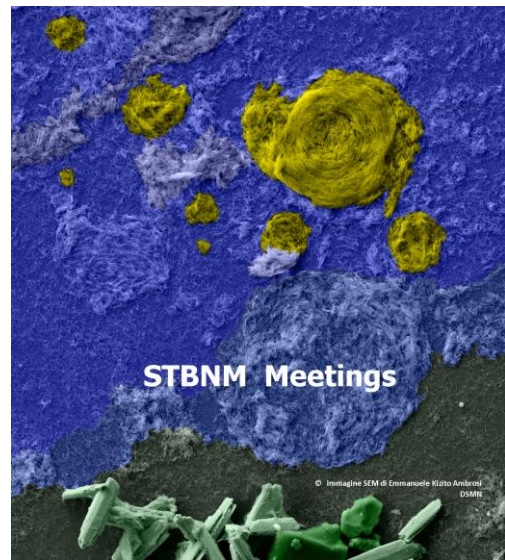




Università
Ca' Foscari
Venezia

**Department
of Molecular Science
and Nanosystems**

**PhD Programme
in Science and Technology
of Bio and Nanomaterials**



**Seminars of the PhD Programme in Science and
Technology of Bio and Nanomaterials**

**Neutrons: a fantastic tool
to study the world around us
including new and smart materials.**

Claudia MONDELLI

CNR-IOM-Institut Laue Langevin, Grenoble, Francia

February 19th, 2019 at 14:00

Conference Room - Via Torino,155 Mestre

**L' organizzatore
Prof. Elti Cattaruzza**

**il Coordinatore
prof. Stefano Polizzi**

Abstract

The aim of the seminar is to present an overview of possible applications of neutron techniques (both diffraction and spectroscopy) to the study of material science, nano-materials and applied chemistry and physics.

Neutrons are a fantastic investigation tool: they interact weakly with matter and they have a spin, furthermore they present isotopic effect, giving a fantastic contrast for hydrogen and deuterium. So they are the perfect probe for organic materials and are very complementary to X-ray synchrotron radiation.

Using neutron diffraction we can investigate nuclear and magnetic structures, also for material that do not have contrast for X-rays. As an example, the residual stress that are the origin of crash in mechanical systems as the blades of a turbine of airplane, or the structure of composites for industrial applications. Small angle neutron scattering it is an incredible tool to obtain the structural and form factor of macromolecules as polymers or clusters (magnetic or not).

The seminar is addressed to Ph.D. students and young researchers to give a general idea of a different and powerful approach to the materials study. A plethora of examples of the use of neutrons will be presented, together with the way to prepare a neutron experiment and the procedure to apply for beam time in large-scale facilities.