ΕΑΡΙΝΟ ΕΞΑΜΗΝΟ 2018

ΙΤΕ/ΙΕΧΜΗ

ΣΕΜΙΝΑΡΙΟ

ΣΕΜΙΝΑΡΙΟ

ΟΜΙΛΗΤΡΙΑ: **Yafit Fleger**, Head of the Charge Particle Microscope (CPM)
Bar Ilan Institute of Nanotechnology & Advanced Materials
Ramat Gan, Israel

ΘΕΜΑ: **Focused Ion beam (FIB) as a Fabrication-Analysis-Microscopic (FAM) tool**

ΤΟΠΟΣ: Αίθουσα Σεμιναρίων ΙΤΕ/ΙΕΧΜΗ

ΗΜΕΡΟΜΗΝΙΑ: **Δευτέρα, 5 Μαρτίου 2018**

ΩΡΑ: **13:00**

ΠΕΡΙΛΗΨΗ

Focused Ion Beam (FIB) was developed during the last two decades and has become a central tool for micro and nano fabrication analysis. The Processing and milling capabilities of FIB can be used for multiple applications in different research fields. Ga ion beam of the FIB system provides a micro to nano scale -milling of various samples with a resolution of ~15 nm while a He source can improve the milling resolution down to ~4 nm.

The most popular FIB is a dual beam system which contains SEM, Gas Injection System (GIS) and lift out prob. All together provides better analysis system with the ability to image, lift out TEM samples and create local depositions of materials such as Pt and SiO. Those three additives turns the FIB system into a powerful factory in the nano world.

A new player in the FIB world is the He Ion Microscopy (HIM) that performs capabilities which the Ga FIB does not have.

In my talk I will describe a variety of FIB applications in physics, chemistry and material science for both academic and industrial purposes.

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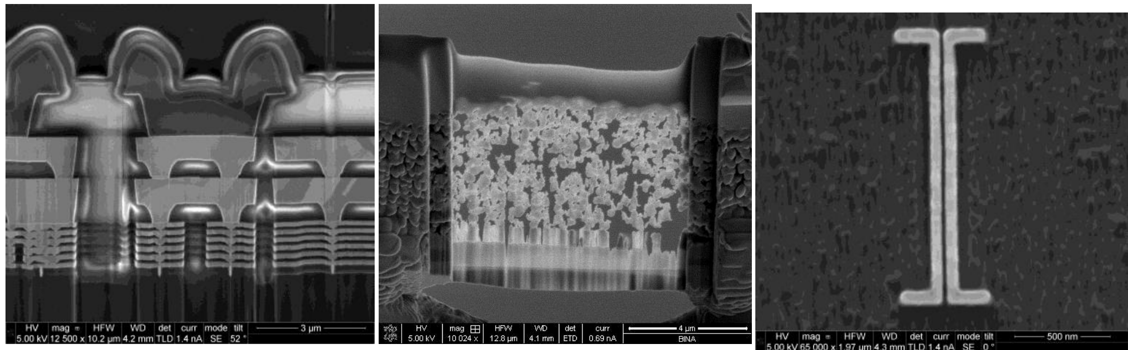
These applications demonstrates the high-resolution milling and imaging, and includes: electrochemistry micro patterning, nano plasmonics fabrication, TEM lamella preparation for analyzing crystal defects, study of carbon nano-tubes and high resolution imaging of nonconductive-biological samples. FIB is also a powerful tool for various failure analysis tests as circuit editing and cross sections and will be demonstrated for the limit size of few tens of nm.

Fig a. cross section of integrated circuit, b. Tem lamella of porous sample, c. Plasmonic nano patterning.



Dr Yafit Fleger

Head of the Charge Particle Microscope (CPM) unit since 2017.

Head of the Focused Ion Beam (FIB) unit 2010-2017.

PhD in Physics from Bar-Ilan University 2010.

As part of my job, I provide research advice and support to both researchers from the university and researchers from various universities in Israel and the industry.

My main specializations are: preparation of TEM Lamellas, thin layer analysis using Cross Section, fabrication using FIB, failure analysis, Helium Ion Microscopy (HIM) usage for imaging non conductive–biological samples, HIM usage for irradiation of 2D materials.