EUROPEAN COMMISSION

European Research Area

Final Symposium Agenda

EC CAST (CArbon-14 Source Term) Project

Ibis Style Lyon Villeurbanne,
Lyon, France,
16th – 18th January 2018.

The research leading to these results has received funding from the European Union's European Atomic Energy Community's (Euratom) Seventh Framework Programme FP7/2007-2013 under grant agreement no 604779, the CAST project.

BACKGROUND

The EC CAST project (CArbon-14 Source Term) aims to develop understanding of the potential release mechanisms of carbon-14 from radioactive waste materials under conditions relevant to waste packaging and disposal to underground geological disposal facilities. The project focuses on the release of carbon-14 as dissolved and gaseous species from irradiated metals (steels, Zircaloys), irradiated graphite and from ion-exchange materials.

The CAST consortium brings together 33 partners with a range of skills and competencies in the management of radioactive wastes containing carbon-14, geological disposal research, safety case development and experimental work on gas generation. The consortium consists of national waste management organisations, research institutes, universities and commercial organisations.

The objectives of the CAST project are to gain new scientific understanding of the rate of release of carbon-14 from the corrosion of irradiated steels and Zircaloys and from the leaching of ion-exchange resins and irradiated graphites under geological disposal conditions, its speciation and how these relate to carbon-14 inventory and aqueous conditions. These results will be evaluated in the context of national safety assessments and disseminated to interested stakeholders. The new understanding should be of relevance to national safety assessment stakeholders and will also provide an opportunity for training for early career researchers.

SYMPOSIUM OBJECTIVE

The CAST Project has been running since October 2013, with five technical work packages focussing on potential release mechanisms of carbon-14 from irradiated steels, irradiated Zircaloys, ion-exchange resins and irradiated graphite, and assessing how the knowledge gained from the related experimental programmes can inform safety assessments undertaken by waste management organisation, as end-users.

Significant progress has been made on carbon-14 release mechanisms, speciation and release rates during the CAST project, both in terms of novel experimental development and set-up, and in terms of new results that can be used by waste management organisations.

This event aims to disseminate the outcomes of the CAST project, and to act as a forum for related discussion. In addition, there will be the opportunity for relevant research not undertaken in CAST to be presented. The overall intention is to bring together scientists working in this field, both to learn more about the CAST project output, and to discuss the implications of carbon-14 release mechanisms in safety assessments of geological disposal facilities.

FINAL AGENDA

Day 1 Tuesday 16th January 2018

Time	Activity
09.00	Welcome & Coffee
09.00 - 09.10	Welcome Speech *Guy Chanfray (IPNL)*
09.10 - 09.15	Information on Guided tour of the Traboules of Lyon. *Nelly Toulhoat (IPNL)*
09.15 - 09.30	CAST Project Overview *Simon Norris (RWM)*
09.30 - 10.15	**Keynote Speaker** Why studying ^{14}C is important: the context of ^{14}C with respect to safety assessment development. *Virginie Wasselin Trupin (IRSN)*
Work Package 2 – Steels	
10.15 - 10.25	Overview of Main WP2 Outcomes. *Jens Mibus (Nagra)*
10.25 - 10.40	Formation and status of ^{14}C in activated steel. *Michel Herm (KIT)*
10.40 - 10.55	Analytical Techniques and their application. *Benjamin Cvetkovic (PSI)*
10.55 - 11.10	Leaching tests and speciation measurements. *Eva de Visser-Tynova (NRG)*
11.10 – 11.30	WP2 Summary and Conclusions. *Jens Mibus (Nagra)*
11.30 - 11.45	Coffee
11.45 - 12.15	**CAST Invited presentation** ^{14}C release from steels: State of the Art from Pre- to Post-CAST. *Steve Swanton (Wood)*
12.15 - 13.00	**External Invited presentation** Possible Fate of Inorganic ^{14}C Released from Activated Steels under Conditions of a Geological Repository. *Laurent Charlet (University of Grenoble)*
13.00 - 14.00	Lunch
Work Package 3 – Zircaloy	
14.00 - 14.10	Overview of Main WP3 Outcomes. *Sophia Necib (Andra)*
14.10 - 14.25	**CAST Invited presentation** ^{14}C inventory in irradiated Zircaloys. *Michel Herm (Karlsrhe Institute for Nuclear Waste Disposal)*
14.25 - 14.45	Leaching test and corrosion measurements for irradiated Zr. *Crina Bucur (RATEN ICN)*

14.45 - 15.05	Analytical strategy to measure ^{14}C released from irradiated Zr. *Tomo Suzuki (University of Nantes)*
15.05 - 15.25	Corrosion rate measurements on Zircaloy-4 in alkaline media. *Sébastien Caes (SCK.CEN)*
15.25 - 15.45	WP3 Summary and Conclusions. *Sophia Necib (Andra)*
15.45 - 16.00	Coffee
16.00 - 16.45	**External Invited presentation** Corrosion of zirconium alloys and ^{14}C release from compacted waste. *Antoine Ambard (EdF)*
16.45 - 17.00	Discussion
17.00 - 20.00	**POSTER SESSION** (with buffet/drinks)

