



## סמינר מחלקתי – הנדסת חומרים

הנכם מוזמנים בזאת לסמינר מחלקתי  
אשר יתקיים ביום ה, 9 במאי 2024, א' באייר תשפ"ד,  
בשעה 11:00, בבניין 51 אולם 15

### **Peptide Templated ZnO Films for Volatile Organic Compounds Sensing**

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The versatility and modularity of peptides make them promising agents for the synthesis and functionalization of inorganic materials. However, the interactions between the peptides and the materials' surfaces, as well as the growth mechanisms involved, have not yet been fully elucidated. As an important test case, in this study I show the use of peptides to fabricate ZnO films and their functionalization. The choice of ZnO is based on its unique properties and its emerging electronic and sensing applications. Specifically, I demonstrate the ability of peptides to facilitate the growth of continuous, homogeneous, and crystalline ZnO films on Au and oxidized Si substrates under environmentally friendly conditions. I further show the effect of pretreatment on surface coverage and elucidate the crucial role of peptide sequence in enhancing adhesion and controlling nanocrystalline morphology. Furthermore, I demonstrate the use of peptide-surface electronic interactions for ethanol sensing. I show that the sensing process depends on the peptide sequence and demonstrate that the detection limit of peptide templated ZnO films is appropriate for driver's alcohol tests. These studies highlight the promising use of peptides as attractive additives for preparation of electronic materials with "green" procedures. Integrating these functionalized materials into electrical devices has the potential to enhance device performance and tailoring surface electronic properties for specific applications, and in particular for the sensing applications demonstrated in this work.