

Work Package 2

Materials Consortium

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Work Package 2

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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:

Close links with the nuclear industry



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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

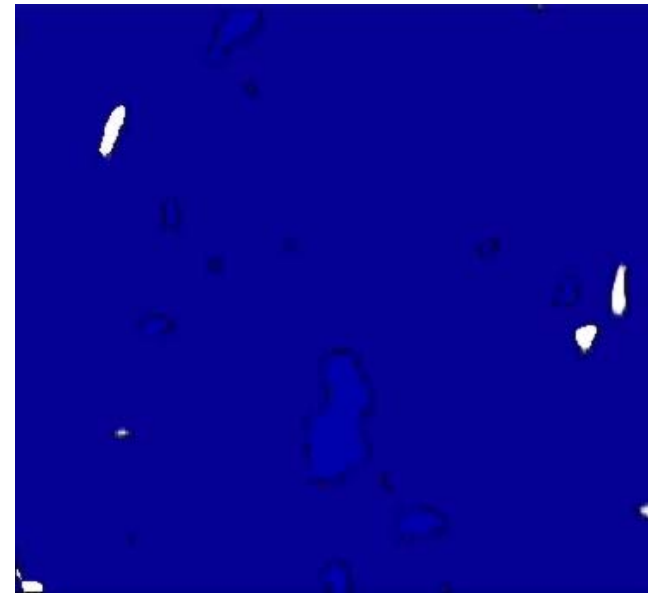
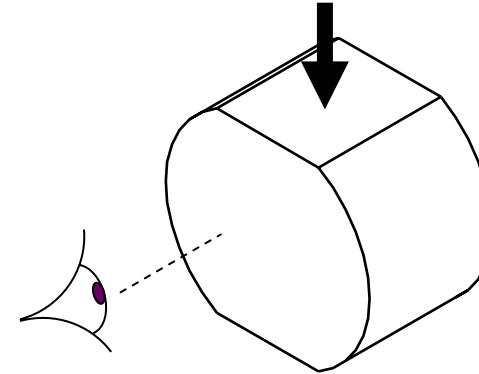


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Aims and Objectives

- 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



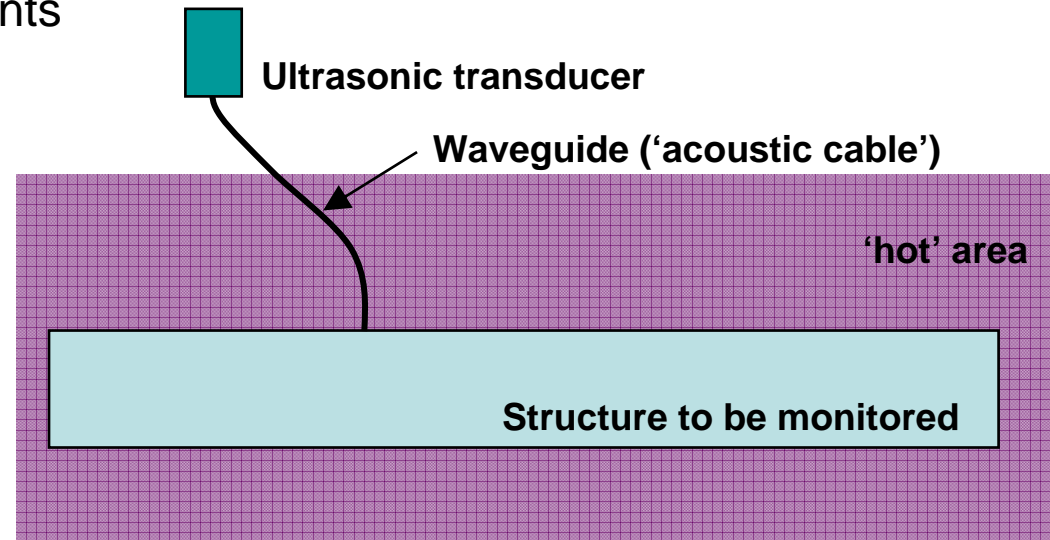
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In-service condition monitoring



Establish remote structural interrogation and monitoring tools based on ultra-long acoustic waveguides, validated by graphite property and crack-growth rate measurements



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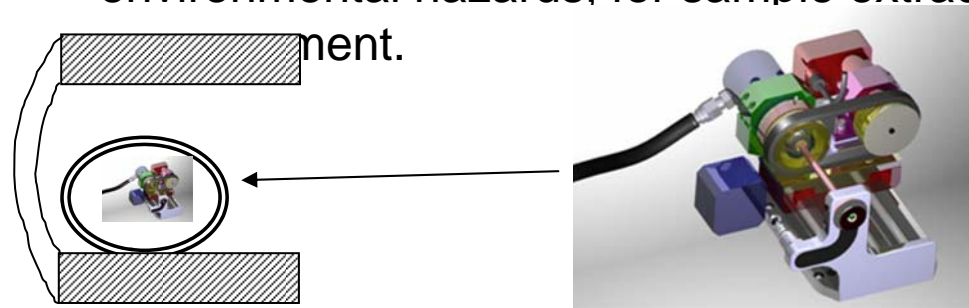
In-service condition monitoring



