TEL AVIV UNIVERSITY אוניברסיטת תל-אביב

The Center for Nanoscience & Nanotechnology

Rational Design of Nanoparticles for Biomedical and Energy Applications

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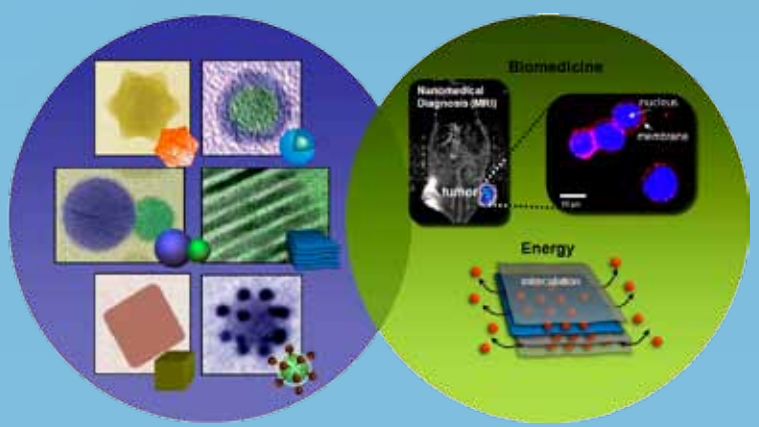
The rational design of nanoparticles has been increasingly important for the successful applications in the detection of biological targets and also for the development of catalysis in energy harvesting and storage. Simultaneous prerequisite is the better understanding of size, composition and shape dependent nanoscaling-laws of nanoparticles.

In the first part, I will discuss about chemical design magnetic nanoparticles as the ultra-sensitive MRI probes (with more than 10 times higher sensitivity than conventional ones) and multi-modal nanoparticles for highly accurate and false-free capabilities in the monitoring of biological species and drug delivery. In the latter part of my talk, "laterally confined 2-dimensional" nanoparticles will be introduced to demonstrate their capabilities as excellent host materials for energy conversion and storage.



References :

Magnetism and MRI probes: Lee and Cheon *Nature Nanotech.* 2011, *6*, 418; Choi and Cheon *J. Am. Chem. Soc.* 2010, *132*, 11015; Jang and Cheon *Angew. Chem. Int. Ed.* 2009, *48*, 1234; Jun and Cheon *Acc. Chem. Res.* 2008, *41*, 179; Lee and Cheon *Nature Medicine.* 2007, *13*, 95.

Multi-modality: Yoo and Cheon *Acc. Chem. Soc.* 2011, *44*, 863; Cheon and Lee *Acc. Chem. Res.* 2008, *41*, 1630; Choi and Cheon *Angew. Chem. Int. Ed.* 2008, *47*, 6259; Choi and Cheon *J. Am. Chem. Soc.* 2006, *128*, 15982; Lee and Cheon *Angew. Chem. Int. Ed.* 2006, *45*, 8160.

2-D nanoparticles: Jang and Cheon *J. Am. Chem. Soc.* 2011, *133*, 7636; Jeong and Cheon *J. Am. Chem. Soc.* 2011, *133*, 14500; Seo and Cheon *Adv. Mater.* 2008, *20*, 4269; Seo and Cheon *Angew. Chem. Int. Ed.* 2007, *46*, 8828;

Sunday, 21 October 2012 at 13:00, Dan David Building, Hall 003

Tel Aviv University Center for Nanoscience & Nanotechnology