Spectroscopy characterization of nanomaterials

Emidio CAMAIONI & Riccardo VIVIANI - *University of Perugia*

Spectroscopy methods play a pivotal role in the characterization of nanomaterials as well as other materials and molecules. They are often used in conjunction other microscopy techniques to provide an overall chemical characterization for the nanomaterial to be analyzed.

The use of the vibrational spectroscopy techniques in the characterization of nanostructured materials will be presented in the first part of the seminar. These analytical techniques applied to the characterization of crystalline nanocellulose (CNC) will be described as a case study.

In the second part, X-ray powder diffraction techniques for the characterization of samples of agricultural interest will be presented. Special attention will be paid to the different information that can be extracted from this technique: qualitative and quantitative phase identification, crystal structure parameters, and microstructural parameters, such as crystallite size and strain.

A brief discussion of instrumentation and experimental practice will be also included.