

NADM 2017

EPSRC ICO CDT in Nuclear Energy

Training cohorts of students in all aspects of Nuclear



ICO Centre for
Doctoral
Training in
Nuclear Energy

Imperial College
London



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Engineering and Physical Sciences
Research Council

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Aim

- To train cohorts of PhDs to operate in the global nuclear technology arena and to deliver high-impact research.

Approach

- 5 cohorts of students (4th to start October 2017)
 - 50%/50% EPSRC/Industry funding model
 - Rolls-Royce, EDF Energy, AWE, Hitachi-GE, UKAEA, NNL, ANSTO,...
 - 1 year MRes + 3 year PhD
 - MRes : training in all aspects of nuclear
 - PhD : training in specific domain of expertise + high impact research
 - Global awareness via visits to international nuclear research
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MRes : training in all aspects of nuclear

- Core modules
 - Introduction to Nuclear Energy
 - Reactor Physics
 - Nuclear Materials for Reactor Systems
 - Nuclear Waste Management and Decommissioning
 - Modelling for Nuclear Engineers
 - Nuclear Safety Management
 - Short courses
 - Nuclear Engineer in Industry
 - Nuclear Energy Policy
 - Research project
-

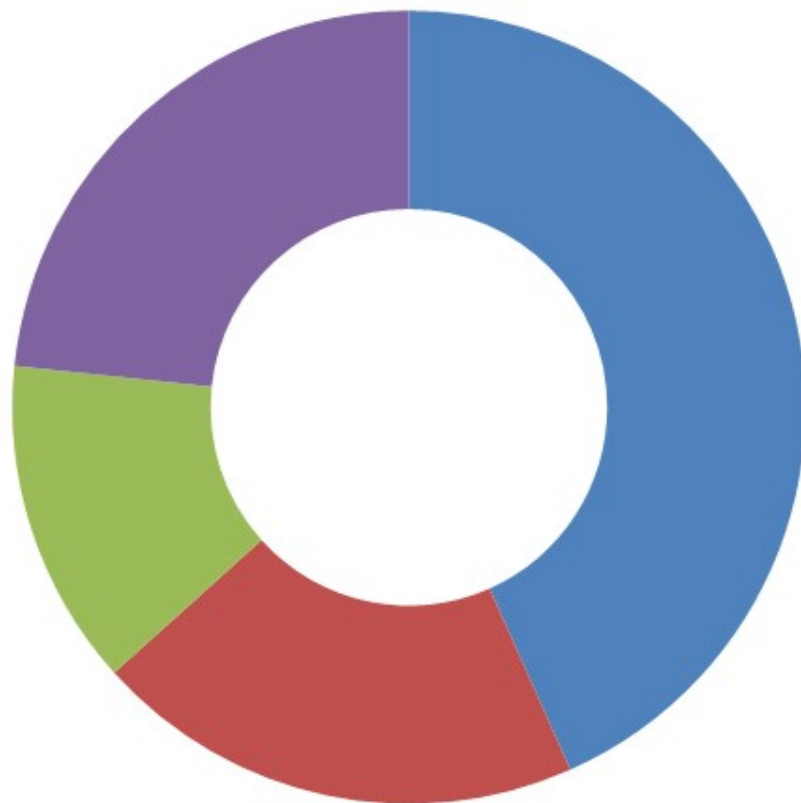
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High impact research – balanced portfolio



- Materials for nuclear fuels and reactors
- Nuclear Policy, Safety, Security and Regulation
- Nuclear Waste Management & Environment
- Reactor Physics & Engineering

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Projects 2017

Microstructurally Informed Structural Integrity of Austenitic Alloys

Corrosion of Advanced MAX Phase Materials for Accident Tolerant Fuels

Next generation composite materials for extreme environments in fusion reactors

Effect of the Compaction Process on the Re-saturation Potential of Bentonite Buffers

The Development of a Regulatory Framework for a Nuclear Fusion Power Station

Tribological response of bearings for nuclear power plants

The Regulation of a Radioactive Waste Disposal Facility

Nuclear Reactor Dynamics and Fuel Performance Studies of Conceptual Space Nuclear Propulsion and Power Systems

Modelling methods for optimal functionally graded materials by novel processing

Measurements of boiling heat transfer in nanofluids

The effect of back-stress on creep fatigue life using high-resolution digital image correlation

Nuclear Energy as a Power Source in Extra-Terrestrial Construction

Technology and Economic Assessment of Small-Scale Fusion Systems

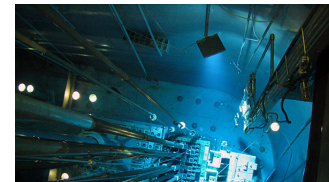
Safety Analysis of Sodium-cooled Fast Reactors

Class room training enhanced by cohort visits

- Consort Reactor, Silwood Park, UK
- Sizewell B, EDF, UK
- Nuclear research institute, Petisti, Romania
 - TRIGA pulsed reactor
 - Measurements of activation
 - Materials research lab
- Centre for Nuclear Research, Mol, Belgium
 - BR3 decommissioning project
 - HADES underground storage laboratory
 - Active materials lab
 - New reactor developments, MYRRAH
- Idaho National Lab & Oak Ridge National Lab, US



