

## המעבדה לכימיה אורגנית ואי-אורגנית

# סמינר

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בנושא:

**Graphene-capped micro-reactors: Swiss  
army knife of modern surface science**

## Graphene-capped micro-reactors: Swiss army knife of modern surface science

**Abstract:** Whilst most surface-sensitive spectroscopy and microscopy techniques require refined ultra-high vacuum conditions, material surfaces are surrounded by gas or liquid phase molecules in real-life applications. A major endeavour of our group is probing surfaces in their application environment, for instance, under catalytic or electrochemical reaction conditions. Graphene is an atomically thin membrane that promises an abrupt change in pressure between the rarefied measurement conditions and the ambient reaction conditions. Moreover, it is mechanically robust and largely transparent to photons and electrons. In this talk, I will present to you our micro-reactor concept built on our unique expertise in manipulating graphene. With this approach, a variety of techniques such as scanning probe microscopy, electron microscopy, x-ray photoelectron spectroscopy, and Raman spectroscopy become available (or has the potential to become available) to probe the electrode-electrolyte and catalyst-reactant interfaces. I will give examples from our proof-of-concept studies on electrochemical gating of graphene, and oxidation and reduction of copper nanoparticles. I will also briefly go over our future plans and what this approach can offer us in the next decade.

