סמינר מחלקתי – הנדסת חומרים

הנכם מוזמנים בזאת לסמינר מחלקתי
אשר יתקיים ביום ה', 29 בפברואר 2024 , כ' באדר א' תשפ"ד,
בשעה 11:00, בבניין 51 אולם 15

Symmetry breaking in the formation of chiral nanocrystals

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Our group has been working on nanocrystals made of inorganic materials which crystallize in chiral space groups. We have shown that using molecular chiral ligands in the preparation of the nanocrystals it is possible to control their handedness and obtain significant enantiomeric excess in the nanocrystal population. In particular, our recent work on chiral europium-doped terbium phosphate nanocrystals has yielded many interesting results through measurements of their circularly polarized luminescence. We have shown that it is possible to obtain nanocrystals of a single handedness when preparing the nanocrystals in the presence of chiral tartaric acid molecules and that a very sensitive symmetry breaking process through chiral amplification occurs in their formation. We also study the kinetics of their formation by following their total luminescence and circularly polarized luminescence as they are being formed, and learn much about crystal nucleation and growth mechanisms. For example, we found that they form by a complex non-classical nucleation process.

I will also briefly discuss a different type of symmetry breaking using circularly polarized light controlled chemistry in noble metal plasmonic nanoparticles.