The Emilio Segre Distinguished Lectures in Physics of the Raymond and Beverly Sackler Foundation

Professor Yaron Oz, Coordinator

TEL AVIV UNIVERSITY

Professor Yuval Ne'eman Memorial Lecture

Introductory Remarks: Prof. Yaron Oz
Prof. David Andelman

Presentation of the “Academic Achievement” Scholarship in memory of Professor Yuval Ne'eman to Ms. Michal Shaviv - Ph.D. Student

Professor Ludwik Leibler
Soft Matter and Chemistry Laboratory
ESPCI, Paris, France

"VITRIMERS: A NEW CLASS OF MATERIALS"

The lecture will take place on Sunday, 23 February 2014, at 16.00, in Melamed Hall (No. 6), Shenkar Physics Building, Tel Aviv University, Ramat Aviv.

Light refreshments will be served at 15:45 before the lecture

Abstract:

During cooling, silica, the archetype glass-former gradually increases its viscosity over a wide temperature range. Silica is not soluble. In striking contrast, all organic and polymer glass forming liquids increase their viscosity and rigidify abruptly when cooled and are soluble. We introduced the concept and synthesized, vitrimers, polymer materials that undergo gradual glass transition like silica. Vitrimers are polymer networks that are able to change their topology without changing the total number of bonds through thermo-activated catalytically controlled exchange reactions. Solid at low temperatures and malleable when heated yet insoluble whatever the temperature, vitrimers constitute the third class of polymers along with thermoplastics and thermosets (elastomers). Since they can be shaped, assembled, repaired and recycled just like the glass, besides opening intriguing perspectives in both physics and chemistry, vitrimers should rapidly find applications in automotive, electronics, airplane, and coatings industries.