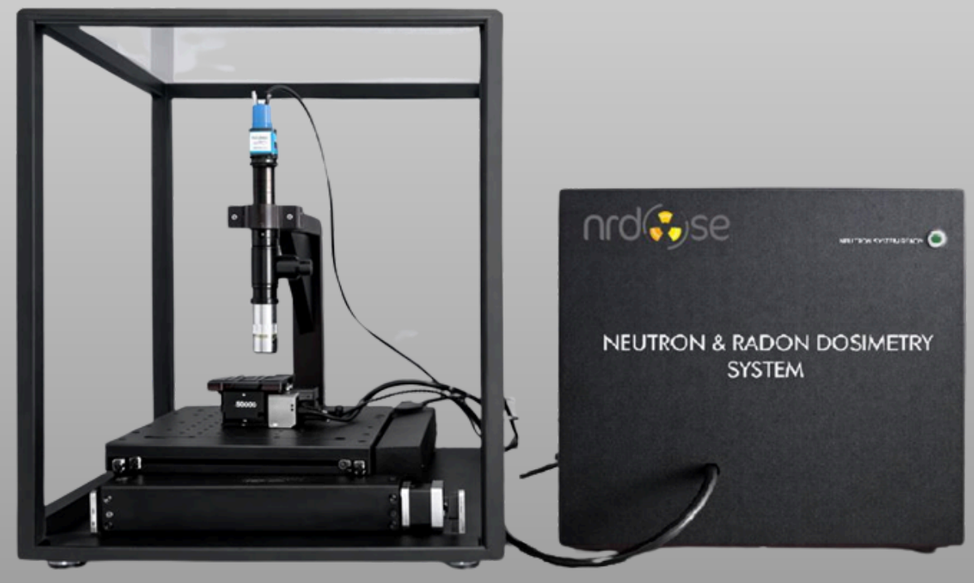
NEUTRON DOSIMETRY SYSTEM



The Neutron Dosimetry System has been developed to perform personal neutron dose measurements using Solid-State Nuclear Track Detectors (SSNTD). The system consists of passive dosimeters, the NRDOSE Dosimeter Reader device, a chemical etching system, and dedicated software modules.

The core component of the system, the NRDOSE Reader, utilizes advanced image processing techniques incorporating deep learning and artificial intelligence algorithms to analyze the geometric characteristics of the tracks. In order to enhance track visibility and improve measurement efficiency, a chemical etching process is applied during the measurement procedure. With this system architecture, accurate and reliable neutron dose measurements are achieved with high precision.

The CR-39 detector has been selected due to its high sensitivity to neutrons. In ISO 21909 compliant neutron dosimeters, HDPE and Boron Nitride (BN) filters are used to enable the discrimination between thermal and fast neutrons.

APPLICATION AREAS

- Nuclear Facilities and Research Reactors
- Particle Accelerator and Cyclotron Facilities
- Research Laboratories with Neutron Sources
- Research Reactors

NRDOSE DOSIMETRY SYSTEM SOFTWARE FEATURES

- Dosimeter Reading Mode
- QC Mode
- User Settings
- Dosimeter History (Reading Data)
- Contact Information

PROFICIENCY TESTS

- ISO 21909

QUALITY STANDARDS

- ISO 9001:2015
- ISO/IEC 17025:2017 (Irradiation and Calibration Laboratories)

TECHNICAL SPECIFICATIONS	
NEUTRON DOSIMETER	**Detector:** CR-39 Solid-State Nuclear Track Detector (SSNTD)
	Filter: • **Thermal Neutrons:** Boron Nitride (BN) • **Fast Neutrons:** High-Density Polyethylene (HDPE)
	Dimentions: 8,5 mm x 19,0 mm
	Usage: Single-use
READER	**Focus:** Automatic
	Imaging Area: 1.0 mm × 0.75 mm
	ID Reading: Automatic
	Reading Time: 3 min / dosimeter
	Analysis: Artificial Intelligence (AI)
	Dosimeter Capacity: 32 / magazine
	Operating Temperature: +10 °C to +40 °C
	Power Supply: 200–240 V, 50–60 Hz
	Camera: CCD camera
	Lens: Optical
	Resolution: 0.7 µm/pixel
MEASUREMENT RANGE (According to ISO 21909)	**Energy Range:** Thermal energies to 14.8 MeV
	Dose Range: • 0.1 mSv – 20.0 mSv (Fast Neutron) • 0.1 mSv – 2.0 mSv (Thermal Neutron)
	Angle: 0° to ±60°
ETCHING SYSTEM	**Etchant Solution:** Potassium Hydroxide (KOH)
	Temperature: 90°C
	Time: 3 hours

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