סמינריון

הנך מוזמן/ת להרצאה סמינריונית של הפקולטה להנדסת מכונות, שתתקיים ביום ב' 19.01.15 (כח' בטבת, תשע"ה), באודיטוריום 1 בבניין דן-קאהן, קומה 0, בשעה 14:30.

תרצה: נדיה אוסטרומוחוב

מנחה: פרופ"מ מורן ברקוביץ'

על הנושא:

Focused upon Hybridization: Rapid and High Sensitivity On-Chip Detection of DNA

The seminar will be given in English

להלן תקציר ההרצאה:

Sensitive, sequence specific DNA detection plays a crucial role in various biosensing applications including medical diagnostics, medical and biological research, food and water safety and forensics. The use of amplification techniques such as polymerase chain reaction (PCR) is a common approach for improvement of sensitivity. However, PCR reactions suffer from an inherent amplification bias, and require significant sample preparation, and a well-controlled environment. This results in a growing need for simpler and faster alternatives to amplification. An amplification-free nucleic acids detection method able to reduce the typical assay time is of special importance in faster disease diagnosis and treatment.

I will present a novel assay for rapid high sensitivity detection of nucleic acids without amplification using isotachophoresis and peptide nucleic acid (PNA) probes. Isotachophoresis (ITP) is an electrophoretic technique in which analytes of interest can be focused at the interface between two electrolytes characterized by high and low electrophoretic mobilities. Utilizing the neutral backbone of peptide nucleic acids, our method is based on the design of low electrophoretic mobility PNA probes, which do not focus under isotachophoresis unless bound to their target sequence. Thus, background noise associated with free probes is entirely eliminated, while maintaining a simple single-step assay requiring no amplification steps. We demonstrate detection of targets as short as 17 nt and a limit of detection of 100 fM with a dynamic range of 5 decades, within 15 min.

בברכה,

פרופ'/מ אמיר שמ

מרכז הסמינרים