Bar-Ilan University
אוניברסיטת בר-אילן

Faculty of Exact Sciences
Department of Chemistry

הפקולטה למדעים מדויקים
המחלקה לכימיה

S P E C I A L S E M I N A R

Tuesday 18/12/18, 12:00 pm

Building 206 Nano, conference room on 9th floor

SPEAKER:

Dr. Jonathan P. Singer
Department of Mechanical & Aerospace Engineering
Rutgers University, United States

TOPIC:

Self-assembly in extreme fields mediated by mobility

Recent developments in nanostructured materials have demonstrated myriad desirable properties ranging from photonic or plasmonic metamaterials to biomanipulative surfaces. To bring these properties from the lab to the commercial space will require innovative nanomanufacturing strategies focused on scalable and cost-effective techniques. My lab, the Hybrid Micro/Nanomanufacturing Laboratory, applies the manipulation of fundamental driving forces to this challenge through combinations of top-down and bottom-up techniques for new hybrid lithographic strategies. One central theme is the use of extreme fields to locally drive self-assembly through mediation of material mobility. In this seminar, I will highlight examples in (1) magnetic nanoparticle alignment, (2) thermocapillary laser processing of thin films, and (3) electrospray deposition of hierarchical structures. The critical feature of each example is that the directed application of both mobility and a driving force serves to eliminate barriers to integration of nanostructured materials with rapid production methods, such as roll-to-roll continuous manufacturing or spray coating.