Impossible Crystals, Quasicrystals: Nobel Prize in Chemistry, 2011

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Quasicrystals that were supposed not to exist were discovered by Daniel Shechtman of the Technicon Institute of Haifa, Israel. Examining the electron diffraction pattern of a rapidly solidified alloy of aluminum and manganese on April 8, 1982, he found that the atoms were not packed in symmetrical patterns which repeated periodically in the crystal. This was in contrast to what was found with crystals previously.

He had prepared the first quasicrystal. Aperiodic mosaics that are found in medieval Islamic mosaics of the Alhambra Palace in Spain and the Darb-I-Imam Shrine in Iran help to understand the appearance of quasicrystals at the atomic level. The patterns are regular but never repeat themselves.

In the course of defending this very controversial discovery, he was asked to leave his research group. As more examples of quasicrystals were found in the laboratory and in mineral samples from a Russian river, the concept of quasicrystals was accepted, thus leading to the awarding of the 2011 Nobel Prize in Chemistry to Daniel Shechtman for the discovery of quasicrystals. Who said that there is nothing new under the sun?