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International Atomic Energy Agency

Agence Internationale de l'énergie atomique

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2022-02-08

**Subject: Virtual Event - Sponsored Participation on Virtual Technical Meeting on the Status and Use of Geopolymers to Immobilize Radioactive Waste, from 4 to 8 April 2022**

Dear National Liaison Officer/National Coordinator,

I am pleased to invite you to send nominations of suitable candidates to participate in the Virtual Event - Sponsored Participation on Virtual Technical Meeting on the Status and Use of Geopolymers to Immobilize Radioactive Waste within the framework of the IAEA technical cooperation project RER9154, "Enhancing the Implementation of Integrated Programmes for the Safe Management of Radioactive Waste".

The purpose of this Technical Meeting is to provide a forum to discuss and share the current approaches and practices in the development and deployment of geopolymers as an immobilization matrix for radioactive waste.

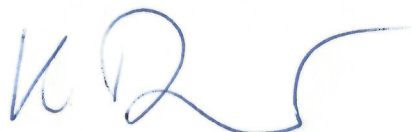
The attached Information Sheet provides further details, including technical and administrative aspects of the event. Selection of participants will be in accordance with IAEA procedures. Member States are strongly encouraged to identify suitable women participants.

For participants who indicate their need, the IAEA could provide financial support to contribute to the expenses of their costs for internet connection for the duration of the event in line with IAEA rules and procedures.

We would appreciate receiving your country's nominations by **18 March 2022** through the IAEA's InTouch+ platform (<https://Intouchplus.iaea.org>). Should this not be possible, applicants may download the Nomination Form for the course from the [IAEA's webpage](#). Completed forms must be endorsed by the relevant government authority and may be sent to the IAEA, preferably by email to Official Mail - IAEA Mail address ([Official.Mail@iaea.org](mailto:Official.Mail@iaea.org)), with copy to Ms Katherina Lydia Deufrains, ([K.L.Deufrains@iaea.org](mailto:K.L.Deufrains@iaea.org)). Please be advised that late nominations or replacements of participants after the closing date for nominations will not be accepted.

We look forward to receiving your early response.

Yours sincerely,



**Katherina Deufrains**  
Programme Management Officer  
Division for Europe  
Department of Technical Cooperation

Enclosure: Information Sheet



# **Virtual Event – Sponsored Participation on Technical Meeting on the Status and Use of Geopolymers to Immobilize Radioactive Waste**

**Hosted virtually by**

The International Atomic Energy Agency

**4-8 April 2022**

**Ref. No.: ME-RER9154-2201347**

## **Information Sheet**

### **Purpose**

The purpose of this Technical Meeting is to provide a forum to discuss and share the current approaches and practices in the development and deployment of geopolymers as an immobilization matrix for radioactive waste.

### **Working Language(s)**

The working language(s) of the event will be **English**.

### **Nominations**

Nominations received after **18 March 2022** will not be considered.

## Introduction

Geopolymers, or alkali-activated aluminosilicate cements or binders as they are also known, were first discovered in early 20th century, and since then have gradually been developed into usable applications in different areas of industry, mainly as construction, ceramic, fireproof and painting materials.

Despite geopolymeric materials having been utilized for ~100 years, it is only within the last 20 years that efforts having been made toward deployment of geopolymers within the nuclear industry. The applications to date are predominantly oriented towards the immobilization of radioactive waste. Experience in this area has been gained in a number of Member States including the UK, Slovakia, Australia, USA and China. A variety of geopolymer matrices for immobilization of radioactive waste and high waste loading capabilities of the matrices, continues to show promise for the immobilization of “challenging” radioactive waste streams (e.g. resins and sludges from NNP’s, crystalline sediment from alkaline saturated solutions, potassium bichromate solutions and THOR® fluidized bed steam reforming product). To date the usage of geopolymers as construction or shielding materials for substitution of ordinary Portland cement concrete in nuclear industry (resistant to extreme conditions of radiation fields) is not explicitly published.

To support Member States in the management of radioactive waste, the IAEA is organising a dedicated Technical Meeting on the Status and Use of Geopolymers to Immobilize Radioactive Waste within the framework of International Predisposal Network (IPN).

