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 <u>במסגרת הדוקטורט,</u>
שתתקיים ביום ה׳ 25.05.17 (כט׳ באייר, תשע״ז), בניין דן-קאהן, אודיטוריום 1 , 13:30.

תרצה :	טל זיידמן-קלמן
מנחה :	פרופ״מ מורן ברקוביץ׳

על הנושא:

Isotachophoretic assays for enhanced biomolecular analysis

The seminar will be given in English

להלן תקציר ההרצאה:

The detection of nucleic acids (NA) and proteins is of critical importance in a wide range of applications, ranging from clinical diagnosis, through environmental monitoring, to bioterrorism. However, their low concentrations in such applications continues to present significant challenges toward their rapid and specific detection.

Isotachophoresis (ITP) is an electrophoretic technique allowing significant concentration of ionic species at a narrow interface between a high mobility leading-electrolyte (LE) and a low mobility trailing-electrolyte (TE). ITP has emerged as a promising tool for rapid NA and protein analysis, owing to its ability to focus reacting species, and accelerate target-probe reaction kinetics.

In this seminar, **I will present two novel assays utilizing ITP to achieve highly sensitive and specific detection of nucleic acids and proteins**. Our nucleic-acid detection assay utilizes the dissociation kinetics and continuous separation of low-mobility non-focusing probes (NFP), resulting in more than an order of magnitude improvement in specificity compared to steadystate assays. Using this assay, we demonstrate the potential ability to distinguish a specific target in the presence of 1000x higher concentration of mismatch sequences.

For the detection of proteins, I will present a new class of surface-based immunoassays in which protein-antibody reaction is accelerated by ITP. We apply the assay to the detection of protective antigen (PA), a component of *Bacillus anthracsis* toxins and demonstrate a 100-fold improvement in limit of detection compared to a standard immunoassay.

בברכה,

פרופ״א שמואל אוסובסקי
מרכז הסמינרים