



The Abdus Salam
International Centre
for Theoretical Physics



Joint ICTP-IAEA Workshop on Modelling for Encapsulated Intermediate Level Waste (ILW) and High-Level Waste (HLW) During Long-Term Storage

Description:

This workshop will introduce the influence of ionization radiation from encapsulated radionuclides on waste forms and different modelling approaches for assessing safety under storage or disposal conditions.

MORE DETAILS:

Nuclear energy is a reliable solution to a finite energy supply from fossil fuels. All Member States (MSs) that benefit from the peaceful uses of nuclear energy have some amounts of radioactive waste to manage in a way that it does not present a burden to future generations.

To identify the preferred approach, a safety case is constructed that includes the assessment of the long-term impact of the various waste management and/or remediation options over a defined lifetime. Ionizing radiation, that arises from radionuclide decay will interact with waste form materials, resulting in radiolysis, collision cascades, defects, dislocations and phase separation that could influence the long-term stability and integrity of the waste form and its ability to isolate radionuclides from the environment.

Computer codes modelling the influence of ionizing radiation, as part of degradation modelling of waste forms and waste packages, are developed and understood only by a few researchers in this field. Unfortunately, the use of such codes is limited due to the lack of suitably trained scientists and engineers, national resource and lack of knowledge on the subject matter.

IAEA is partnering with International Centre for Theoretical Physics (ICTP) to deliver a workshop to teach the modelling of ionizing radiation (that arises from radionuclide decay) on the properties of a waste form and use this information to design long-term storage facilities and management procedures.

TOPICS:

- Basics of interaction of ionizing radiation with cementitious, vitrified and ceramic waste forms;
- Role of absorbed dose and dose rate of radiation;
- Principles of radiation shielding, dose and dose rate calculations;
- Data on G-values for waste form, waste packages and shielding materials;
- Introduction to the transport of ionising radiation;
- Practical exercises using Mathcad method to calculate dose rates and decay heat;
- Practical exercises using MCNP_Source_App codes to model shielding calculations;
- Practical exercises calculating (Nuclide, Activity) inventories in radioactive waste, using the codes ORIGEN, ORIGAMI and FISPACT.

LOCAL ORGANISER:

Nicola SERIANI, ICTP, Italy

SPEAKERS:

- C. Cockrell, Queen Mary University, UK
- M. Lang, University of Tennessee, USA
- W. Meyer, IAEA-Vienna, Austria
- M. Ojovan, Imperial College, UK
- H. Peng, Lanzhou University-China
- J. Provis, Paul Scherrer Institute-Switzerland
- M. J. Sassi, PNNL-USA
- J. Van Rooyen, North-West University, USA



26 February - 1 March 2024



Trieste, Italy



Application and Deadlines:

Requesting financial and/or visa support:

8 December 2023

For all other applicants:

13 January 2024

DIRECTORS:

W. MEYER, IAEA, Austria
M. OJOVAN, Imperial College, UK
R. ROBBINS, IAEA, Austria

FURTHER INFORMATION:



E-mail: smr3920@ictp.it

Web: <http://indico.ictp.it/event/10458/>

Female scientists are encouraged to apply.

GRANTS:

A limited number of grants are available to support the attendance of selected participants, with priority given to participants from developing countries. There is no registration fee.

