

# **DISTINCTIVE – 1<sup>st</sup> Annual Meeting**

**Decommissioning, Immobilisation and Storage Solutions for  
Nuclear Waste Inventories**

**Millennium Gallery, Sheffield  
15<sup>th</sup>-16<sup>th</sup> 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](http://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



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, 1<sup>st</sup> May 2013
- Project started 10<sup>th</sup> February 2014 to 9<sup>th</sup> February 2018, although no-cost extension granted to 9<sup>th</sup> November 2018
- £4.91M EPSRC → total £6.13M, plus £2.23M from industry = £8.36M
- World-class University network:

Imperial College  
London



Loughborough  
University

UNIVERSITY OF  
BIRMINGHAM



UNIVERSITY OF LEEDS

MANCHESTER  
1824  
The University of Manchester



- Key project partners:



DISTINCTIVE

# 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
- **PuO<sub>2</sub> & Fuel Residues (Lead: Colin Boxall/Nik Kaltsoyannis):**
  - Behaviour of PuO<sub>2</sub> during interim storage
  - Behaviour of Pu bearing wasteforms 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

# 1<sup>st</sup> 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!

# 1<sup>st</sup> 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

