Professor M. Ricardo Ibarra, Director of the Institute of Nanoscience of Aragon, Spain, is going to give a series of Lecture about Magnetic Nanostructures and Nanomaterials. The program schedule is listed below:

Lecture 1: Magnetic and superconducting nanostructures produced by focused ion and electron beams
October 21, 10:00-12:00, Room 2404
Lecture 2: Magnetic nanoparticles in new therapies and diagnosis
October 22, 14:30-17:00, Room 4503

Interested student please register by completing the form in the link down below:
https://docs.google.com/forms/d/1jPDkUbhwpxSAr_BjuljAoQawya058NnzX154iNHcevE/viewform

Should you have any question please contact Mr. Ng, kenok@ust.hk

Postgraduate Student Workshop

Postgraduate Student Seminar on Magnetic Nanostructures and Nanomaterials

October 21st ~22nd , 2013

Location

October 21st, 2013: Room 2404
October 22nd, 2013: Room 4503
The Hong Kong University of Science and Technology
Clear Water Bay, Kowloon, Hong Kong

Lectures

Magnetic and superconducting nanostructures produced by focused ion and electron beams
Professor M. Ricardo Ibarra
Professor of Condensed Matter Physics; Director of the Institute of Nanoscience of Aragon,University of Zaragoza. Zaragoza, Spain.

Magnetic nanoparticles in new therapies and diagnosis
Professor M. Ricardo Ibarra
Professor of Condensed Matter Physics; Director of the Institute of Nanoscience of Aragon,University of Zaragoza. Zaragoza, Spain.

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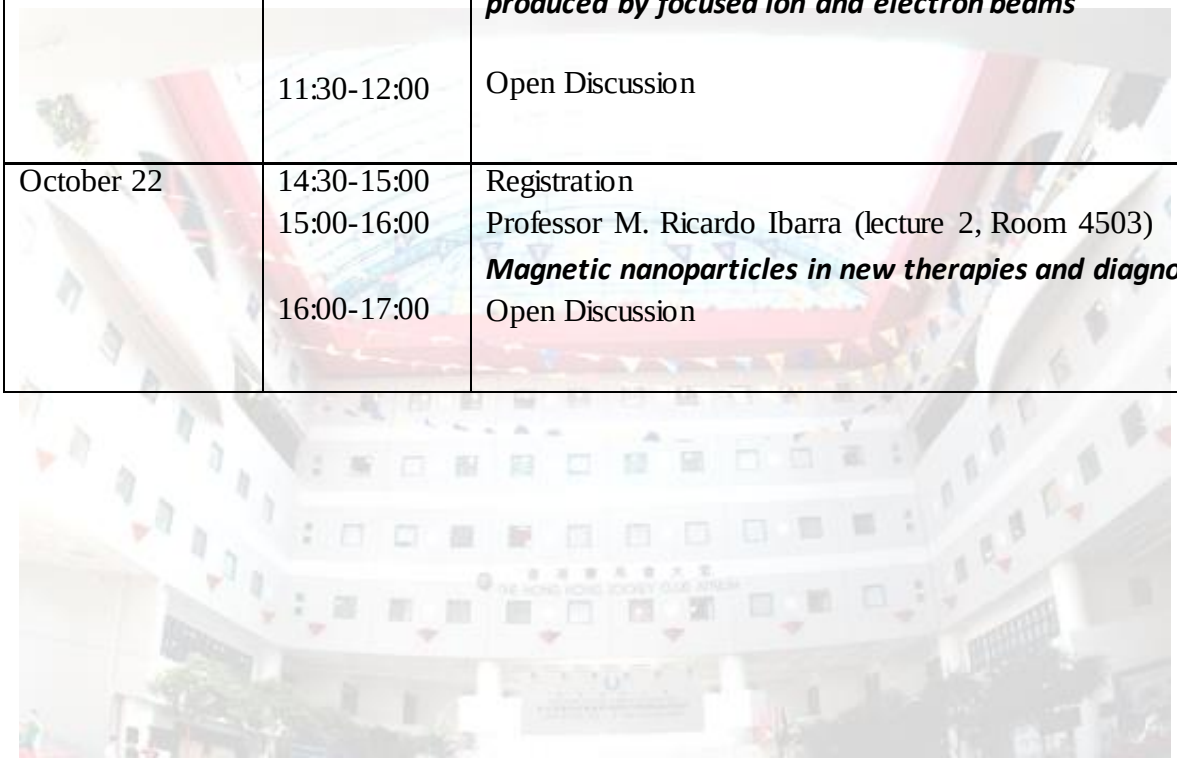
Postgraduate Student Conference/Seminar Grants (PSCG), Research Grants Council; and William Mong Institute of Nano Science and Technology (WMINST)

