Department of Materials
Science and Engineering

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הפקולטה להנדסה
ע"ש איבי ואלדר פליישמן
אוניברסיטת תל אביב

המחלקה למדע
והנדסה של חומרים

You are cordially invited to attend this seminar to be held on

Wednesday, December 21st, 16:00
Room 206, Wolfson Mechanical Engineering Building

Sculpting Photocatalysts on the Nano Scale

Asst. Prof Lilac Amirav

Schulich Faculty of Chemistry,
Technion – Israel Institute of Technology

Abstract

The solar-driven photocatalytic splitting of water into hydrogen and oxygen is a potential source of clean and renewable fuels. However, four decades of global research have proven this multi-step reaction to be highly challenging. The design of effective artificial photo-catalytic systems will depend on our ability to correlate the photocatalyst structure, composition, and morphology with its activity.

I will present our strategies, and most recent results, in taking photocatalyst production to new and unexplored frontiers. I will focus on unique design of innovative nano scale particles, which harness nano phenomena for improved activity, and methodologies for the construction of sophisticated heterostructures. I will share our design rules and accumulated insights, which enabled us to obtain a perfect 100% photon-to-hydrogen production efficiency, under visible light illumination, for the photocatalytic water splitting reduction half reaction. Finally, I will describe our future designs of systems capable of overall water splitting and genuine solar-to-fuel energy conversion.

Biosketch

Lilac Amirav received a Bachelor's degree (B.Sc.) from Tel Aviv University at the age of 18, and obtained her PhD in Physical Chemistry from the Technion, under the supervision of Prof. Efrat Lifshitz. Amirav was a Rothschild and 'Sara Lee Schupf' postdoctoral fellow with Prof. Paul Alivisatos at the University of California, Berkeley. In the fall of 2011 Amirav joined the Schulich Faculty of Chemistry at the Technion – Israel Institute of Technology as an Assistant Professor. She is affiliated with the Russell Berrie Nanotechnology Institute (RBNI), and the Grand Technion Energy Program (GTEP), and a member of the I-CORE "Israel Solar Fuels Consortium" center of excellence in renewable and sustainable energy. Amirav is interested in photocatalysis on the nano scale and related photophysical and photochemical phenomena, with focus on photocatalytic solar-to-fuel conversion.