Joint seminar of the NPI of the CAS

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Stefanus Harjo, J-PARC Center, Japan Atomic Energy Agency: ***Neutron Engineering Materials Diffractometer TAKUMI in J-PARC***

Abstract:

TAKUMI is a neutron powder diffractometer designed for investigating internal stresses and crystallographic structures to better understand deformation behavior and phase transformations in various metallic materials and ceramics, as well as residual stress distributions in engineering components. Thanks to the contributions of outstanding users and team members, TAKUMI has consistently delivered significant research outcomes.

In addition to three types of radial collimators (with viewing widths of 1 mm, 2 mm, and 5 mm), TAKUMI is equipped with a wide range of sample environment devices. These include loading machines with varying maximum capacities, furnaces, and a cryogenic chamber (which can be integrated with the loading machines), as well as an electric field application system and a Eulerian cradle. Hybrid neutron diffraction measurements combined with digital image correlation (DIC), infrared thermography, and/or acoustic emission have also been developed and applied in various experiments.

This presentation will introduce the current status of TAKUMI and highlight several key research achievements.