

PhD Course
***Models and Methods for Material
and Environmental Sciences***
PRESENTS

X-RAY TOMOGRAPHY AND IMAGE DATA ANALYSIS

Dr. Gabriele Lanzafame (Università di Catania)

Prof. Alberto Viani (UNIMORE)

Tuesday, 24 June - Wednesday, 25 June

09:00 - 13:00

14:30 – 17:30

Computer Room 2° Floor (Dpt. Chemical and Geological Sciences - Via Campi, 103)

X-ray tomography is an important technique for the non-invasive characterization of a wide range of materials: from biological materials to all sorts of organic and inorganic solids (rocks, cements, ceramics, battery materials, bones, fossils, wood, etc...). Moreover, apart from its more 'traditional' applications, in recent years the so-called 4D tomography flourished. 4D tomography allows for the investigation of systems evolving in time, for example during a reaction, the application of external stimuli (e.g. mechanical tests), or during variations of environmental conditions (pressure, temperature, partial pressure of gas, etc.). The aim of the proposed course is to get acquainted with the principles of the method, the instrumentation (laboratory and synchrotron light) and the techniques for image analysis (2D, 3D and 4D), including basic examples of machine learning techniques (AI). The course will be mainly held by Dr. Gabriele Lanzafame from the University of Catania. He started his career at the tomography beamline of Elettra synchrotron light source, and since then he applied the technique to a large number of different systems. Practicals focused on data analysis of real systems will be an essential part of the course.

ECTS credits: 3.5 (14h)

PARTICIPATION: A certificate of attendance, including certification of the ECTS credits achieved, will be delivered to the participants who will be positively evaluated based on the outputs of the course activity.

Host

Prof. Alberto Viani

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