



Module 4: **Neutron Scattering for Structure at Mesoscopic Length Scale: Small Angle Neutron scattering and Neutron Reflectometry - I**

Dr. V.K. Aswal

MODULE OUTLINE:

Introduction to Small Angle Neutron Scattering (SANS, together with Small Angle X-ray Scattering, SAXS), SANS instrument, Application of the technique for physical characterization, Data Analysis

ABOUT INSTRUCTOR:

Dr. V.K. Aswal is presently Head, Small Angle Scattering Section, Solid State Physics Division, Bhabha Atomic Research Centre, Mumbai. He is also Professor, Homi Bhabha National Institute, Mumbai. He has been working as a scientist at the Bhabha Atomic Research Centre since 1993. He is M.Sc. in Physics from IIT Bombay (1992), Ph.D. from Bombay University (1999) and Post-doctorate from Paul Scherrer Institut, Switzerland (2001-2003). He is expert in the field of small-angle neutron scattering (SANS) for its applications to soft matter, nanomaterials and biological systems. He has also been involved in the development of SANS facilities at research reactors, BARC and played an active role in popularizing the use of these facilities among many University researchers.

Dr. Aswal is recipients of number of Awards which includes IUMRS Young Research Award (1998), IPA Best Thesis Award (1999), Associate of the Indian Academy of Sciences (2000-2005), IPA Satyamurthy Young Scientist Award (2001), Scopus Young Scientist Award (2007), DAE-SSPS-2007 Young Achiever Award, DAE-Scientific & Technical Excellence Award (2008), DAE Group Achievement Award (2009), DAE-SRC Outstanding Investigator Award (2012), Homi Bhabha Science & Technology Award (2012), Fellow of Maharashtra Academy of Sciences (2014) and Invited Fellow of KEK, Japan (2020). He has been listed in the world's top 2 per cent of the most-cited scientists by Stanford University. He has published more than 400 research papers in journals having h-index of 51 and total citations around 12000.

MODULE PLAN:

- 1. Small-Angle Neutron and X-Ray Scattering Facilities - 1 Lecture**
- 2. Contrast Variation in Small-Angle Scattering - 1 Lecture**
- 3. Data Analysis Methods - 1 Lecture**
- 4. Applications to Soft Matter, Nanomaterials and Biology - 1 Lecture**
- 5. Tutorial - 1 Lecture**