

**Location**

The course will be held at the **Campus North** of the **Karlsruhe Institute of Technology**, which is located ~10 km north of Karlsruhe next to Eggenstein-Leopoldshafen  
(<http://www.kit.edu/downloads/Campus-Nord.pdf>)



If you are interested in participation, please provide following information to:

Dr. Volker Metz and Dr. Vanessa Montoya  
Karlsruhe Institute of Technology (KIT)  
Institute for Nuclear Waste Disposal (INE)  
Hermann-von-Helmholtz-Platz 1  
D-76344 Eggenstein-Leopoldshafen, Germany  
phone: (+49) 721-608-28078 / 721-608-24602  
fax: (+49) 721 608-2 4308  
e-mail: [gentle-course@ine.kit.edu](mailto:gentle-course@ine.kit.edu)  
website: <http://www.ine.kit.edu/>

**Please complete all sections**

Name: .....

Institution: .....

Address: .....

.....

e-mail: .....

Phone: .....

undergraduate student

graduate / Ph.D. student

other



EURATOM Coordination and Support Action  
GENTLE

Intersemester Course

# “Nuclear Waste Management”

Karlsruhe, Germany  
29<sup>th</sup> of June – 3<sup>rd</sup> of July 2015



## Introduction and Scope

A **five days intersemester course** is organized within the framework of the EURATOM FP7 GENTLE project <http://gentleproject.eu/>.

The course will comprises:

- Lectures by experts
- Laboratory visits with practical training.

The course focuses on the topic **Nuclear Waste Management**. It is open to all interested (post-) graduate students of academic/research institutions of the European Union (EU) and is limited to 15 participants. (When there will be vacancies in the course, the course is open to other interested persons). It will provide advanced level understanding of the different waste streams, their origins, radiological and chemical properties, and the hazards they represent. Moreover it covers waste management of decommissioning wastes, irradiated materials, spent nuclear fuel and nuclear materials. Options for waste stabilisation (immobilisation), storage, disposal and the supporting facilities will be explained.



## Course contents

- Overview on nuclear waste management strategies; introduction to concepts for interim / long-term storage, final disposal, multi-barrier concepts, alternatives to deep geological disposal
- Sources of L/ILW, treatment, decontamination, conditioning and interim storage of L/ILW
- Built-up of fission / activation products and actinides in nuclear fuel – spatial and temporal radionuclide distribution within fuel
- Radionuclide distribution and evolution in fuel cycles with Accelerator-Driven Reactors (ADR), transmutation of actinides
- Partitioning: Conventional recycling of irradiated LWR-UO<sub>2</sub> fuels, PUREX process, MOX production, recycling of fuels in potential P&T cycles
- Aqueous chemistry and thermodynamics of actinides and long-lived fission products
- Vitrification of liquid high level waste
- Properties of spent nuclear fuel (SNF) / irradiated LWR UO<sub>2</sub> fuels, evolution of SNF after discharge
- Radionuclide release from SNF under repository conditions
- Reactive transport processes in the near field of high level waste / SNF repositories
- Radionuclide transport and retardation: near-field and far-field processes
- Synchrotron-based speciation studies regarding radionuclide behaviour in the multi-barrier system
- Safety case for deep geological repository system for radioactive waste
- Ethical and socio-economical aspects of various strategies for nuclear waste management: Long-term interim storage vs. final disposal

## General information

The intersemester course is organized by the *Karlsruhe Institute of Technology, Institute for Nuclear Waste Disposal, KIT-INE*, in collaboration with the *Joint Research Centre - Institute for Transuranium Elements, JRC-ITU*, and the *Hauptabteilung Dekontaminationsbetriebe, WAK-HDB*.

**For graduated and post-graduated students of academic institutions of the EU the intersemester course is free of charge.** The GENTLE project will cover the following costs:

- Attendance to the course
- Coffee breaks
- Shuttle from Karlsruhe city to KIT-INE

Other costs must be supported by the participant (e.g. accomodiation). Additional information is available at <http://gentleproject.eu/courses/schedule/>

The course is funded by the GENTLE project, EURATOM Fission Training Schemes of the European Commission's 7<sup>th</sup> Framework Programme .



## Registration

The requested information of the registration form (see front page) must be provided and sent to the following E-mail addresses:

- [gentle-course@ine.kit.edu](mailto:gentle-course@ine.kit.edu)

**Deadline for registration is 5<sup>th</sup> of June 2015**