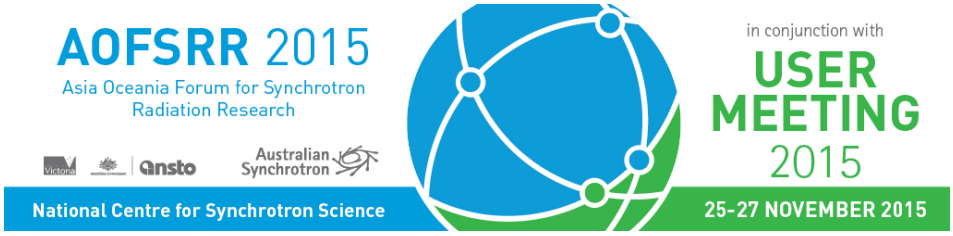

Contribution ID : **8** Type : **Oral**

Radioactive? Tick; Toxic? Tick; Explosive? Tick. What could possibly go wrong?

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Innovation drives science, and synchrotrons are often a critical tool in this. Consequently many experiments done at synchrotrons are pioneering and/or unique. Despite the impression we may form when completing a Risk Assessment prior to an experiment, Synchrotrons are the antipathy of the nanny state. The Australian Synchrotron frequently allows experiments under extreme conditions with extremely reactive or toxic materials. As the title says what could possibly go wrong when heating a radioactive material under a hydrogen atmosphere?
In this presentation I will describe our journey to the riskier side of chemistry, looking at structural transformations in uranium, technetium and osmium oxides. Each of these elements present unique handling challenges that are further compounded since we are interested in the response of the materials to changes in temperature and environment. Whilst my tool of choice is generally high resolution powder diffraction there is often the need to supplement this with spectroscopic information; moving hazards from one beamline to the next, always with the hope of being allowed back.

Keywords

Powder Diffraction; X-ray Spectroscopy; Uranium; Technetium; Osmium

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