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## Scattered Neutron Imaging as a Technique to Compliment Traditional Radiography and Total-scattering Methods.

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The use of neutron scattering techniques to understand characteristics of materials at the nanoscale has matured to a point where the subtlest of reciprocal space features can be quantified. In contrast, radiographic imaging using thermal and cold neutrons is entering adolescence, garnering substantial interest by science communities external to traditional scattering disciplines and receiving large initial investments by neutron facilities new and old, large and small. Given this substantial investment in instrumentation technology dedicated to radiography as well as its uniqueness in beam configuration, an opportunity has arisen to develop Scattered Neutron Imaging (SNI) as a complimentary technique that can operate in a nominally parasitic mode at most neutron radiography instruments. Preliminary concepts have been simulated and a few have been tested that provide insight into the capability and performance of this only recently tenable technique. Results of those simulations and tests will be presented, as well as potential future implementations of the technique for instruments at North American neutron facilities.

This research used resources at the High Flux Isotope Reactor and Spallation Neutron Source, a US Department of Energy, Office of Science User Facility operated by the Oak Ridge National Laboratory.

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