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ASI – Department of Radiation Safety and Security

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Mission

- to protect people and the environment from exposure to ionizing radiation as well as general occupational health and safety

Tasks within PSI

- Ensure the radiological safety of people and the environment from activities and facilities at PSI
- Compliance with legal regulations in the area of occupational safety, fire protection and environmental protection
- Access control and monitoring of the PSI area



Organizational chart

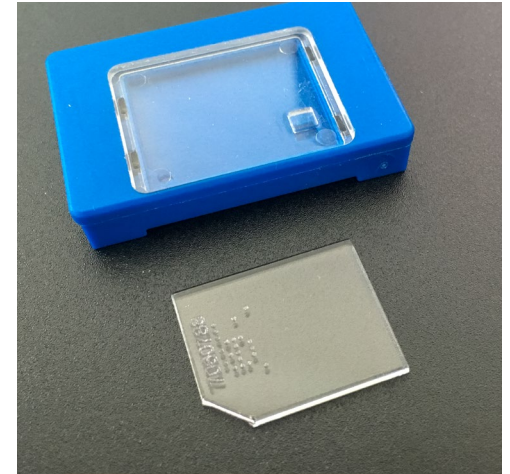


- **Dosimetry Group**

- Personal dosimetry at PSI and external customers
- Neutron dosimetry for CERN, DESY, etc.
- Incorporation monitoring
- Research on new dosimetry techniques

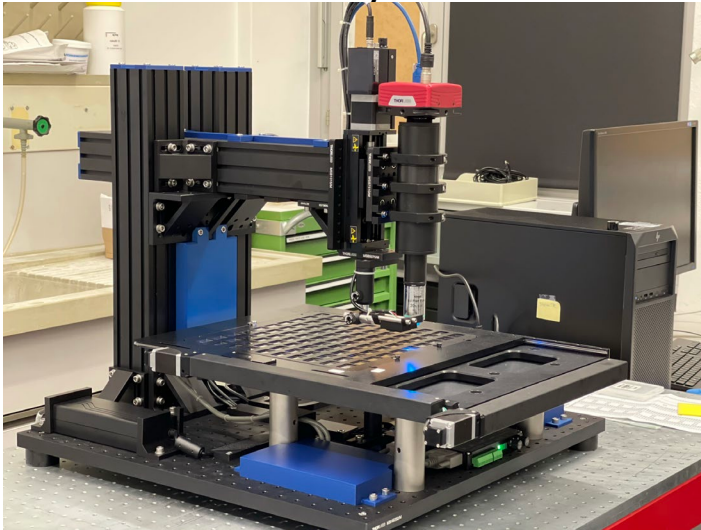
- **Calibration Group**

- Calibration of radiation measurements instruments
- BAG portal monitor project
- Aeroradiometry
- Support for clearance measurements
- Other special projects



