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## DEPARTMENT OF MECHANICAL ENGINEERING

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### SEMINAR

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*to be held on Thursday, March 15, 2018, 11:00  
in the Seminar Room (#117) of the Mechanical Engineering Building (#55)  
at the Campus of the Ben-Gurion University of the Negev*

## Programming the response of soft materials through micro-structural design

**Dr. Noy Cohen**

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### Abstract:

Owing to their ability to undergo large deformations, elastomers are ubiquitously employed in modern applications. Enhancing their performance is an important challenge that requires a deep understanding of the relations between the micro-structure and the macroscopic behavior. In the first part of my talk I will present microscopically motivated theoretical models and FE simulations that capture the essential features of the electro-mechanical response of (i) smectic liquid crystal elastomers and (ii) liquid metal embedded elastomers. Next, with the aim of controlling the purely mechanical behavior of polymers, I will introduce a multi-scale framework that captures the non-linear response of polymer networks with flexible monomers. Lastly, I will discuss some ongoing efforts to model the non-linear response of cellular materials.

**Bio:** Noy Cohen joined Prof. Robert McMeeking's group at the University of California, Santa Barbara, as post-doctoral scholar at the beginning of the year. Prior to joining UCSB, He was a post-doctoral scholar at Prof. Kaushik Bhattacharya's group at the California Institute of Technology. He received his B.Sc., M.Sc., and Ph.D. in Mechanical Engineering from the Ben-Gurion University in Israel in 2016 under the supervision of Prof. Gal deBotton. His research interests are in soft, stretchable multi-functional materials that undergo large deformations in response to external stimuli.

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