

#ICMoTalks

Prof. Menny Shalom**Ben-Gurion University of the Negev,
Beer-Sheva, Israel****May 12nd - 10:00****📍 Assembly Hall - ICMol****PROGRAM**10:00 - 11:00 *Talk****Talk: Materials design for photo and electrochemical reactions******Prof. Menny Shalom*** / Department of Chemistry, Ben-Gurion University of the Negev, Beer-Sheva, Israel

11:00 Short talkg of members of the Photochemistry Reactivity Group (10 + 3 min questions)

Talk: Understanding charge dynamics in heterojunction photocatalytic materials for enhanced solar-driven fuel production.***Dr. Soranyel Gonzalez Carrero*** / ICMol - Photochemistry Reactivity Group***Talk: Revolutionizing energy conversion with perovskite nanocrystals: from sensitization to photocatalysis.******Dr. Alejandro Cortes Villena*** / ICMol - Photochemistry Reactivity Group***Talk: NIR-triggered upconversion photoluminescence in dye-Yb lake doped latex nanoparticles.******Dr. Rita Cevallos Toledo*** / ICMol - Photochemistry Reactivity Group***Talk: Interaction of tetracycline with N-acetyl-L-cysteine-capped gold nanoclusters: fundamentals and sensing.******Miguel Justo Tirado*** / ICMol - Photochemistry Reactivity Group



Prof. Menny Shalom

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Abstract

Materials design for photo and electrochemical reactions

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Developing efficient, stable, cost-effective catalytic systems for renewable energy conversion and storage is one of today's critical scientific challenges. In our research, we try to address these challenges through new approaches to photocatalysis, photoelectrochemical, and electrochemical systems.

The first part of this talk presents the rational synthesis of transition metals and their composites for various electro-oxidation and reduction reactions, including oxidative upgrading of organic molecules and hydrogen peroxide synthesis. I will present our recent work on zinc-air batteries, peroxide-based electrolyzers, and alkaline water electrolyzers.

The second part will show new approaches for growing polymeric carbon nitride (CN) layers on conductive substrates for photocatalytic and photoelectrochemical applications. We demonstrate CN-based photoanodes as stable, efficient platforms for converting organic molecules into value-added chemicals while simultaneously producing hydrogen. In addition, I will show the use of CN-films as highly stable photocatalytic panels for various catalytic reactions.

Biography

Menny Shalom completed a B.Sc. in chemistry summa cum laude at Bar Ilan University in 2007. He conducted his Ph.D. under the supervision of Prof. Arie Zaban at Bar Ilan University. Afterward, he did postdoctoral research in Max Planck Institute of Colloids and Interfaces (MPI), Germany, with Prof. Markus Antonietti. In 2013 he was appointed as a Group Leader at MPI. Menny joined the Ben-Gurion University of the Negev, Department of Chemistry in October 2016. Menny's research is focused on several fundamental scientific topics spanning material synthesis mechanisms, the development of new materials and concepts for clean fuel production (e.g., hydrogen, hydrogen peroxide, and carbon-based fuels), catalyst design, and functional devices. The materials of interest range from 2D metal-free materials, through metal-carbon hybrids, to various ceramics. He investigates sustainable solar-to-fuel conversion using photoelectrochemical cells, photocatalyst panels, and electrocatalysis.

His undergraduate honors include Bar Ilan University's Dean and Rector Awards for Outstanding Students and the Wolf Foundation Award. His awards include the Wolf Foundation Award for M.Sc. and Ph.D. students, the Israel Chemical Society (ICS) prize for outstanding Ph.D. student, Israel Sustainable Energy Society Prize for the best Ph.D. thesis, the Minerva fellowship for postdoctoral research, Israel Vacuum Society (IVS) early career excellence award (2018), Toronto prize for excellence in research for young faculty members (2018), ICS excellent young scientist prize (2020), Tenne Family Prize (2021), The Blavatnik Award for Young Scientists (2022), Nano Research young investigators (NR45) award in nanocatalysis (2022), and the Climate Solution Prize for groundbreaking technologies (2024).