## Expected Outputs

The virtual meeting will bring together researchers from the area of materials science with a focus on geopolymer materials for nuclear waste immobilisation and will promote scientific exchange of current advances among experts. The expected outcome from the meeting will be a documented summary on the status and use of geopolymer matrixes to immobilize radioactive waste and future mechanisms of sharing of knowledge on the identified subject matter.

## Scope and Nature

The meeting will feature Member State representatives sharing their experience on the status and use of geopolymers. These could include the following specific topical areas:

1. Basis of geopolymer chemistry (including curing mechanism)
2. Designing of geopolymer matrix for waste compositions (including alternative binders (alkali-activated binders, phosphate binders, calcium aluminate and sulfoaluminate binders) for the conditioning of challenging waste streams)
3. Optimization of geopolymer process (operational temperature, waste type, geopolymer composition, loading capacity)
4. Performance testing of geopolymer matrix
5. Operational experience with geopolymer processing
6. Non-conformity issues, problems detected during operation, drawbacks of the different types of geopolymer processes;
7. Long-term behaviour of geopolymer waste packages during disposal:
  - Compliance with waste acceptance criteria;
  - Characterization of waste packages;
  - Chemical durability and long-term performance under radiation: experimental and modelling approaches;
8. Technical, legislative and financial aspects.

Meeting participants are encouraged to present information based on industrial implementation scale.

## Participation

The meeting is open to Counterparts from Member States participating in the TC regional project RER9154 or qualified candidates nominated by the CPs.

## Participants' Qualifications and Experience

The event is targeted at representatives with a current or future programme or project regarding the use of geopolymers to immobilize radioactive waste. In order to maximize the exchange of information, individuals attending should be from all Member States with nuclear facilities, NPPs, waste management facilities, regulatory body, research facilities or from non-governmental or international organizations that represent such programmes regionally or worldwide.

## Application Procedure

Candidates wishing to apply for this event should follow the steps below:

1. Access the InTouch+ home page (<https://intouchplus.iaea.org>) using the candidate's existing Nucleus username and password. If the candidate is not a registered Nucleus user, she/he must create a Nucleus account (<https://websso.iaea.org/IM/UserRegistrationPage.aspx>) before proceeding with the event application process below.
2. On the InTouch + platform, the candidate must:
  - a. Finalize or update her/his personal details, provide sufficient information to establish the required qualifications regarding education, language skills and work experience ('Profile' tab) and upload relevant supporting documents;
  - b. Search for the relevant technical cooperation event (EVT2201347) under the 'My Eligible Events' tab, answer the mandatory questions and lastly submit the application to the required authority.

**NOTE:** Completed applications need to be approved by the relevant national authority, i.e. the National Liaison Office, and submitted to the IAEA through the established official channels by the provided designation deadline.

For additional support on how to apply for an event, please refer to the [InTouch+ Help page](#). Any issues or queries related to InTouch+ can be addressed to [InTouchPlus.Contact-Point@iaea.org](mailto:InTouchPlus.Contact-Point@iaea.org).

Should online application submission not be possible, candidates may download the nomination form for the training course from the [IAEA website](#).

## **Administrative and Financial Arrangements**

Nominating authorities will be informed in due course of the names of the candidates who have been selected and will at that time be informed of the procedure to be followed with regard to administrative and financial matters.

Selected participants who indicate their need, will receive financial support to contribute to the expenses of their costs for internet connection for the duration of the event in line with IAEA rules and procedures.

## **Disclaimer of Liability**

The organizers of the event do not accept liability for the payment of any cost or compensation that may arise from damage to or loss of personal property, or from illness, injury, disability or death of a participant while he/she is travelling to and from or attending the course, and it is clearly understood that each Government, in approving his/her participation, undertakes responsibility for such coverage. Governments would be well advised to take out insurance against these risks.

The IAEA takes no responsibility for, and the provider of the virtual meeting services has represented and warranted that the Services shall not contain, and that no end user shall receive from the software used to hold the virtual meeting, any virus, worm, trap door, back door, timer, clock, counter or other limiting routine, instruction or design, or other malicious, illicit or similar unrequested code, including surveillance software or routines which may, or is designed to, permit access by any person, or on its own, to erase, or otherwise harm or modify any data or any system, server, facility or other infrastructure of any end user (collectively, a "Disabling Code").

## **IAEA Contacts**

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