Avviso di seminario, giovedì 12/10/2017 alle 14:30, Aula 1, Edificio F, Area di Ricerca CNR

3-D Atom-by-Atom Dissection of Materials

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Atom-probe tomography (APT) is finally coming of age, after a long gestation period, because of the availability of reliable and well-engineered commercial instruments and data analysis software, which are both robust and ergonomic. APT is now being applied to a broader range of materials classes that involve highly important scientific and technological problems in materials science and engineering. For example, APT is being utilized to study specific problems concerning metal and semiconductor structures and interfaces, oxides, organic/inorganic interfaces, and organic and biological materials. In this presentation, I will describe the underlying physics of laser-assisted field evaporation which is the cornerstone of APT analysis. To amplify on this point I will discuss the science and practice of the use of APT to achieve 3-D atom-by-atom maps of the emerging isotopically engineered nanoscale and quantum materials.

Bio.

Oussama Moutanabbir holds Canada Research Chair in Integrative Nanoscale and Hybrid Materials at department of Engineering Physics of Polytechnique de Montréal. He obtained a Ph.D. degree in energy and materials sciences from Institut National de la Recherche Scientifique (INRS-EMT). As a fellow of the Japan Society for the Promotion of Science, he was involved in collaborative research between Keio University and University of California at Berkley. Before taking position in Montreal, he worked for nearly five years as Project Leader at the Max Planck Institute of Microstructure Physics in Germany. Since 2008, he has been visiting scientist at Northwestern University Center of Atom Probe Tomography. He also holds a joint appointment as an Invited Researcher at RIKEN Institute of Advanced Science in Japan since 2009. His research is in materials physics and engineering encompassing fundamental scientific and industrial activities. His main work focuses on expanding the fundamental understanding of basic physical properties of a variety of semiconductor nanomaterials and quantum systems. Additionally, his group is also actively involved with major semiconductor companies in developing innovative integration processes to enable a variety of cost-effective and high-performance optoelectronic, photovoltaic, and electronic devices. He is co-founder and coordinator of the Global Materials Network (http://www.globalmaterialsnetwork.org/), which is an active platform to unite materials researchers around the world and promote their global collaborations in materials research and education.