

Following in situ synthesis using neutron powder diffraction

Presenting Author : Ashfia Huq¹

**Collaborators: Dileka Abeysinghe², Melanie Kirkham³, Robert Schmidt⁴,
Gabriel Veith⁴, Hanno zur Loye²**

Institution:

¹Chemical and Engineering Materials Division, Oak Ridge National Laboratory, Oak Ridge, TN, United States.

²University of South Carolina, Columbia, SC, United States

³Instrument and Source Design Division, Oak Ridge National Laboratory, Oak Ridge, TN, United States.

⁴Materials Science and Technology Division, Oak Ridge National Laboratory, Oak Ridge, TN, United States.

Studying materials *in operando* has become the norm in most application oriented science endeavors. Neutrons have always had an advantage as a probe due to its high penetration. To date, discovery of new materials are often serendipitous, even though they are guided by centuries of knowledge gained in chemistry. However, a tremendous amount of information can be gathered for material synthesis in discovering new phases or finding ideal reaction conditions by following the reaction in-situ. In this presentation, I will talk about some examples of work done on sample synthesis at POWGEN diffractometer and the instrumentation challenges associated with it.