

SEMINARIUM RENTGENOWSKIE

Dnia 17.09.2013r. o godz. 10.30, w Sali D Instytutu Fizyki PAN, odbędzie się seminarium rtg., na którym **prof. Giora Kimmel** z Ben-Gurion University of the Negev z Izraela, wygłosi referat p.t.:

"Art and science in crystallographic models"

Abstract:

During the nineteenth century and earlier the crystals were described as solids with facets reflecting light into discrete directions. From the angles between the facets it was concluded that the crystals have an internal periodic structure built from a single cell. All possible shapes of unit cell and crystal symmetries were found theoretically, considering the existence of a long-range translational symmetry. After the discovery of x-ray diffraction (1912) the positions of atoms and molecules in many crystals were determined. The periodic structures of crystal were assessed and found also in solids without facets and even in some liquids. Therefore, the crystallinity was defined as periodic structures, ignoring how the crystal is looked. The term "x-ray crystallography" was introduced. Neutron and electron diffraction yielded the same results. The model of periodic structures was associated with only 1,2,3,4 and 6 fold rotation symmetries. Until 1982 all solids obeyed this limitation and it was regarded as a fact. When Dan Shechtman discovered 5 and 10 fold rotation symmetries in electron diffraction patterns the world of crystallographers was shaken. Even Shechtman and his co-investigators hesitated to violate the holiness of the periodic crystals and called their materials "quasicrystals". Many crystallographers rejected these findings trying to identify it as an artifact. The periodic crystals were categorized as a state of art which should be preserved. However, other scientists tried to separate science from art and classified the quasicrystals as aperiodic crystals. Within 5 years the definition of crystals was modified but it took 30 years to Dan Shechtman to become a Nobel Prize Winner. The crystallography is still a state of art but not on the expense of science.

Dr Iraida Demchenko