



School of Nano Science (IPM)



Condensed Matter & Statistical  
Physics Group (IPM)

## Weekly Webinar

### Periodic Mesoporous Organosilica with Bulky Functional Groups within Frameworks, from Bulk to Especial Morphology

Speaker: **Dr. Mojtaba Khorasani**

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Thanks to the high surface area, tunable pore size and diameter, high loading of organic functional groups, good biological interaction, excellent biocompatibility and biodegradability periodic mesoporous organosilicas (PMOs) have attracted tremendous research interest from catalysis to nanomedicine. These types of materials are typically prepared by the hydrolysis and condensation of at least a bridged organosilane precursor  $[(R'O)_3Si-R-Si(OR')_3]$  in the presence of a suitable surfactant as supramolecular structure-directing-agent (SDA) under either acidic or basic conditions. Although, a plethora of bulk PMOs (micrometer-sized particle) from simple to advanced functional groups have been reported so far, synthesis of PMOs nanoparticles (below 400 nm sized dispersed particles) with well-defined morphology (such as spherical, hollow spheres, core-shell spheres and hierarchical structures) in the nanoscale domain, remains a challenge. On the other hand, because of the difficulty in controlling effects of size, wettability, electric charge and chemical characters of the bridging organic groups on the self-assembly of surfactant species as well as low reactivity of bridged organosilanes, PMO nanoparticles have been mainly described by using small organic. Therefore, synthesis of PMO NP with bulky functional groups in the framework while monodisperse nanoscale morphology obtained, is considered as the hottest topic in this research area. In this presentation, I am going to talk about some applications of PMO materials from bulk to well-defined morphology.

**Wednesday, 15 July 2020 (۲۵ تیر ۱۳۹۹), 14:00-15:00**

Virtual Meeting Room (please log in as a guest):

<https://www.skyroom.online/ch/schoolofphysics/school-of-nano-science>

