

NEST BEAST Summer School: Expert Knowledge – R&D on Radiological Characterization in Decommissioning and Waste Management

Date:	6.-9. September 2022 (3.5 days)
Venue:	AiNT GmbH, Cockerillstraße 100, 52222 Stolberg, Germany
Course Management:	Dr. A. Havenith, Dr. Bo Fu
Leading Organisation:	AiNT, Germany
Participating Organisations:	ENEA, Italy RWTH Aachen, Germany SCK CEN, Belgium CEA, France [invited, but cooperation agreement not yet signed]

Outline

The Summer School provides an opportunity to NEST Fellows participating in the BEAST project for an in-depth training on topics related to characterization in decommissioning and radioactive waste management. The NEST project „Building competence, Expert knowledge, Applied techniques, Safe decommissioning, Train fellows“ (BEAST) addresses postgraduate students, postdoctoral researchers and young professionals who intend to work in the field of Nuclear Decommissioning and Waste Management. Each participating organisation will give a lecture covering topics on:

1. Radiological characterisation of nuclear facilities and decontamination technologies,
2. Clearance of buildings and radioactive waste,
3. Characterisation of radioactive waste, especially legacy waste and
4. Final disposal of radioactive waste

The Summer School provides training and networking to NEST fellows and lays the foundation for a potential internship at one of the participating organisations.

Agenda

Day 1 – 06.09.2022

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| 9:00 – 9:30 | Welcome and Introduction

Dr. Andreas Havenith - AiNT |
| 9:30 – 10:30 | Basics of Nuclear Physics and Radiation Protection - Part I

Dr. Christopher Helmes - AiNT |
| 10:30 – 11:00 | Coffee Break |
| 11:00 – 12:30 | Basics of Nuclear Physics and Radiation Protection - Part II

Dr. Christopher Helmes - AiNT |
| 12:30 – 13:30 | Lunch |
| 13:30 – 15:00 | Conditioning of radioactive Waste for Final Disposal & Case Study for Waste Acceptance Criteria of the “KONRAD” Final Repository

Dr. Andreas Havenith - AiNT |
| 15:00 – 15:30 | Coffee Break |
| 15:30 – 17:00 | Determining Activity Inventories for Nuclear Decommissioning using Nuclear Simulation Tools (MCNP, SCALE, etc.)

Frederic Simons – AiNT |
| 16:00 – 17:00 | Wrap-up of Day 1

Dr. Andreas Havenith - AiNT |

Day 2 – 07.09.2022

- 8:30 – 9:00 Opening and Recap of Day 1
 Dr. Andreas Havenith - AiNT
- 9:00 – 10:30 Measurement Techniques for the Non-Destructive Characterization of
Facilities and Decommissioning Waste (Advanced Sectorial Gamma Scanning,
Mobile In-situ Gamma-Spectrometry)
 Dr. Bo Fu - AiNT GmbH
- 10:30 – 11:00 Coffee Break
- 11:00 – 12:30 Metrology in radiation detection: Uncertainty Quantification and
characteristic Limits according to ISO 11929
 Dr. Kai Krycki - AiNT GmbH
- 12:30 – 13:30 Lunch
- 13:30 – 14:30 Clearance of Residual Materials – Fundamentals and Applications in D&D
Marius Hirsch - AiNT GmbH
- 13:30 – 14:30 Final Disposal and Interim Storage of Radioactive Waste in Germany
Prof. Dr. Klaus Fischer-Appelt, Dr. Frank Charlier - RWTH Aachen University
- 15:30 – 16:00 Coffee Break
- 16:00 – 17:00 Prompt Gamma Neutron Activation Analysis for Material Characterization of
Radioactive Waste
Gunnar Jäkel – AiNT GmbH

Day 3– 08.09.2022

- 9:00 – 12:00 Gamma Ray Spectrometry Interactive Lab-Course

- 12:00 – 13:00 Lunch
- 13:00 – 13:15 **Transfer to the Technical Center of AiNT**
- 13:15 – 17:00 Measurements in the AiNT – Technical Centre (4 Stations)
- Drum measurement – Advanced Sectorial Gamma Scanning
 - Clearance measurements of a surface – Total surface activity vs. Insitu gamma spectrometry
 - Material Characterization of Waste by QUANTOM-Measurements
 - VIRERO Spatially resolved radiological and geometrical characterization
- AiNT GmbH
- 17:00 – 17:30 **Transfer to AiNT or hotels**

Day 4 – 09.09.2022

- 9:00 – 12:00 Discussion and Evaluation of the performed measurement – Practical Part
Dr. Bo Fu – AiNT GmbH
- 12:00 Debriefing of the Summer School
Dr. Andreas Havenith – AiNT GmbH
- 12:30 – 13:30 Lunch

- End of the Summer School -