



Technical Lecture

Topic: *Applications of X-ray and Neutron scattering in nuclear waste forms*

Speaker: *Dr. Gordon J. Thorogood*, Australian Nuclear Science and Technology Organisation (ANSTO), Australia

Date & Time: 8th November, 2019, Friday, 15:00 hrs

Venue: MDL Seminar Hall, MMG

All are invited!

Tea will be served at 14:45 hrs

G. Sainath
(For IIM Kalpakkam Chapter)

Abstract

Nuclear waste forms have the requirement to be durable in the environment for geological time scales whilst at the same time resistant to the radiation produced by the elements they have immobilised. There have been many waste forms either proposed or currently employed which fit into three broad classifications, glass, glass ceramic and ceramic. There has been a large amount of research performed on ceramic waste forms such as titanate-based systems typically known as Synroc due to the fact that some of the proposed phases have been shown to be durable for millions of years. While production of single-phase materials that can incorporate a single radionuclide are fairly straight forward a large phase assemblage that can accommodate multiple radio nuclides is much more challenging. X-ray and Neutron diffraction can provide a very useful insight into the structure of these waste bearing phases and how they will perform over long periods of time. In this talk I will outline the basic principles of the two and give examples of how they have provided a deeper understanding of proposed nuclear waste forms.