

DISTINCTIVE – 1st Annual Meeting

Decommissioning, Immobilisation and Storage Solutions for Nuclear Waste Inventories

**Millennium Gallery, Sheffield
15th-16th April 2015**

Introduction and Housekeeping

Michael Fairweather
University of Leeds



House-Keeping

- No scheduled fire alarms
- WiFi is open access and free to use
- All speakers please upload presentations prior to session
- All presentations will be uploaded to our website:
www.distinctiveconsortium.org
 - Please inform Abby Ward if you do not want your presentation to appear online
- Industry-members to vote for PhD prizes (see delegate pack)

Acknowledgements

The DISTINCTIVE University Consortium gratefully acknowledges funding from the EPSRC as part of the Research Councils UK Energy programme

The Energy Programme is a Research Councils UK cross council initiative led by EPSRC and contributed to by ESRC, NERC, BBSRC and STFC

Code: EP/L014041/1

The logo for EPSRC, featuring the letters 'EPSRC' in a bold, purple, sans-serif font. The letters are underlined by two horizontal teal lines.

Engineering and Physical Sciences
Research Council

We also gratefully acknowledge funding from our key project partners



Sponsorship

The DISTINCTIVE University Consortium would like to say a special thank you to our event sponsors:

- NNL – Drinks and Canapés Reception
- NDA – PhD Student Awards



Drinks Reception and Evening Dinner

Mercure St Paul's Hotel and Spa
(adjacent to the Millennium Gallery)

6:30-7:30 PM – Drinks and Canapés Reception
– Yard Lounge



7:30-10:00 PM – Evening Dinner
– City Suite A & B



DISTINCTIVE: Background

- EPSRC Nuclear Decommissioning, Immobilisation and Waste meeting, Sheffield, 1st May 2013
- Project started 10th February 2014 to 9th February 2018, although no-cost extension granted to 9th November 2018
- £4.91M EPSRC → total £6.13M, plus £2.23M from industry = £8.36M
- World-class University network:

Imperial College
London



UNIVERSITY OF
BIRMINGHAM



- Key project partners:



Objectives

- Carry out internationally leading science and engineering research in area of decommissioning and nuclear waste management
- Support research that provides routes to innovative technology developments that can be applied to decommissioning and nuclear waste management
- Foster and develop new multi-disciplinary research partnerships between academic and industry researchers
- Train next generation of UK researchers, equipping them with skills and experiences relevant to nuclear waste management and decommissioning issues
- Provide focal point for government, industry and academics through which current and future R&D issues associated with nuclear waste and decommissioning can be discussed
- Provide route for public understanding of underlying research and development needs, opportunities and solutions to nuclear waste and decommissioning

Key Issues

National Importance:

- In line with Government's Nuclear Industrial Strategy (2013), NDA Strategy (2011) and current EPSRC strategy (joined up approach to nuclear R&D across government, industry and academia; benefit to economy and security of supply; establish UK industry as global leader in decommissioning and waste management)

National/International Links:

- Members of consortium already have extensive links (direct research partnerships, members of international research consortia)
- Invite key international players to participate in consortium meetings (offer advice, membership international advisory group)

Technical Programme:

- Can't cover all areas of interest, but research primarily at TRL 1-3 with some higher risk projects
- Active work key focus
- Modelling underpinning safety cases key feature of many projects

Research Plan: Technical Work Packages/Themes

- **AGR, Magnox and Exotic Spent Fuels (Lead: Tom Scott/Nick Evans):**
 - Wet fuel storage issues
 - Transitions to dry fuel storage
 - Long-term storage effects and exotic fuels
- **PuO₂ & Fuel Residues (Lead: Colin Boxall/Nik Kaltsoyannis):**
 - Behaviour of PuO₂ during interim storage
 - Behaviour of Pu bearing wastefoms and encapsulants
 - Methods for characterisation of stored Pu, Pu-contaminated materials/facilities
- **Legacy Ponds and Silo Wastes (Lead: Joe Hriljac/Bill Lee):**
 - Wasteform durability
 - Effluent treatment and analysis
 - Pond and silo sludges
- **Structural Integrity (Lead: Rebecca Lunn):**
 - Physical ground barriers for in-situ contaminant containment
 - Remote crack detection, infrastructure health prediction, building preservation
 - Development and real-time management of autonomous systems for decommissioning

Research Plan: Cross-Cutting Activities

- **Active Research Projects (Lead: Simon Pimblott):**
 - Use of active research facilities at NNL and elsewhere
 - Two major projects already planned, others indicated potential need for active facilities
 - Simon to act as champion to promote use of active facilities and to ensure that consortium receives appropriate advice and support
- **Impact, Outreach and Public Engagement (Lead: Neil Hyatt):**
 - Proposal identifies three groups of non-academic beneficiaries: Site licence companies and supply chain; Government, regulators and implementation authorities; Society and stakeholder groups
 - Impact in 4 key domains: Knowledge; People; Economy; Society
 - 5 critical enablers at core of impact strategy: Building and maintaining relationships and networks; Communication and dissemination; Public, media and government engagement; Knowledge transfer and commercialisation; Training and development

Summary

- **Excellent team of researchers:**
 - Significant track-record of success in supporting relevant R&D in nuclear area
- **Builds from earlier EPSRC consortia KNOO (Keeping the Nuclear Option Open) and DIAMOND (Decommissioning, Immobilisation and Management of Nuclear Wastes for Disposal):**
 - Learning from these consortia input into this new activity
 - Success of earlier consortia gives confidence for this new activity:
 - Supply of researchers into industry
 - Technical developments for deployment
 - General awareness of industry needs
- **Expands earlier groupings:**
 - Wider coverage
 - Stronger team
 - Larger international profile

1st Annual Meeting: Agenda

- 23 oral presentations given across five sessions:
 - 16 DISTINCTIVE researchers (1 Col, 9 PDRAs/6 PhD students)
 - 4 invited speakers from industry
 - 3 international keynote speakers from complementary research areas
- 36 poster presentations will be available for viewing during the breaks
- NNL/NDA/SL exhibiting in Arundel Room
- Two PhD awards (oral/poster presentations) will be presented at the end of Thursday. Don't forget to vote!

1st Annual Meeting: Objectives

- Facilitate knowledge transfer, enabling our researchers to share advances made, and to engage with industry experts and potential employers
- Provide networking opportunities between academia, industry, government and regulatory authorities
- Promote the uptake of DISTINCTIVE research into the nuclear waste management and decommissioning industry
- Generate new collaborative research ideas

I hope that you enjoy the meeting