Potential areas of research

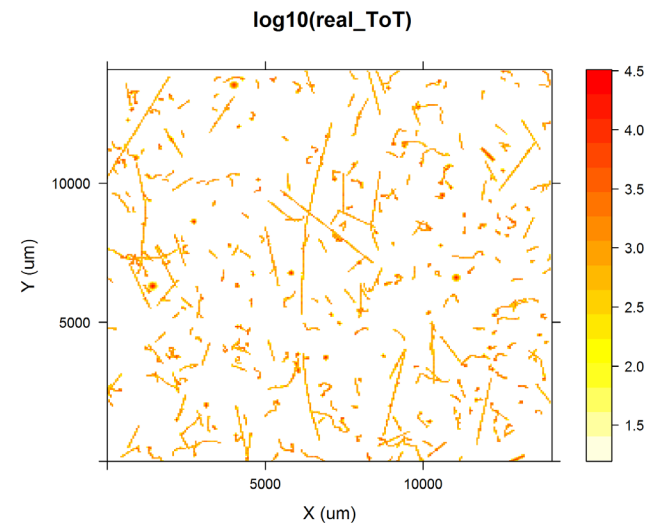
Neutron dosimetry



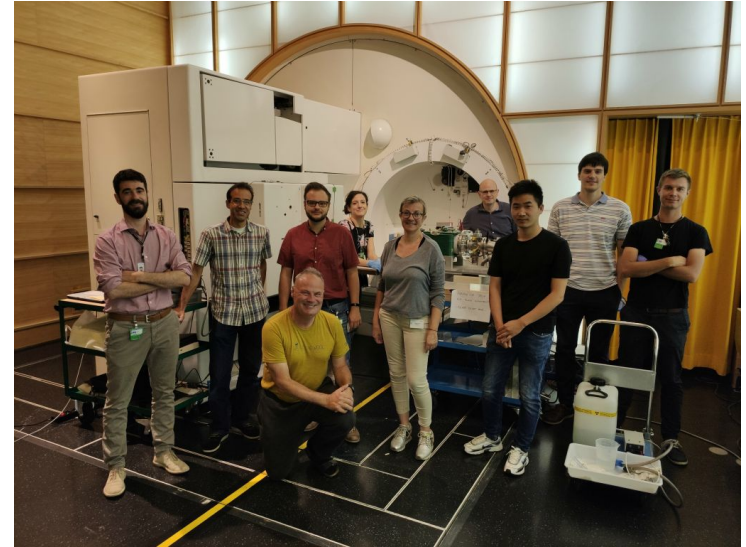
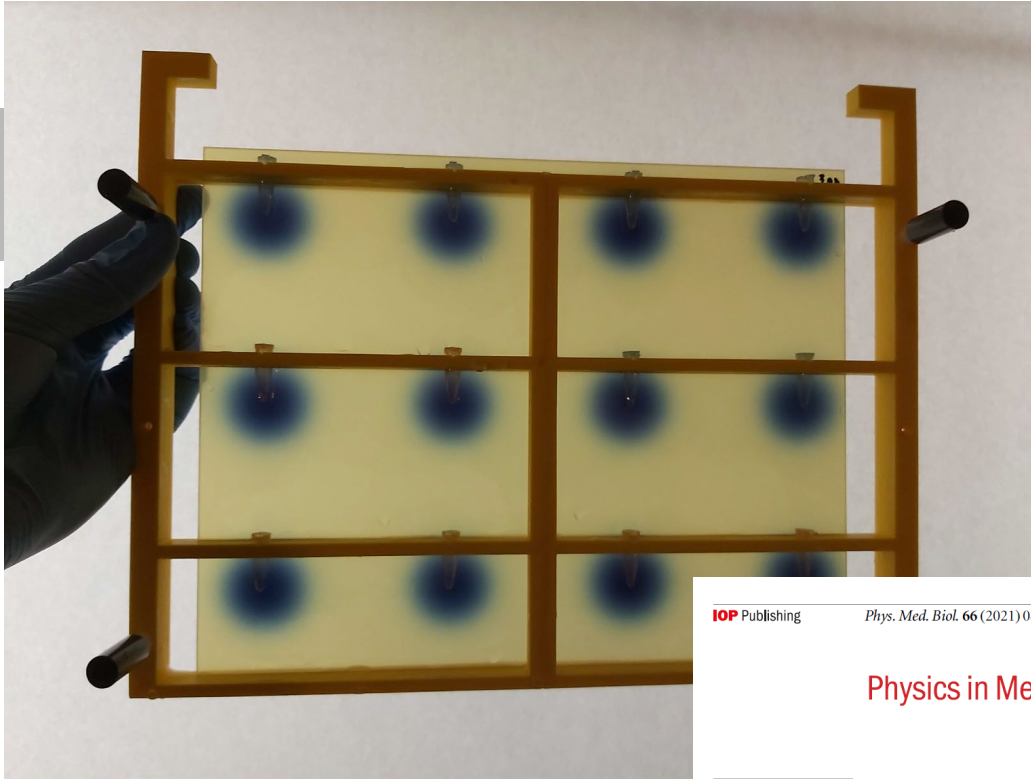
Luminescence dosimetry & materials



Detector characterization & calibration procedures



Example of project



IOP Publishing

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$\text{Al}_2\text{O}_3\text{:C}$ optically stimulated luminescence dosimeters (OSLDs) for ultra-high dose rate proton dosimetry

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Supplementary material for this article is available [online](#)

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Requirements and benefits

Requirements

- Curious mind
- Problem-solving skills
- Interest in radiation measurements and radiation protection
- Facility with programming and data analysis

