

Michael Agamalian (1946–2019)

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Michael Agamalian, known to friends as ‘Misha’, passed away peacefully at his home in Oak Ridge on Saturday 9 February 2019 at the age of 72, after fighting cancer for two and a half years. Michael was born to Mikhail Tigranovich Agamalyan and Amana Misakovna Akulian of Armenian nationality on 20 June 1946 in Tbilisi, Georgia, former USSR. Michael obtained his PhD in Physics at the St Petersburg Nuclear Physics Institute, Russia. He began his career at the Petersburg Nuclear Physics Institute. After he moved to the USA, he worked as a Lead Instrument Scientist for the Spallation Neutron Source (SNS) at Oak Ridge National Laboratory (ORNL).

Michael Agamalian and collaborators made important contributions to the development of the ORNL Bonse–Hart Ultra-

Small-Angle Neutron Scattering instrument (USANS). In particular, they adapted the classical X-ray Bonse–Hart technique for neutrons by modifying the silicon channel-cut crystal and introducing an additional element, a cadmium absorber. This innovation, combined with application of a specialized chemical–mechanical treatment of the diffractive surfaces of the Si channel-cut crystal, increased the sensitivity of the ORNL USANS instrument by three orders of magnitude. This dramatic improvement of the experimental technique created sufficient conditions for the scientific breakthrough in micrometre-scale structural analysis using neutron diffraction. The USANS instrument development team, lead by Michael Agamalian, also developed the concept of a new time-of-flight USANS instrument, currently at the ORNL SNS.

Dr Agamalian also discovered a new dynamical diffraction effect, the ‘neutron camel’, which refers to the unusual profile of the back-face rocking curve measured on a transparent Si slab-shaped crystal. In combined experimental and theoretical studies, he and his collaborators identified and investigated the extreme sensitivity of the neutron camel to ultra-small deformation strains (bending with a radius of tens of kilometres) and demonstrated an application of this effect in the measurement of residual stresses in thin films deposited on thick silicon crystals.

Dr Agamalian received two international awards for this research, the A. Guinier Prize from the International Union of Crystallography (2002) and the Arnold O. Beckman Award from the International Society of Instrumentation and Control (1999).

Outside of a successful career, he lived a balanced life. He had a passion for tennis and a healthy lifestyle. He was a very supportive and caring friend, always ready to help and to tell a joke with his unique sense of humor.