

## **EPSRC CDT in Nuclear Fission- Next Generation Nuclear (NGN)**

### **Academic team-**

**Lancaster- Colin Boxall**

**Leeds- Bruce Hanson**

**Liverpool- Eann Patterson**

**Manchester- Sarah Heath, Francis Livens**

**Sheffield- Neil Hyatt**

Model based on a three-way partnership-

EPSRC

Universities- Lancaster, Leeds, Liverpool, Manchester, Sheffield

Industry- Amec, Areva, AWE, EDF Energy, NDA, NNL, Rolls-Royce, Sellafield

19 students in Cohort 1, 11 projects with industry cofunding

Cohort 2 project development under way

## Cohort 1 Projects (start Sept 2014)

Combatting high-intensity contamination of safeguards assay in head-end waste streams	Lancaster
Safe Recycling of Spent Nuclear Fuel	Lancaster
The Micro-Optical Ring Electrode: A Sensor for Multiple Actinide Ions Monitoring	Lancaster
Process optimisation of mediated electrochemical oxidation for the destruction of waste organics	Leeds
Scaling sludge erosion and re-suspension with impinging vertical liquid jets	Leeds
Particle Transport, Deposition and Agglomeration for Nuclear Reactor and Nuclear Waste Flow Applications	Leeds
Solids Aggregation in Nuclear Waste Sludge	Leeds
Robust probabilistic risk/safety analysis for dealing with scarce and limited data	Liverpool
Enhanced nuclear waste assay	Liverpool
Effect of colloid deposits on radionuclide filtration performance in porous media	Liverpool
Understanding surface species and interactions between adsorbed chloride and water on stored PuO <sub>2</sub>	Manchester
Using atomistic simulation to understand microstructural evolution under proton irradiation	Manchester
Nuclear Forensics of Radioactive Particles in the Environment	Manchester
Modelling of in-line tube banks on AGRs boilers	Manchester
The Application of Multi-Scale Modelling of Carbursed Type 316H Stainless Steel Operating at High Temperature to Inform Creep-Fatigue Assessment Procedures	Manchester
A mechanistic study of pellet cladding interaction in Zr	Manchester
The dissolution of UK HLW glass: an advanced flow-through and surface analytical approach to mechanistic understanding	Sheffield
Optimisation of the PyroRoc process for immobilisation of pyrochemical reprocessing	Sheffield
Radiation Effects – The Implications for Future Nuclear Technologies	Sheffield

## Features of the NGN Programme

'Whole CDT' Events-

Nuclear Security and Proliferation;

Legal, Ethical and Economic Aspects of Nuclear Energy

Emergency Preparedness

January Winter School (student conference)

Nuclear Professional Development- Accelerated SQEP; industry mentoring

Themed Masterclasses

## **Joint Activities with ICO CDT in Nuclear Engineering**

Single International Advisory Group for both CDTs

Winter School/Annual Conference

Visits

Seminars, Masterclasses, Professional Development