Benefits

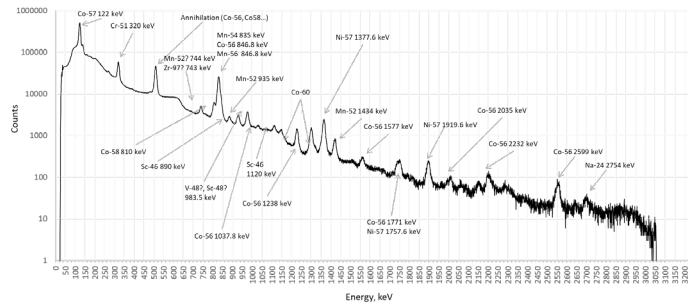
- Contact with practical problems in radiation protection and dosimetry
- Experience with radiation measurement instruments and detectors
- Experience with data analysis and programming languages
- Working closely with PSI experts
- Dynamic research environment
- Participate in publications of the groups

Organizational chart

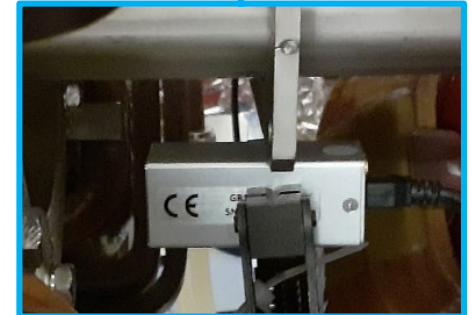
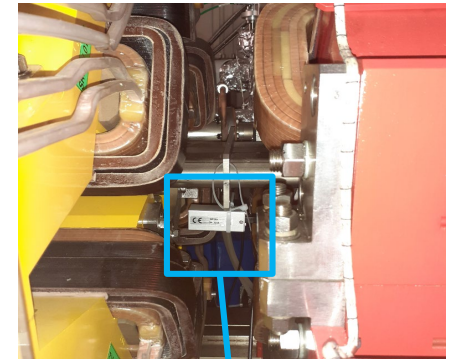


Gamma spectrometry

- Various detector types, mainly HPGe detectors
- Radiological characterization of materials



Laboratory:
HPGe-Detector with shielding



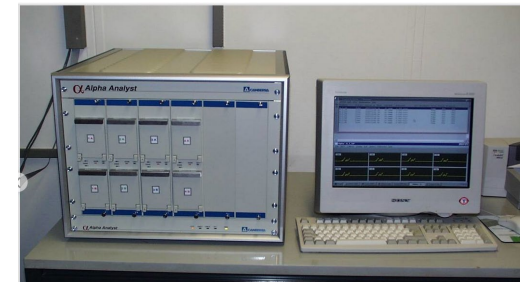
In-Situ:
Activation studies at SLS

Alpha / beta spectrometry

- Radiological characterization of materials (e. g. Pu/ U)



Chemical separation (Sr-90)



Measurements (Alpha)

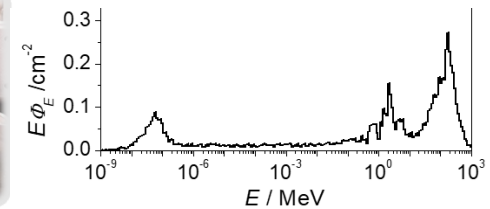
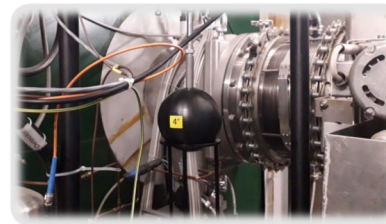
Measurement techniques and competences

Neutron spectrometry

- Extended range Bonner sphere spectrometer
- ! Energy range: Thermal to GeV !



PSI-Bonner sphere spectrometer moderators



Measurement at HIPA with data evaluation

Decommissioning

- Nuclear and accelerator facilities
- Concepts of material and radiological characterization



PROTEUS-reactor: Characterization of the biological shield

Potential projects

- Characterization of radioactive materials from nuclear facilities using in-situ gamma spectrometry
- Investigation of residual activation for clearance using Monte Carlo methods
- Characterization of neutron stray fields around high-energy accelerators
- Improvement of chemical procedures used for alpha/beta-nuclide analysis
- Evaluation of modern electrochemical methods for radionuclide analysis

Contact information

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