

S E M I N A R
Wednesday 16/5/18 11:00 am
Building 211, room 112

SPEAKER:

Dr. Iftach Nevo
Tel Aviv University

TOPIC:

**Laser induced homogeneous and oriented ice nucleation
probed by ultrafast X-ray pulses**

Illumination of supercooled microliter water drops on a hydrophobic glass slide with pulsed ns-laser beams induces ice nucleation. The type of the ice nucleation, heterogeneous or homogeneous is determined by the illumination configuration. When analyzing the enhancement of the X-ray diffraction peaks from frozen drops and the first appearance of diffraction peak from the growing nuclei in a liquid drop by X-ray pulse after each laser pulse, a correlation to the polarization state is seen. This points toward the mechanism where the electric field defines preferred direction for water molecules to bind via the interaction between laser-induced dipoles. Furthermore, the latter observations also reveal particle ice attachment during growth. Finally, different illumination configurations yield freezing temperatures that can be higher by about 10 °C than from non-irradiated water drops.