



Ben-Gurion University of the Negev

אוניברסיטת בן גוריון בנגב



# Emmanuel Tannenbaum Memorial Lecture

Department of Chemistry

**Monday, May 29<sup>th</sup>, 2023**

**Time: 14:00**

**Bldg. 43 Room 015**

**Prof. Micha Asscher**

Department of Chemistry, Hebrew University of Jerusalem, Israel

## **Buffer Layer Assisted Chemistry at small (nm) and large (Universe) scales**

Molecular thin films (buffer layers) grown on solid surfaces were studied as model systems for two purposes: Growth of metallic nano-clusters and energetic excitation driven chemical reactivity. These were investigated with amorphous solid water (ASW) as the buffer molecule. On top of the bi and tri-metallic alloy nanoparticles, model catalysis studies were investigated, focusing on acetylene conversion and methanol decomposition reactions.

Energetic excitation - induced chemical reactivity of small molecules, embedded within ASW films, were studied by employing low energy electrons and UV photons. Such complex films are known to cover small particles (grains) with energetic irradiation sources at the background of the Inter Stellar Medium (ISM). Various excitation products were identified by employing in-situ mass-spectrometry, suggesting that those that possess C-H, C-N and N-H bonds serve as building blocks and may have contributed to the origin of life.