



Nanomaterials @ Interfaces

Researcher

Prof. Yuval Golan

Department of Materials Engineering

Research

The aim of Prof. Golan's research is to identify and to understand the chemical and physical interactions and inter-facial processes that govern the formation of thin films and two- and three-dimensional assemblies of ordered nanoparticle systems. This includes the direct deposition of semiconductor thin films on single crystal substrates and on ultra-thin organic film templates, as well as surfactant-controlled chemical deposition of nanoparticles of different shape and composition onto solid supports (from a solution or from the air-water interface using the Langmuir-Blodgett technique) in order to form ordered super-crystalline arrays of nanoparticles.

Characterization techniques include advanced electron microscopy, electron and x-ray diffraction techniques, plus a variety of optical techniques, such as photo-luminescence and optical absorption spectroscopy. Prof. Golan uses various synchrotron radiation techniques for structural characterization, including grazing incidence x-ray diffraction and grazing incidence small angle scattering.

Applications & Products

Coating of 2D and 3D semiconductor films onto single crystal and organic films at room temperature with very simple and inexpensive equipment, suitable for mass-production of products such as solar cells, detectors, etc.