

Work Package 2 Materials Consortium

Progress Meeting: 4 May

Work Package 2

Materials Consortium

Aims and Objectives

- To establish new methods that enhance the design and operation of current and future nuclear plant and waste facilities:

Close links with the nuclear industry



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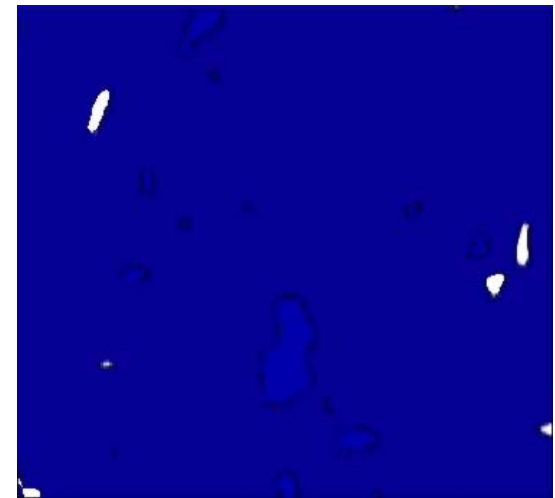
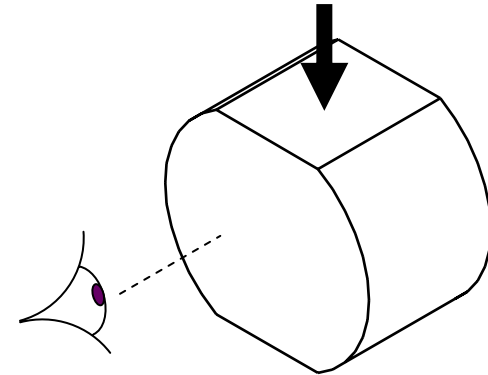
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Aims and Objectives

- To establish new methods that enhance the design and operation of current and future nuclear plant and waste facilities:

1. In-service condition monitoring
2. Predicting materials performance





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- To establish new methods that enhance the design and operation of current and future nuclear plant and waste facilities:

- Condition Monitoring
1. Establish remote structural interrogation and monitoring tools based on ultra-long acoustic waveguides, validated by graphite property and crack-growth rate measurements.
 2. Develop intelligent, miniaturised, encapsulated monitoring systems that are protected from radiation and other environmental hazards, for sample extraction and strain measurement.
 3. Establish finite-element/self consistent models to assess materials performance in Gen. III and Gen. IV systems, under accident conditions and in on-site weld repairs.
 4. Develop new mechanistic understanding and predictive models of microstructural, mechanics and electrochemical effects on IA- and AI-SCC in corrosion-resistant materials for nuclear plant and waste storage applications.
 5. Develop new mechanistic understanding and materials property models to predict irradiation induced aging in nuclear graphite.
- Materials Performance



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Researchers within WP2

Condition monitoring

Neville McNeill	Bristol	Power requirements
Soheil Nakhodchi	Bristol	Measurement of internal strains in nuclear graphite
Frederic Cegla	Imperial	Innovative Approaches to Nuclear Industry Inspection and Monitoring

Materials performance

Tony Cook	Manchester	Atmospheric-induced SCC
Abdulla Al Shater	Manchester	Irradiation effects on SCC in AGR fuel pins
Yi Zhang	Manchester	Computer simulation of SCC
Giuseppe Cornacchia	Manchester	
Supriyo Ganguly	OU	Residual stress and mechanical properties of stainless steel welds
Ashwin Rao	OU	Creep behaviour of stainless steel
Oliver Zanellato	OU	Deformation characteristics and residual stresses in zirconium alloys
Fawad Rajput	OU	
Keyun Wen	Manchester	Microstructure-property relations in nuclear graphite
Abbie Jones	Manchester	Microstructure-property relations in nuclear graphite
Under offer	Manchester	
Alex Theodosiou	Cardif Graphite	
Ankoo Patel	Imperial	Radiation sensor materials

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Aim of today's meeting

1. To assess progress of materials work package against the broad objectives and timescales set out in the original proposal
2. To provide the opportunity for researchers to present progress and plans and to provide constructive feedback
3. To 'network' with others within the materials area
4. To explore opportunities for closer links with Stakeholders, other parts of the KNOO programme and beyond