



The Hebrew University Center
for Nanoscience & Nanotechnology



Nano Seminar

Synthesis and Characterization of 2D Materials and Heterostructures

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Abstract:

The interest in 2D layered materials has been renovated with the successful isolation of single- and few-layer graphene in 2004 and the elucidation of its wonderful electronic properties. Since then, the research on graphene and other atomic-films, such as hexagonal boron nitride (h-BN), boron-carbon-nitrogen (BCN), transition metal dichalcogenides (TMDs), topological insulators, etc. has been exponentially increased and new interesting phenomena and applications were demonstrated. The intense study of the growth mechanism of graphene has enabled today the growth of millimeter-size single-crystal and single-layer graphene domains. This was achieved by understanding the basic processes taking place during the growth. Little is known, however, about the growth mechanism of other 2D layered atomic-films. The ability to synthesize large-area and high quality 2D atomic films is a prerequisite for their successful integration into a wide variety of applications, such as nanoelectronics, nanoelectromechanical systems, flexible and transparent devices, electro-optics, renewable energy, catalysis, etc.

In this talk, I will describe the growth mechanism of single and few-layer graphene and hexagonal boron nitride (h-BN) films while pointing out the similarities and differences of these unique materials. The growth of single- and few-layer h-BN on nickel will be explained in detail. In the second part I will describe our efforts to reveal the structure and chemical composition of atomic-films and their heterostructures. Specifically, the use of Raman spectroscopy and mapping, low-energy electron microscopy (LEEM) and time-of-flight secondary ion mass spectroscopy (TOF-SIMS) will be covered. I will finalize by introducing the work at the 2D materials Lab in Tel Aviv University

Gathering & Refreshments at 10:50

Please contact Liron Dover at 6584919 if you are interested in meeting the lecturer.

Sunday, Nov 15th 2015, 11:00 at the Seminar Hall
Los Angeles Building, entrance floor.