Program Schedule

October 21	10:00-10:30	Registration
	10:30-11:30	Professor M. Ricardo Ibarra (lecture 1, Room 2404) ***Magnetic and superconducting nanostructures produced by focused ion and electron beams***
	11:30-12:00	Open Discussion
October 22	14:30-15:00	Registration
	15:00-16:00	Professor M. Ricardo Ibarra (lecture 2, Room 4503) ***Magnetic nanoparticles in new therapies and diagnosis***
	16:00-17:00	Open Discussion



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Abstracts

Lecture 1: Magnetic and superconducting nanostructures produced by focused ion and electron beams

Room 2404
10:30-11:30
October 21st, 2013

New advanced microscopies combine electron and Ga ions focused beams in the same chamber. This allows a number of applications for preparation of nanostructures either using the possibility of etching of the FIB or the deposition from an organometallic gas precursor assisted deposition. This could be achieved either by the electrons (FEBID) or ions (FIBID) Focused Beam Induced Deposition. Magnetic and superconductor nanostructures were fabricated using this technique. Co magnetic nanowires of high purity (95%) were produced using FEBID technique and the magnetic characterization of L-shaped Co nanowires revealed that the domain-wall propagation field is lower than the domain-wall nucleation fields (*conduit behaviour*).

3D magnetic nanostructures have been obtained and constitute a promising feature which could have implication in magnetic logic, sensing and storage applications. W nanostructures using FIBID showed relevant superconductor properties. It was found transition critical temperatures around Tc = 5K and archetypical BCS behavior that do not change with the size reduction. New effect related with melting of vortex lattices present under application of a magnetic field, were observed in these new nanostructures. A new field induced dissipation-free state has been observed in very narrow nanowires fabricated using FIBID showing the relevance of the surface superconductivity.

Prof. Manuel Ricardo IBARRA
Professor of Condensed Matter Physics
Director of the Institute of Nanoscience of Aragon

His research focuses on Magnetism and magnetic materials. His works provide important insight on the magnetic properties of materials and nanostructure, and form the foundation of his research into the application of these materials in electronics and medicine. He is chairman of the European Physical Society, and member of several Advisory Committee Boards. He was awarded Doctor Honoris Causa by the AGH University and Premio Aragon Investiga a la Excelencia Investigadora 2009.

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Lecture 2: Magnetic nanoparticles in new therapies and diagnosis

Room 4503
15:00-16:00
October 22nd, 2013

Magnetic nanoparticles constitute nowadays a vast field of research due to the current and expected application in nanobiomedicine. The potential of magnetic nanoparticles stems from the intrinsic properties of their magnetic cores, combined with the functionality acquired under an appropriate coating. The capability for loading and targeted controlled release of drugs is one of the main issues in cancer therapy. The biofunctionalization of the nanoparticles surface make them suitable for magnetic separation based on the biomolecular recognition of biological moieties. New inmunomagnetic assays using magnetic nanoparticles provides a new route to quantize the results of these biosensors. The magnetic interactions involved in the application of electromagnetic waves enhance therapies based on magnetic fluid hyperthermia. The presence of magnetic nanoparticles also perturb locally the hydrogen proton relaxation, this phenomenon is on the bases of the enhance MRI diagnostic using contrast agents. Targeting of these contrast agents could detect angiogenesis processes at early stages. A brief review of all these different applications will be depicted emphasizing also the possible viability of targeting using loaded cell with nanoparticles as vehicle towards a malignant region. The case of dendritic cells (DCs) as main candidate for magnetic hyperthermia will be reported.

Prof. Manuel Ricardo IBARRA
Professor of Condensed Matter Physics
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His research focuses on Magnetism and magnetic materials. His works provide important insight on the magnetic properties of materials and nanostructure, and form the foundation of his research into the application of these materials in electronics and medicine. He is chairman of the European Physical Society, and member of several Advisory Committee Boards. He was awarded Doctor Honoris Causa by the AGH University and Premio Aragon Investiga a la Excelencia Investigadora 2009.

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