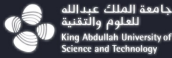


Introduction to X-ray Diffraction & Its Applications

March 28 – March 30, 2021
2:00 to 5:00 p.m.
virtual on ZOOM



جامعة الملك عبدالله
للعلوم والتقنية
King Abdullah University of
Science and Technology

Core Labs and
Research Infrastructure

KAUST Imaging and Characterization Core Lab (IAC) presents:

Introduction to X-ray Diffraction and Its Applications

X-ray diffraction: A powerful technique

X-ray diffraction (XRD) is a powerful, nondestructive technique and a fingerprint method used for the characterization of crystalline materials for phase identification; quantification; crystallite size and lattice parameter determination; texture analysis; phase transitions and stability; stress and strain analysis; thermal expansion; assessment of crystal quality; and determination of crystal structures.

Samples in the form of powders, polycrystalline thin films, epitaxial thin films and single crystals can be studied both *ex situ* and *in situ*, under vacuum or reactive gas atmosphere; and at various temperatures and pressures.

Lattice expansion and distortion, the local atomic environment of the atoms and structural changes are probed by XRD following the kinetic and thermodynamic phenomena associated with the chemical and physical processes.

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XRD is, therefore, a widely used method in diverse scientific fields, such as metallurgy; mineralogy; archeology; solid-state physics; chemistry; materials science; and biology. It is also utilized in the semiconductor, pharmaceutical and petroleum industries.

Day 1: (March 28, 2:00 to 5:00 p.m.)

- Opening and introduction to KAUST Imaging and Characterization Core Lab (IAC)
Dr. Yao He, IAC acting director
- Invited talk by Bruker AXS Special Account Manager KAUST about related Bruker products/ technologies
Dr. Menges Götz, Customer Success & Channel Partner Manager, Bruker AXS GbmH
- "What we can offer" - about IAC's XRD facilities
Dr. Bambar Davaasuren, IAC staff scientist, physical characterization
- How to access the KAUST Core Labs and an introduction to the Request For Service (RFS) platform
Haider Syed, Core Labs and Research Infrastructure, user support specialist

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Day 2: (March 29, 2:00 to 5:00 p.m.)

- Basic concepts of powder XRD

Dr. Youyou Yuan, IAC staff scientist, physical characterization

- Fundamentals of single crystal XRD

Dr. Serhii Vasylevskyi, IAC staff scientist, physical characterization

- Introduction to High-resolution XRD

Dr. Fernando Rinaldi, Application Scientist, Department of Advanced X-ray solutions, Bruker AXS GmbH

Day 3: (March 30, 2:00 to 5:00 p.m.)

- Advanced applications of powder XRD

Dr. Youyou Yuan, IAC staff scientist, physical characterization

- "Single crystal X-ray data processing: Tips and Tricks "

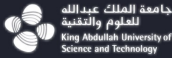
Dr. Serhii Vasylevskyi, IAC staff scientist, physical characterization

- Some examples on High-resolution XRD

Dr. Bambar Davaasuren, IAC staff scientist, physical characterization

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IAC's XRD facilities are equipped with 10 X-ray diffractometers, including powder, single crystal and high-resolution machines. For a full and detailed list of equipment, please visit the link [here](#).

Please register for the course online using the link [here](#). You will receive a confirmation email after registration.

For any questions, please contact iac.phy@kaust.edu.sa.

This opportunity is brought to you by the KAUST Core Labs and Research Infrastructure in partnership with