Day 2 Wednesday 17th January 2018

Time	Activity
08.30	Welcome & Coffee
Work Package 4 – Ion Exchange Resins	
08.45 - 08.55	Overview of Main WP4 Outcomes. *Pascal Reiller (CEA)*
08.55 - 09.10	**CAST Invited presentation** ^{14}C Content and Speciation of SIERs from PWR. *(Jerome Comte, CEA-EdF)*
09.10 - 09.25	**External Invited presentation** ^{14}C Content and Speciation of SIERs from CANDU. *(Crina Bucur, RATEN-ICR)*
09.25 - 09.40	^{14}C Content and Speciation of SIERs from BWR. *Andrey Bukaemskiy (FZJ)*
09.40 - 09.55	Evolution of IERs. *Antonietta Rizzo (ENEA)*
09.55 - 10.10	Cementation of SIERs and Consequences on ^{14}C mobility. *Petr Vecernik (UJV)*
10.10 - 10.55	Particular view of a WMA. *Klas Källstrom (SKB)*
10.55 - 11.00	**External Invited presentation** View of the French WMO Andra on the current SIERs management in surface storage. *Andra (TBC)*
11.00 - 11.15	Coffee
Work Package 5 - Graphite	
11.15 - 11.25	WP5 - Overview of Main Outcomes. *Simon Norris (RWM)*
11.25 - 11.50	Ion irradiation used as surrogate for neutron irradiation to understand nuclear graphite evolution during reactor operation: consequences for long lived radionuclide behaviour.

	Nelly Toulhoat (IPNL)
11.50 - 12.10	^{14}C in TRIGA Irradiated Graphite and its Release under Alkaline Conditions. *Crina Bucur (RATEN ICN)*
12.10 - 12.20	WP5 Summary and Conclusions *Simon Norris (RWM)*
12.20 - 12.45	New concept and instruments for ^{14}C measurements in i-graphite. *Gérard Laurent (Integrated Nuclear Engineering Solutions)*
12.45 - 13.30	Lunch & Poster Session
13.30 - 13.55	Oldbury graphite study for RWM. *Steve Swanton (Wood plc)*
Work Package 6 – Safety Case Relevance	
13.55 - 14.20	Implication of CAST results on safety assessment and safety case: Introduction and focus on disposals in clay formations. *Manuel Capouet (Ondraf/Niras)*
14.20 - 14.45	Implications of the CAST results for the disposal systems crystalline host rocks. *Olli Nummi (Fortum)*
14.45 - 15.10	The role of ^{14}C for repositories in salt: Integration of the CAST results. *Andre Rübel (GRS)*
15.10 - 15.20	Coffee
15.20 – 15.45	Assessment of aqueous ^{14}C transfer in an Intermediate-Level Waste (ILW) disposal cell. *Jean-Charles Robinet (Andra)*
15.45 – 15.55	Current position on ^{14}C in the RWM Environmental Safety Case *Simon Norris (RWM)*
15.55 – 16.20	An Overview of ^{14}C Treatment in Post-closure Safety Assessment in a Canadian Deep Geologic Repository. *Helen Leung (NWMO)*
16.20 – 18.30	Guided tour of the Traboules of Lyon.
19.30	Conference Dinner (Ibis Style Lyon Villeurbanne)

Day 3 Thursday 18th January 2018

Time	Activity
9.00	Welcome & Coffee
9.15 - 10.00	WP7 Dissemination Overview. *Erika Neeft (Covra)*
10.00 - 10.45	CAST - Expert Review Group Findings. *Irka Hajdas (ETHZ)& Fraser King (Integrity Corrosion Consulting Ltd)*
10.45 - 11.00	Coffee
11.00 - 12.00	Panel Session – Implications of CAST Project outcomes on waste management organisations safety assessments. • *How could the outputs of CAST be used to inform national programmes?* • *Feedback on CAST project approach to dissemination: present and longer-term;* • *Are there any remaining gaps or uncertainties of safety case significance?* • *Are there opportunities for future collaboration?*
12.00 - 13.00	Lunch

2nd CAST Workshop

13.00 – 16.00 **(*Please note this is not part of CAST Symposium)***

ABSTRACTS

Electronic copies of poster and presentation abstracts will be issued on the 10th January 2018. No paper copies will be available at the symposium.

Papers from the symposium will be considered for inclusion in a Special Edition of the Radiocarbon (RDC) journal.

OFFICIAL LANGUAGE

English will be the working language for the oral and written communications of the symposium.

CONFERENCE FEE

There will be no conference fee. Advance registration is required.

PRACTICAL INFORMATION AND REGISTRATION

All T&S and accommodation costs will be covered by the attendees.

The poster buffet is free to registered participants.

It is hoped all participants will join the Symposium dinner (€35 per person). The cost is to be covered by individually, and can be paid in conjunction with your room booking if staying in the hotel or otherwise by notifying Ally Clark / Simon Norris.

Please pass this on to colleagues who may be interested in this event. We have a maximum of 100 places and there are still a limited number available.

To register, please email Ally Clark (alastair.clark@mcmenvironmental.co.uk) and Simon Norris (Simon.Norris@nda.gov.uk) with your name, organisation details, and an indication of whether you intend to submit an abstract to the symposium (absolute deadline 5th January 2018 for inclusion in the symposium abstract booklet).

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PROGRAMME COMMITTEE

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Jens Mibus (Nagra – CAST WP2 Leader)
Sophia Necib (Andra – CAST WP3 Leader)
Pascal Reiller (CEA – CAST WP4 Leader)
Manuel Capouet (Ondraf/Niras – CAST WP6 Leader)
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WEBSITE

Information on the symposium is available through the CAST website - http://www.projectcast.eu/.