

הנדך מוזמן/ת להרצאה סמינריונית של הפקולטה להנדסת מכונות שתתקיים ביום ה' 14.03.2019
(ז' באדר ב', תשע"ט), בניין דן קאהן, חדר 217, 11:00.

מרצה: אייל רובין

מנחה: פרופ' יצחק בוכר

על הנושא:

**מדידה רב ממדית של טופוגרפיה לפיתוח
מיקרוסקופ אטומי מאופנן תדר
Multidimensional topography sensing for
frequency modulated AFM**

The seminar will be given in Hebrew

תקציר ההרצאה:

Atomic force microscopy (AFM) is widely used in the semiconductor industry for inspection and quality control. The basic mechanical concept of an AFM is a cantilever with a sharp stylus at its tip, excited in resonance. The frequency modulated AFM (FM-AFM) can extract surface topography by measuring the frequency shift created by the Van der Waals forces between the tip and the sample. To enhance the measurement speed and address complex geometries emerging in industrial microchip constructions, several enhancements are introduced. While most FM-AFM devices operates in a single vibrating mode, suggest here is a method for multidimensional sensing using frequency modulation of orthogonal vibration modes, simultaneously. The concept was tested on a macro-scale experimental system, where Van der Waals forces were replaced by stronger magnetic forces, using magnetic tip and ferromagnetic samples. Autoresonance (AR) control scheme for faster excitation and novel frequency estimation algorithm were used for sensing both modes simultaneously without waiting for steady state settling. Experimental results from the macro-scale rig show 3D relevant topographies such as inclined surfaces, steep walls and trenches that were extracted experimentally with 2 [μm] resolution.

בברכה,

ד"ר איתי סאס
מרכז הסמינריום