

Outcome of the Workshop on Enhancing Experimental Support for Advancements in Nuclear Fuels and Materials

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Workshop Objectives

- ✓ Promote interaction between the parties (industry, regulators, R&D and infrastructure)
- ✓ Identify
 - scientific, technological and safety issues related to new fuels
 - how best to **couple** state-of-the-art experimental data/approaches to state-of-the-art modelling and simulation
 - scientific and technological issues related experimental infrastructure and techniques
- ✓ Identify the role of NEA and potential collaborations that could strengthen the experimental support for **fuels/materials** validation and qualification processes to address safety and development needs
- ✓ Critically evaluate any gaps in infrastructure capability for provision of robust validation/qualification
- ✓ Reinforce a scientific community around relevant **infrastructures**

<https://www.oecd-nea.org/science/workshops/advnucfuel2018/>

Workshop Structure

Chair: John W. Herczeg, Chair of the NEA Nuclear Science Committee (NSC)

- **Session 1: Industry Experience and Perspectives in Fuel and Materials Evolution**
10 speakers: representatives of utilities and vendors
Chairs: Randy Stark (EPRI), Phillip Finck (INL)
- **Session 2: Advances in Nuclear Science: Promising Fuel Technologies, Modelling and Validation Methods, and Associated Experimental Challenges**
5 speakers: representatives of R&D organisations
Chairs: Kemal Pasamehmetoglu (INL), Alexander Tuzov (RIAR)
- **Session 3: TSO's Perspectives for Operation of Current and Innovative Fuel and Materials**
4 speakers: representatives of TSOs and regulators
Chairs: Jean-Christophe Niel (IRSN)
- **Session 4: Experimental Infrastructure: Perspectives in Advanced Instrumentation and Experimental Techniques to Support Fuel Development**
8 speakers: representatives of experimental facilities
Chairs: Hamid Ait Abderrahim (SCK.CEN), Nicolas Waeckel (EDF)
- **Closing Session**
Presentation of NI2050, sessions/workshop summaries, concluding remarks
<https://www.oecd-nea.org/science/workshops/advnuclfuel2018/>

Workshop Outcome: Some Potential Actions (1/2)

- Form a group to prioritize needs for validation/qualification of new fuels and materials
- Build a platform to establish link between the needs identified and the experimental and modelling capabilities available
- Develop international collaboration to address generic questions
- Promote framework for more efficient use of international resources (transport, disposal)

Workshop Outcome: Some Potential Actions (2/2)

- Organise multi-lateral and multi-national experimental programs for qualification/validation of evolutionary and revolutionary fuel/cladding concepts and structural materials
- Establish frameworks
 - to facilitate pooling & networking of experimental infrastructures / sharing techniques / developing and implementing advanced instrumentation
 - to organize cross-benchmarking (for techniques & procedures)
 - to allow the linking of the experimental data resulting from the networking above through the advanced modeling for the benefit of the end-users)
- Consider a HLG or equivalents to address issue of international transport and back-end of experimental samples

Workshop Outcome: Actions in Progress and Further Steps

- **Identified Actions:**
 - Create a framework for
 - Identification/ prioritisation of needs (jointly with CSNI and other NEA Committees)
 - Mapping of the existing experimental capabilities for fuel/material testing for qualification and validation purposes
 - Collect PIRT tables to support the activity on the needs prioritisation
- **These actions were discussed and endorsed by the NSC Bureau meeting (11/01/18)**
- **The EG on Accident Tolerant Fuel (EGATFL) will extend its activity towards the identification/prioritisation of experimental needs for fuel/material testing (EGATFL final meeting on 12/01/18)**
 - New mandate is being drafted by K. Pasamehmetoglu and EGATFL members, due 06/18
 - Kick-off meeting is tentatively scheduled for 09/18
- **Working method/structure for development of international collaboration on experimental support for fuel/material testing has been proposed by Nuclear Science and is being discussed internally**
- **Several intentions were expressed by workshop participants to submit proposals/needs for experimental projects**