Consort reactor



TRIGA reactor Pitesti



SCK / HADES

Class room training enhanced by cohort visits

- Sellafield, UK
- BAE Systems, UK



BAE Systems



Sellafield

- Annual joint Winter School with Next Generation Nuclear CDT
- Joint events with Fusion CDT & other Energy CDT's

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Further training in transferable skills

- **Public outreach**
 - Organisation of a 1 day conference on nuclear
 - Public engagement training
 - Creating Cambridge Science Festival stand
 - Supporting Imperial Science Festival
- **Entrepreneurship**
 - course from Judge Business School, Cambridge



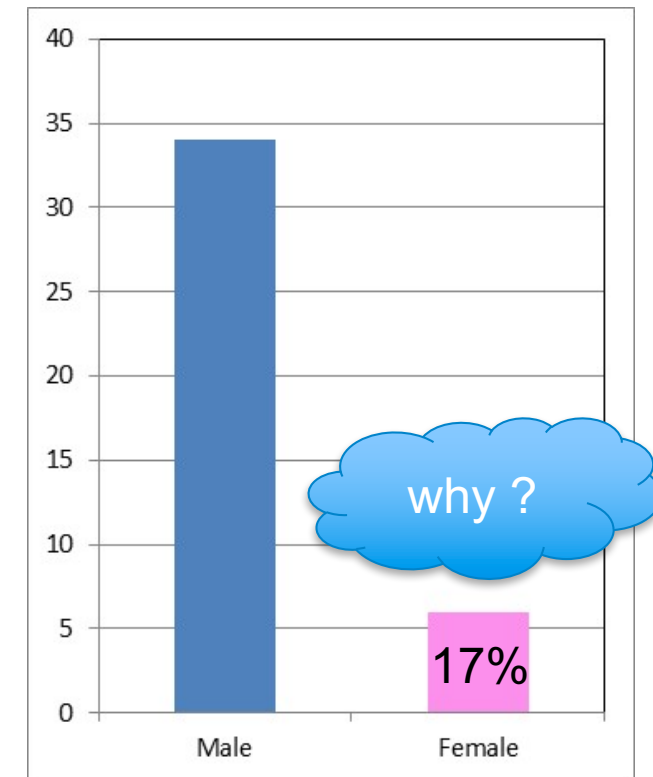
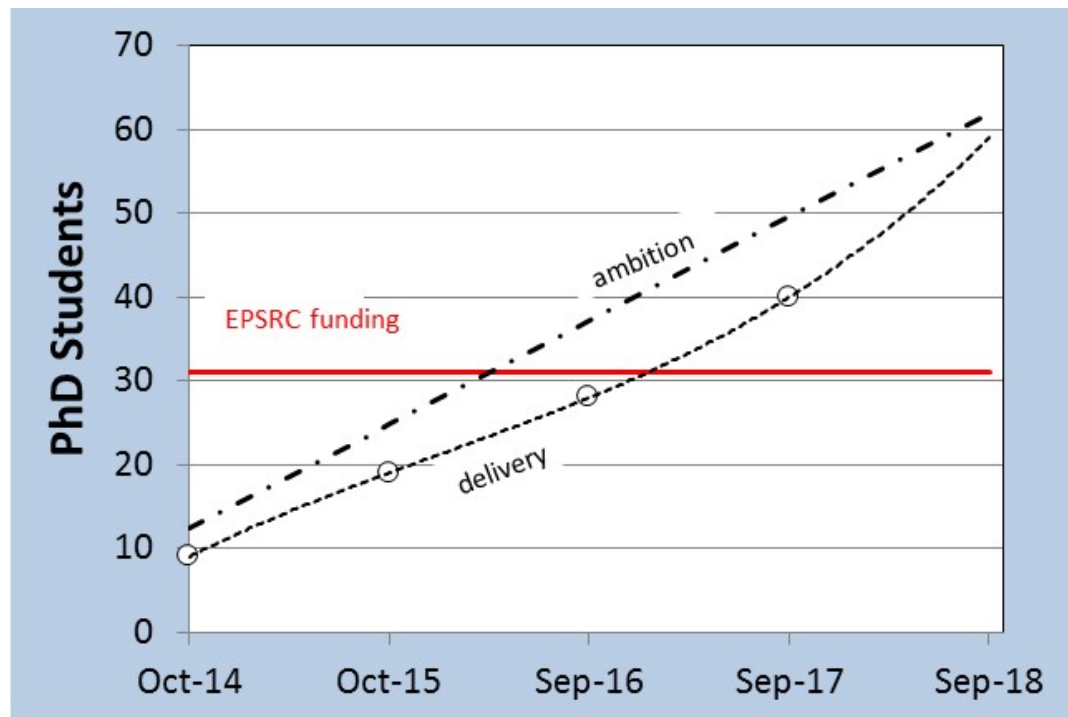
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Cohorts



£1.8M in industry project funding already agreed in addition to EPSRC funding