

הפקולטה למדע והנדסה של חומרים Department of Materials Science and Engineering





סמינר SEMINAR



Synthesizing Block-Copolymer-Based Emulsion-Templated Porous Polymers

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Porous polymers are of interest for a wide variety of applications. Emulsion templating has been used to generate porous polystyrene crosslinked with divinylbenzene (DVB) (PSD), but these polymers were not rubber-toughened. The objective of this research was to synthesize rubber-toughened, emulsion-templated PSD monoliths through atom transfer radical polymerization (ATRP) of styrene and DVB from a rubbery macroinitiator (MI) within a high internal phase emulsion, yielding triblock-copolymer-like macromolecular structures. ATRP of PSD alone produced a much narrower tan δ peak than free radical polymerization, indicating a more homogeneous network structure. The MI was based on either poly(dimethyl siloxane) (PDMS) or hydroxy-terminated polybutadiene (HTPB). Porous, crosslinked PSD-PDMS-PSD and PSD-HTPB-PSD monoliths with densities of around 0.12 g/cm³ were successfully synthesized. Higher PSD contents produced a typical emulsion-templated structure, while lower PSD contents produced a typical emulsion-templated structure, while lower PSD indicating an interpenetrating-network-like structure.

<u>BIO</u>

Keren Mizrahi is currently in her second year at the Technion, pursuing an M.Sc. in Materials Engineering under the supervision of Prof. Silverstein. Her research topic is synthesizing block-copolymer-based emulsion-templated porous polymers. She earned her Bachelor of Science in Chemistry at Tel Aviv University in 2021 as well as a Bachelor of Science in Materials Engineering. Her long-term goal is to undertake a Ph.D. and then work as a research engineer.

Advisor: Prof. Michael S. Silverstein

14:30 ההרצאה תתקיים ביום ראשון, ה – 11 ביוני 2023 בשעה באודיטוריום ע"ש דויד וואנג, בניין מידן, קומה 3

The lecture will take place on Sunday, June 11th, 2023 at 14:30 David Wang Auditorium, 3rd floor, Dalia Maydan Bldg.

כיבוד קל יוגש לפני הסמינר Light refreshments will be served before the seminar.