Establish remote structural interrogation and monitoring tools based on ultra-long acoustic waveguides, validated by graphite property and crack-growth rate measurements



Develop intelligent, miniaturised, encapsulated monitoring systems that are protected from radiation and other environmental hazards, for sample extraction and strain



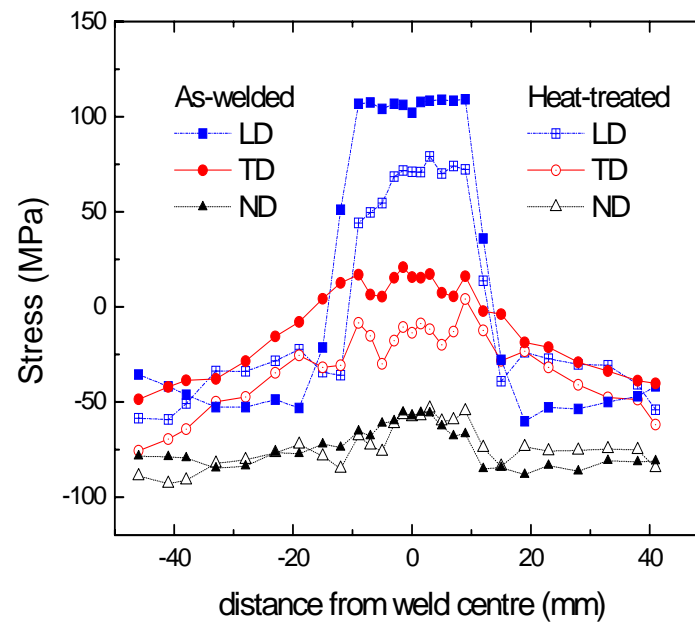
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Predicting materials performance



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



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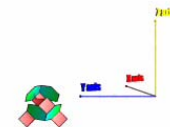
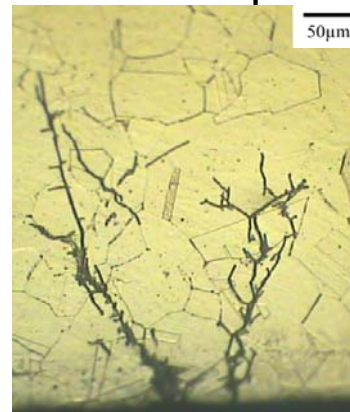
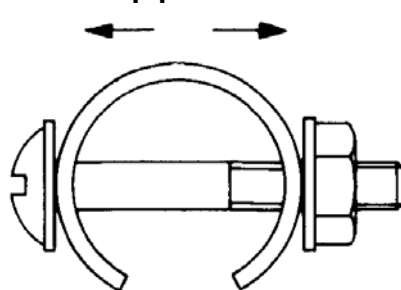
Predicting materials performance



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



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



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Predicting materials performance



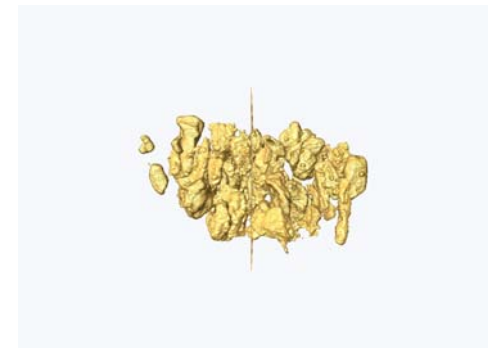
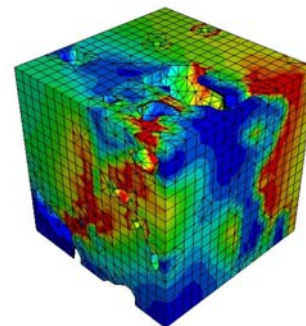
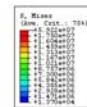
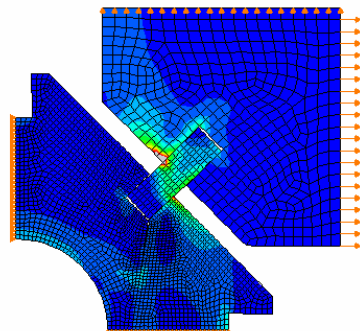
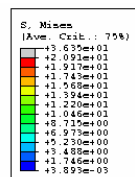
Establish finite-element/self consistent models to assess materials performance in Gen. III and Gen. IV systems, under accident conditions and in on-site weld repairs



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



Develop new mechanistic understanding and materials property models to predict irradiation induced aging in nuclear graphite.





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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

Materials
Performance

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.