MaNaCa

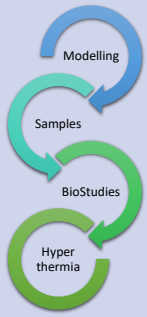
Training Workshop

Magnetic Nanohybrids for Cancer Therapy

Thessaloniki | April 07-09, 2022

Workshop Program

ORAL PRESENTATIONS

	Thursday 07.04	Friday 08.04	Saturday 09.04
09^{00}-11^{00}		**Properties** **H. Sarafidis, Greece** *Mossbauer Spectroscopy in Fe oxides* **A. Semisalova, Germany** *Ferromagnetic resonance study of magnetic nanoparticles for biomedical applications* **D. Karfaridis, Greece** *X-ray Photoelectron Spectroscopy: Principles and application on magnetic nanomaterials* **J. Kioseoglou, Greece** *Tailoring magnetic exchange bias and Curie temperature in Ni-based nanoclusters*	**Lab courses** 
	11^{00}-11^{30} *Coffee Break*		**12^{00}-13^{00} *Lunch***
11^{30}-13^{30}	***Arrivals*** ***Registration opens at 13^{00}***	**Magnetic nanohybrids** **F. Pinakidou, Greece** *Probing the nanostructure of magnetic cementite nanoparticles using X-Ray Absorption Spectroscopic techniques* **N. Sisakyan, Armenia** *Iron-Cementite nanoparticles in carbon matrix: Synthesis, structure and magnetic properties* **N. Tetos, Germany** *Magnetically-actuated cell manipulation with "nanoflower"-shaped magnetic nanoparticles* **N. Maniotis, Greece** *Micromagnetic analysis tools for revaluation of magnetic nanoparticle physical properties in magnetic hyperthermia* **H. Gyulasaryan, Armenia** *Synthesis, structure, and magnetic properties of (Fe-Fe_3O_4)/C core-shell nanoparticles* ***Poster flash presentations (5 min/Poster)***	***Excursion to Lake Kerkini*** ***13^{00}-21^{00}***
	13^{30}-15^{00} *Lunch Break*		
15^{00}-17^{00}	**Materials** **M. Angelakeris , Greece** *Workshop Opening* **U. Wiedwald, Germany** *From physical design to medical applications of magnetic nanoparticles for cancer therapy* **S. Mourdikoudis, Czech Republic** *Colloidal chemical routes for the synthesis of magnetic nanostructures destined for biomedical applications. What to choose?* **A. Elsukova, Sweden** *More than an image: advanced electron microscopy methods for material characterization* ***Poster flash presentations (5 min/Poster)***	**Perspectives** **K. Giannousi, Greece** *Bio-applications of metal-based nanoparticles* **M. Efremova, Germany** *A new approach to magnetic sensing and actuation of mammalian cells based on genetically encoded encapsulin protein* **K. Spyridopoulou, Greece** *Preclinical study design considerations in cancer nanomedicine* **A. Assimopoulou, Greece** *Magnetic nanostructures as drug delivery systems for natural products* **M. Angelakeris, Greece** *Closing Remarks*	*Lunches and coffee breaks take place at Poster Session Room* *In parallel, students may hang their posters, present and discuss their results*
	17^{00}-17^{30} *Coffee Break*		
17^{30}	***Visit at Noesis, Workshop Dinner***	***MaNaCa Project Meeting***	

POSTER PRESENTATIONS

(Onsite & 5 min flash presentations)

P01	**Synthesis and characterization of a novel multifunctional magnetic bioceramic nanocomposites** *K. Kazeli, Greece*
P02	**Single-step solid state-pyrolysis of carbon-Fe_3C submicron spheres** *E. Papadopoulou, Germany*
P03	**Alternative protocols to optimize magnetic hyperthermia efficiency** *A. R. Tsiapla, Greece*
P04	**Synthesis of Fe-based magnetic nanoparticles by pyrolysis method** *G. Chilingaryan, V. Avagyan, Armenia*
P05	**Tuning synthesis of Fe_3O_4 nanoparticles: the role of surface charge on Cr(VI) uptake** *K. Kalaitzidou, P. Asimakidou, Greece*
P06	**Structural properties of Fe/Fe_3C cementite nanoparticles using spectroscopic techniques** *K. Kontou, Greece (web)*
P07	**Investigation of the heating properties of Fe_3O_4 magnetite nanoparticles dispersed in agarose** *I. N. Sahin, Germany*
P08	**4D Printing: Synthesis, characterization and mechanical evaluation of ferromagnetic hybrid scaffolds for magnetic hyperthermia** *A. Alexandridis, Greece*

LAB COURSES-HANDS ON

(Saturday 09/04/2022, 09^{00}-12^{00})

Samples	**Magnetic Nanoparticles**. Synthetic routes using the aqueous chemical coprecipitation method, highlighted as a cost-effective and fast process, easily expandable on an industrial level.
	3D Printed Scaffolds. Elaboration of 3D printing technology to fabricate magnetic scaffolds using a Fused Deposition Modelling printer, either with a commercial magnetic filament or with a handmade polymer bonded magnetic filament.
	3D printed Magnetic Devices. Design and manufacture of devices that can produce high spatial gradients of the magnetic flux density (120 T/m) strong mechanical forces and torques that can be applied on cells when incubated with MNPs.
BioStudies	This Lab is focusing to provide briefly state-of-the-art of nanomaterial application for cancer therapy, on a theoretical level, and a real-time demonstration on experimental design and synthesis routes of magnetic materials focused on biomedical applications, utilizing the Magna Charta Lab equipment, and provided devices.
Hyperthermia	After a brief introduction on the magnetic hyperthermia origin following a short presentation on the Magna Charta lab devices and equipment, the experimental process will be analyzed and presented in a real-time demonstration.
Modelling	In the first part of this course, we will find out how we can easily set up a hysteresis loop in OOMMF software. In the second part, we will present how to build numerical models with finite element method and more specifically with the COMSOL software for the description of the phenomena that take place in a magnetic hyperthermia experiment.