

Tel Aviv University , Colloquium

Professor Ludwik Leibler

ESPCI, Paris

Melamed Hall 006- Shenkar Physics building

Professor Yuval Ne'eman Memorial Lecture: "VITRIMERS: A NEW CLASS OF MATERIALS"

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.