National Institute of Materials Physics
and
UNESCO Chair on STEM Education -TRRISE
presents

Mini-Series of Two Courses

🧩 Course 1: X-ray Scattering and Its Use in Exploring the Structure of Materials

Speaker: Dr. Doru Constantin
Affiliation: Institut Charles Sadron, CNRS, Strasbourg, France
📅 **Monday, 17th of November 2025**
🕙 **10:00 – 12:00**
📍 **National Institute of Materials Physics**
Atomistilor 405A, Magurele — *Seminar Room, Ground Floor*

After a brief presentation and motivation section, the first lecture will introduce the interaction between X-rays and matter and the basic principles of (elastic) scattering and diffraction, including Bragg's Law and the intimate connection with the Fourier transform.

We will then focus on the structure of crystals and introduce concepts such as reciprocal lattice concept and structure factor in order to explain the features of the scattered intensity and how they reveal the details of atomic arrangements.

We will end with an overview of X-ray generation in laboratory sources and at synchrotron and will briefly discuss the distinctive features of the latter in terms of access and working conditions.

💡 Course 2: The Nanoworld Under the Light of the Synchrotron

Speaker: Dr. Doru Constantin
Affiliation: Institut Charles Sadron, CNRS, Strasbourg, France
📅 **Tuesday, 18th of November 2025**
🕙 **10:00 – 12:00**
📍 **National Institute of Materials Physics**
Atomistilor 405A, Magurele — *Seminar Room, Ground Floor*

In this second lecture, we will focus on small-angle light scattering (SAXS), a technique that reveals the structure of matter on a "large" scale (from the nm to the μm), bridging the gap between crystallography and optical microscopy.

We will illustrate the power and usefulness of SAXS (especially when using synchrotron radiation) with a few recent studies on nanoparticle assemblies and on several soft-matter systems of biological origin.

Join us for an exciting two-part mini-series exploring cutting-edge techniques for understanding materials at the nanoscale!