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Heavy Food Molecules from the National Deuteration Facility for Structure Function Applications

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There have been limited global initiatives in the field of molecular deuteration where the majority of these programs focus on biological deuteration of proteins, while more complex deuterated small molecules like phospholipids, sugars, triglycerides, fatty acids haven't been widely available to the wider science community. This has limited the experiments that can be performed, and formed a bottle-neck for advancing the applications of neutron scattering, mass spectroscopy and NMR.

In this paper we will discuss the recent advancements and the impact of deuteration on the research outcomes achieved by using deuterated molecules produced by the National Deuteration Facility of the Australian Nuclear Science and Technology Organisation. Recent high-impact case studies in the fields of food science and biotechnology will be presented which reveal the exciting and diverse characterisation studies which are now available for the neutron, NMR, IR and mass spectroscopy science communities.

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