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GUtech and GSO hold seminar and exhibition on crystals

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BARKA The German University of Technology in Oman (GUtech) and the Geological Society of Oman (GSO) jointly organized a seminar-cum-exhibition recently on 'Crystals, Forbidden Symmetries and Quasi-Crystals' at the Oil and Gas Exhibition Center, Qurum recently. The event coincided with the 100th anniversary of the conferment of Nobel Prize in Physics on Max von Laue in 1914 for his path-breaking work on crystals, and also marked UNESCO's observance of year 2014 as the International Year of Crystallography. The samples are were displayed at the Oil and Gas and Planetarium Centre near PDO and are now on display at GUtech, Halban Campus, Faculty of Science Applied Geosciences, 4th floor.

Lauding the whole effort of promoting a spirit of research among young students, GSO President Dr. Mohammed Al Kindy commented: "The event was a manifestation of the high level of practical training and theoretical learning provided to the students of GUtech. Though in their first year, the students' in-depth knowledge and confidence were amply visible during their presentations on a highly sophisticated and complex topic like crystallography. For the Geological Society of Oman (GSO), the event marks an important step forward in its mission of supporting and developing students in geosciences-related subjects." The crystal samples provided by GUtech received great attention from the audience.

The lectures and exhibition were conceived and coordinated by Prof. Dr. Michaela Bernecker (Department of Applied Geoscience, GUtech) and Prof. Dr. Florian Rupp (Department of Mathematics and Science, GUtech) with support from GSO. The session began with an introductory talk by Prof. Florian, followed by talks from Applied Geosciences (AGEO) students of GUtech. In his speech Prof. Florian illustrated the scientific milestones in crystallography studies that significantly contributed to today's understanding of crystalline structures.

Elaborating how crystallography is connected to oil and gas, Prof. Michaela said: "The crystals of the mineral Dolomite form a sedimentary rock, and this can be a reservoir rock for oil and gas, provided the required porosity and permeability between the crystals are present," she added: "The minerals found in nature are crystalline. In Oman you can find Quartz (as sand in the desert) or Calcite in limestone (used as building stones) and ore minerals like Pyrite and Chromite (used as industrial minerals) in the mountains of Oman."

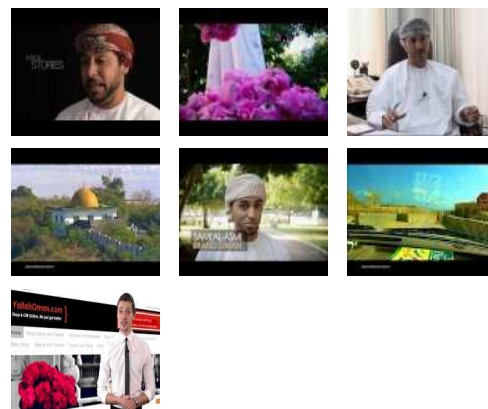
The talks highlighted the trailblazing discoveries till date including Steno's Law, Planar and Spatial Packing classifications, and X-ray diffraction, among others. A discussion on the role of symmetries and detailed analyses of allowed and forbidden rotations in crystals made the talks quite informative: A 5-fold rotation symmetry was considered to be strictly forbidden, but the discovery of the same in an alloy crystal in the 1980s proved to be a game-changer in the world of crystallography. The very special spatial packings that make this forbidden rotation symmetry possible were surveyed and connected to the possible forbidden symmetries that occur in crystalline structures known as quasi-crystals.

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Symmetries, Symmetries of Quasi Crystals, Optical Properties of Crystals, and Crystals und the Microscope. The exhibition also showcased various crystals and quasi-crystals, a collection illustrations and important achievements in the area of crystallography. The display of the ma fascinating forms of pyrite, a commonly found mineral in a variety of geological formations, w the center-piece of the exhibition.



The Department of Applied Geosciences is working with GSO to build a network of geoscienti: that will enable a wider understanding of the beautiful and fascinating geology of Oman and al contribute to its protection, apart from educating the young generation.



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