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**

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 -