

## Overview of IEC Research at Kyoto University

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The IEC fusion research group at Kyoto University has conducted development of portable / transportable IEC neutron sources and nondestructive inspection systems, a ring-shaped ion-source-driven device (RIS-IEC) for exploring the extremely low pressure IEC operation below 10 mPa (D<sub>2</sub>), and diagnostic techniques and numerical codes for analyses of those IEC devices. This presentation reviews some of the major accomplishments and overviews new trials and recent progress such as;

- (i) application of a compact glow-discharge-driven D-D IEC neutron source which produces more than  $5 \times 10^7$  neutrons/sec very stably in dc operation; preliminary experiments of neutron/X-ray radiography,
- (ii) upgrade plan and study of the ring-shaped magnetron-discharge ion source, aiming at a high-current operation of the low-pressure RIS-IEC, e.g. 100 mA dc – 5 mPa (D<sub>2</sub>),
- (iii) design of a 200 kV – 5 A pulsed power supply for the R&D project of the special nuclear material interrogation system,
- (iv) development of an IEC device employing a 5-stage high-voltage feedthrough, which is expected to improve confinement time of ions in the low-pressure RIS-IEC, as well as to enable the high-voltage operation required for the SNM interrogation system,