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POS-42 - Acrylic compatibility testing for the SNO+ Experiment

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The SNO+ experiment is searching for neutrinoless double beta decay with Tellurium-130 isotope. Tellurium is synthesised from Telluric Acid into Tellurium Butane Diol (TeBD), this is dissolved in 780 tonnes of liquid scintillator (Linear Alkyl Benzene, LAB), and this is then circulated back into the acrylic vessel of the detector. In the first phase of the competitive neutrinoless double beta decay search the SNO+ experiment will use 0.5% Tellurium loading in LAB. As many solvents interact with acrylic the compatibility between the Tellurium complex and acrylic needs to be tested.

Exposing acrylic to the complex and applying constant strain accelerates any chemical effects. Performing tensile testing on the exposed acrylic yields insight into how the complex will affect the acrylic vessel throughout the lifetime of the SNO+ experiment. In the poster, I will present results from tensile testing after different exposure lengths, as well as microscopic images of the acrylic surface post exposure.

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