Prof. Dan Shechtman

Dan Shechtman is a Distinguished Professor in the Materials Science and Engineering Department at Technion, the Israel Institute of Technology in Haifa and a Professor of Materials Science and Engineering at Iowa State University (USA). After receiving his doctorate at Technion in 1972, Prof. Dan Shechtman was a NRC fellow at the Aerospace Research Laboratories at Wright Patterson AFB, Ohio, where he studied the microstructure and physical metallurgy of titanium aluminides. In 1975 he joined the department of Materials Science and Engineering at Technion. In 1981-1983 he was on Sabbatical at the Johns Hopkins University, where he studied rapidly solidified aluminum transition metal alloys. During this study, he discovered the Icosahedral Phase which opened the new field of quasi-periodic crystals. In 1992-1994 he was on Sabbatical at NIST, where he studied the effect of the defect structure of CVD diamond on its growth and properties. Prof. Shechtman’s Technion research is conducted in the Louis Edelstein Center, and he heads the Wolfson Centre.

Prof. Shechtman is a member of several academies and professional societies around the globe and has been awarded many prizes, including received the Nobel Prize in Chemistry in 2011 for the discovery of quasicrystals.

QUASICRYSTALS

Quasicrystals are materials that exhibit long-range order in a diffraction experiment and yet do not have translational periodicity. Until Prof. Shechtman’s discovery, such materials were believed to be physically impossible and materials were considered as crystals only if their unit cell could be repeated in all directions. To include quasicrystals, the International Union of Crystallography changed the definition of a crystal in 1992, retaining only the criterion of an essentially sharp diffraction pattern. Intermetallic quasicrystals are hard and brittle materials with unusual transport properties and very low surface energies which make them promising materials for coatings.