

AKE 3: Decommissioning of Nuclear Facilities and Final Repository

Time: Monday 14:00–15:30

Location: U A-Esch 1

Invited Talk AKE 3.1 Mon 14:00 U A-Esch 1
Radioactive waste in Germany - current situation and future perspectives — ●CLEMENS WALTHER — Institute of Radioecology and Radiation Protection Leibniz Universität Hannover, Herrenhäuser Str. 2, D-30419 Hannover

Asse, Morsleben, Konrad, Gorleben - names that are identified with the, some call it "wicked", problem of nuclear waste disposal. However, during the past five years, new concepts were elaborated - particularly concerning legal, political and participatory issues. The presentation will give an overview of the current situation from the technical side (how much waste will we have to handle? What are specifications and requirements for safe disposal?), elucidate the planned selection process according to the site selection act (How long will it take? Who will decide?) and will identify how research must continuously support this process.

Invited Talk AKE 3.2 Mon 14:30 U A-Esch 1
Decommissioning of nuclear facilities — ●THOMAS WALTER TROMM — KIT, Karlsruhe Institute of Technology

This presentation gives an overview on the KIT activities related to decommissioning of nuclear facilities. Our research aims are to standardize decommissioning procedures, to increase efficiency, to further minimize radioactive waste amounts, to reduce radiation exposure rates to staff, and to design autonomous and/or remote-operated decontamination techniques, which can be used in highly contaminated areas. The standardization of the entire decommissioning process allows for an automation which reduces staff deployment and thus occupational radiation exposure. Those activities take place in close cooperation with industry and with research and education partners, such as the newly founded Decommissioning Competence Cluster coordinated by KIT. KIT researchers are strongly involved in German decommissioning working groups (e.g. within German Nuclear Society (KTG), Association of German Engineers (VDI)), in the international decom-

missioning network (IDN) of the IAEA, and are actively engaged i.e. in the organization of international workshops. In cooperation with the European Commission, the ELINDER (European Learning Initiatives for Nuclear Decommissioning and Environmental Remediation) initiative, which started in 2016, is being carried out, while having a regular exchange with international institutions (e.g. Fukui University, Japan).

Invited Talk AKE 3.3 Mon 15:00 U A-Esch 1
The Nobel Prize in Physics 2018 and future applications for Laser-Driven Neutron Sources — ●MARKUS ROTH — Technische Universität Darmstadt, Institut für Kernphysik, Schlossgartenstrasse 9, 64289 Darmstadt

One of the pressing demands in our western society is the safety and maintenance of our nuclear legacy. In Germany the dismantling, safe processing and storage of nuclear waste have resulted in a multi-national research program. Nondestructive testing methods and material selective imaging of compound large objects is possible using thermal and fast neutrons. Also, a powerful, safe, and compact neutron source is required. Since Donna Strickland and Gerard Mourou opened the path for ultra-intense lasers many applications have been investigated using the unique parameter of laser-driven secondary sources. Recently, we have demonstrated the realization of a short-pulse laser-driven neutron source with beam intensities orders of magnitude above earlier attempts. Those sources can lead to a compact and potentially mobile neutron source with a large number of applications.

I will present the mechanism of creating an intense pulsed and highly directed beam of neutrons using ultra-intense lasers and the recent results using laser systems in the US and in Europe. I will focus on a few examples of using such sources for applications that are either important for the security of our countries or will have large economical potential in industrial applications. These range from the remote sensing of illicit nuclear material in cargo to the non-destructive analysis of large civil constructions using compact laser systems.