity to adiabatic shear localization .

Ti6Al4V is chosen as a model material to study the influence of impact-induced DRX on the subsequent quasi-static flow properties through a series of “dynamic static” tests. This experimental work shows that the presence of DRX’ed islands causes a noticeable drop in the strain-hardening capacity. The lack of hardening is a key factor in the subsequent plastic strain localization.

A systematic characterization of the efficiency of the thermomechanical conversion (Taylor-Quinney Coefficient) for seven different metals loaded in dynamic tension, compression and dominant shear is presented and a unified database of Taylor-Quinney Coefficient for those materials is provided, as well as its dependence on strain and loading mode (for some materials).

A joint thermal-mechanical characterization of near α Ti3Al2.5V and near β Ti-55511 titanium alloys at high strain rates is carried out to study the thermomechanical response and dynamic failure of these two titanium alloys.

בברכה,

פרופ״א אתי סאס
מרכז הסמינרים