Contribution ID: **91** Type: **Poster Presentation**

Towards Scientific Establishment and Validation of Quality Standards for Digital Thermal Neutron Imaging

Thursday, 14 July 2011 17:00 (2 hours)

<p>Digital thermal neutron imaging (radiography and tomography) is a powerful non-destructive analytical tool and has demonstrated its importance in industrial and research application world-wide. However, standards through test samples, methods and procedures, which are essential when the technique is to be applied in the national and international industrial and research environment, do not exist yet. Firstly, characterization of the hardware facilities is essential in order to determine their capabilities in terms of beam properties, detection properties and subsequent combinations of the two such as spatial and temporal resolution, acquisition period, L/D, S/N ratio, etc. This can be achieved through the implementation of test samples and test methods which entails the efforts towards achieving the correct test specimens, procedures and practices. Secondly, obtaining accurate quantitative information from digital thermal neutron images is an important development of this decade, and establishment and finalization of standardization in this regard is essential. A properly validated methodology to standardize quantitative digital thermal neutron imaging is of importance in a number of current research fields of global interest which includes in-situ investigations of fuel cell dynamics as well as quantification in porous media. This presentation provides the layout of the proposal for the PhD study intended at contributing towards the establishment of national and international standards for digital thermal neutron imaging. This entails a contribution towards the establishment, evaluation, validation and improvement of special test specimens as well as the creation and refinement of measurements, procedures and practice utilizing digital neutron radiographs and tomograms.

Level (Hons, MSc,
   PhD, other)?

PhD

Consider for a student
   award (Yes / No)?

YES

Would you like to <br> submit a short paper <br> for the Conference
 Proceedings (Yes / No)?

NO

Primary author: Mr RADEBE, Mabuti Jacob Radebe (Necsa)

Co-authors: Prof. SIDERAS-HADDAD, Elias (Wits University); Mr DE BEER, Frikkie (Necsa); Dr NOTHNAGEL, Gawie (Necsa)

Presenter: Mr RADEBE, Mabuti Jacob Radebe (Necsa)

Session Classification: Poster2

Track Classification: Track F - Applied and Industrial Physics