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 ד׳ 19.12.2018 (יא׳ בטבת, תשע״ט), בניין דן קאהן, אודיטוריום 1, 13:30.

מרצה: עשהאל שהם

מנחה: פרופ׳/ח ספי גבלי

על הנושא:

Mechanics of macromolecules with bistable domains undergoing hard-soft transitions

The seminar will be given in Hebrew

תקציר ההרצאה :

Many macromolecules such as DNA, spider silk, biopolymers, titin and more, exhibit bistable behaviour. While there have been many experiments performed to fully understand the behaviour of such macromolecules, under force or length constraints, there is yet to be an explicit relation between the transition force and the temperature and strain rate. The present study develops a rigorous theoretical model that will enable, fundamental understanding of the behavior of such molecules when subjected to length-control experiments. To do so the study uses a theoretical model for a basic element in a chain composing the macromolecule, implements numeric statistical thermodynamics methods developed previously for the tri-linear chain model. The simulations allow accurate modeling of the behaviour of the macromolecule. Using these simulations, the study finds a relatively simple global parameter which describes the temperature and rate dependency of the macromolecule. This global parameter allows for deeper understanding of the behaviour of such macromolecules, and enables far more accurate predictions in experiments, without the need of any other simulations performed beforehand.

בברכה,

פרופ"א מתי וו סאס
מרכז הסמינרים