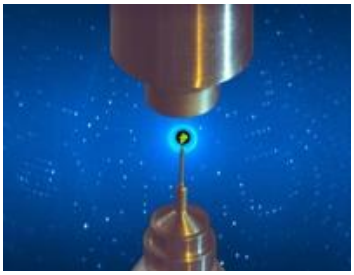

Contribution ID: **20** Type: **Talk**

ANSTO's National Deuteration Facility (NDF): A Molecular Deuteration Platform for Characterisation Studies in the Life Sciences

Friday, 11 June 2021 09:50 (20 minutes)

The NDF at the Australian Nuclear Science and Technology Organisation (ANSTO) provides deuteration through both biological and chemical techniques for a diversity of molecules and applications. Molecular deuteration of organic compounds and biomolecules significantly increases options in complex structure function investigations by providing contrast and improved data resolution when using neutron techniques.
Along with capabilities for provision of variably deuterated proteins, NDF provides access to a range of deuterated lipids, unsaturated phospholipids (such as POPC and DOPC) and detergents. The availability of these custom complex deuterated molecules which are generally unavailable commercially, adds to the range of characterisation techniques possible across multiple research areas in the life sciences including drug discovery and vaccine development.
Match-out detergents can be utilised to determine membrane protein conformation in solution via small angle neutron scattering (SANS) and deuterated lipids can be employed to construct biologically relevant lipid matrices. Encapsulating various molecules within lipid nanoparticles (LNP) has garnered high interest during the worldwide COVID-19 pandemic with the development of RNA vaccines. Deuterating components of these LNP is essential for neutron techniques that can be used to study the stability and structure of these drug delivery vehicles.
An overview of the NDF capabilities will be provided in this presentation.

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