

Venerdì 27 Maggio 2016

Alle ore 11:00

presso l'aula 2 dell'Edificio F,
Area della Ricerca CNR, Via Madonna del Piano, 10 Sesto F.no

Il Dr. Nikola Knezevic

del The Vinca Institute, University of Belgrade
terrà il seguente seminario:

"Functionalized silica-based nanoparticles for targeted cancer treatment"

Abstract:

Synthesis and extensive application possibilities of various nanoarchitectures are being discussed in the literature. Different complex magnetite-mesoporous silica-based core-shell nanosystems are also demonstrated for application in targeted treatment of cancer. Functionalized silica-based nanomaterials possess the ability to target tumour tissues by specific interaction with tumour-overexpressed biomolecules, tumour-specific acidic environment, or by regulating their therapeutic activity in response to externally applicable targeting stimuli, such as exposure to light, or magnetic field. Different morphology of the nanoarchitectures can be obtained in dependence of the employed syntheses conditions, and the presence of organic functional groups can differently affect the loading and delivery capacities of different drugs, while rate of the drug delivery from magnetic drug nanocarriers can be also modified by the action of magnetic field. In addition, more complex systems are being developed where the anticancer drugs are loaded inside the porous silica framework, and their retention and on-desire release can be achieved through different linkage strategies with mesopore-capping agents. Thus, CdS quantum dots are demonstrated as effective caps for the core-shell magnetic mesoporous silica materials through UV light-cleavable nitrobenzyl-linker, to entrap the anticancer drug camptothecin. The efficient synergistic anticancer effect of the capping quantum dots and the released camptothecin is demonstrated upon UV exposure of the treated cancer cells. Development of multifunctionalized porous silicon and organosilica nanoparticles for targeted chemo- and photodynamic therapy will be also discussed, in addition to covering the ongoing research studies and opportunities for future work.

Il Direttore ICCOM
Dr. Maurizio Peruzzini