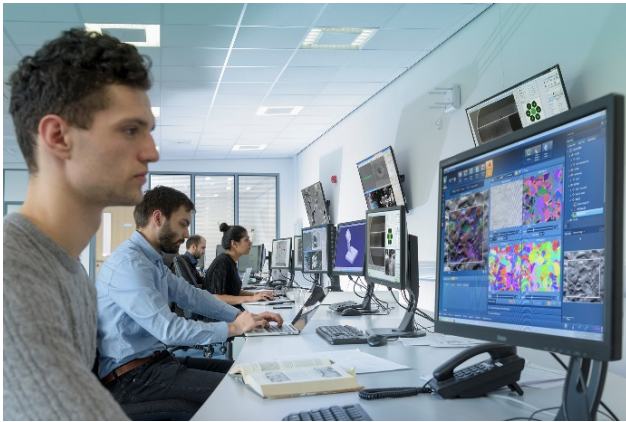


UKAEA Update

Martin O'Brien

- **Materials Research Facility**
- **Gamma detectors (ADRIANA)**
- **Collaboration opportunities**
- **Nuclear Institute event**

Materials Research Facility



Hot cells for processing specimens - up to TBq

10 shielded rooms for analysis – up to GBq

To process and characterise material with activities intermediate between university and NNL/Sellafield capabilities. Active work starts this year.

- Sample preparation for analysis on- or off-site (e.g. TEM, APT). Microstructural (SEM, FIB, AFM), mechanical (nano-indentation, fatigue, static) and thermophysical analysis.
- Over £10M invested to date from NNUF, UKAEA and Henry Royce Institute. Further £4M from Royce is under way. Another ~ £8M from NNUF if its Phase II is approved.

More details from Steven Van Boxel

ADRIANA laboratory at Culham

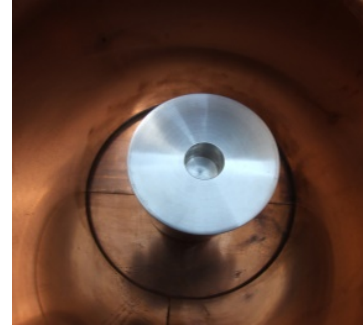
Advanced Digital Radiometric Instrumentation for Applied Nuclear Activities



Portable HPGe system



BeGe detector with NaI
Compton suppression



SAGeWell detector



190% RE coaxial
HPGe detector

Activities (most include training MSc/MPhys/PhD students) – see poster by Chantal Nobs

- Environmental soil samples from Dounreay (Lancaster)
- Generalized gamma spectrometry simulator PhD for improved isotope identification (Birmingham/AWE)
- Neutron source irradiation facility characterisation (Lancaster)
- Calibration of liquid scintillator detectors for discrimination between gamma rays and fast neutrons (Lancaster)
- Characterisation of SAGe Well detector, development of pulse shape analysis algorithms (Liverpool)
- Equipment lent to ISIS to measure spallation neutron induced gamma environments (STFC)
- Foil-based neutron diagnostics at JET - improved measurement capability
- Support to Waste Management and characterisation activities activation wastes and 'ad hoc' legacy samples

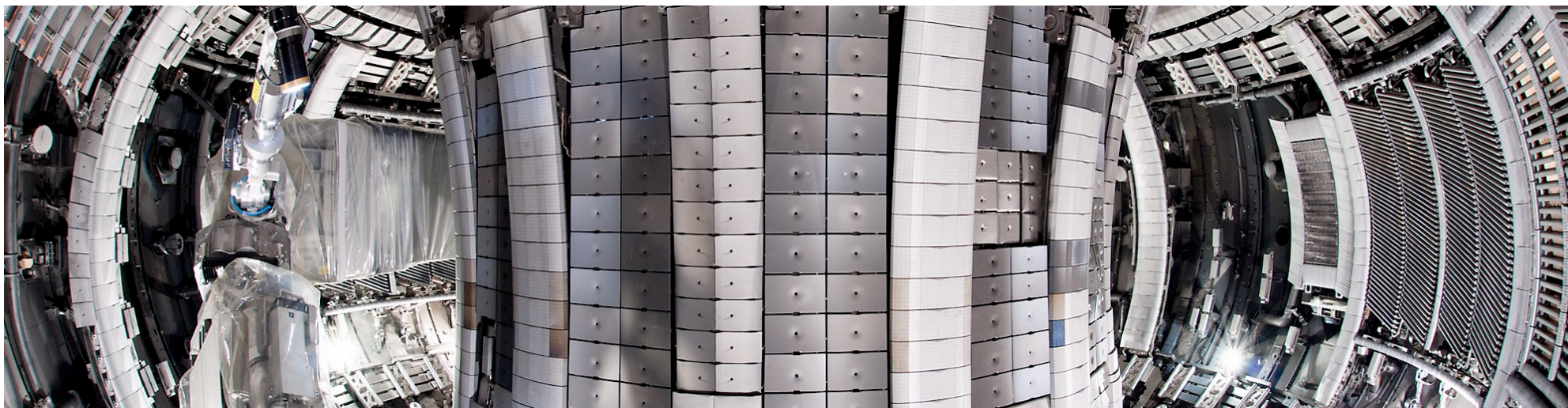
Collaborations: We are diversifying beyond fusion and keen to be Co-Is in grants that are mainly or entirely non-fusion

- MRF and ADRIANA experiments
- Modelling radiation damage linked to related experiments (e.g. with M Preuss et al. on Zr)
- Materials technology for demanding environments
- Neutronics, nuclear data, radiation transport (e.g. time of flight neutron detection with M Joyce)
- Remote handling, robotics and autonomous systems (e.g. nuclear consortium bid for Industrial Strategy funds)
- Advanced computing for science and engineering (“big data”, data provenance, virtual prototyping, UQ, computational physics, algorithms ...)

And we're always interested in discussing student projects in engineering and science, from undergraduate placements to PhDs.

Nuclear Institute and UKAEA event: **Realising a Fusion Power Plant**

Wolfson College Oxford, 8-9 November 2017



Speakers from universities, industry, NI, UKAEA. Sessions on

- The Landscape for Fusion Power
- Connecting Fission and Fusion Technologies
- Fusion Specific Technologies

<http://www.nuclearinst.com/Events/Realising-a-Fusion-Power-Plant---Save-the-date/49093>
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For more details

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Other Collaborations

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