Culham Materials Research Facility

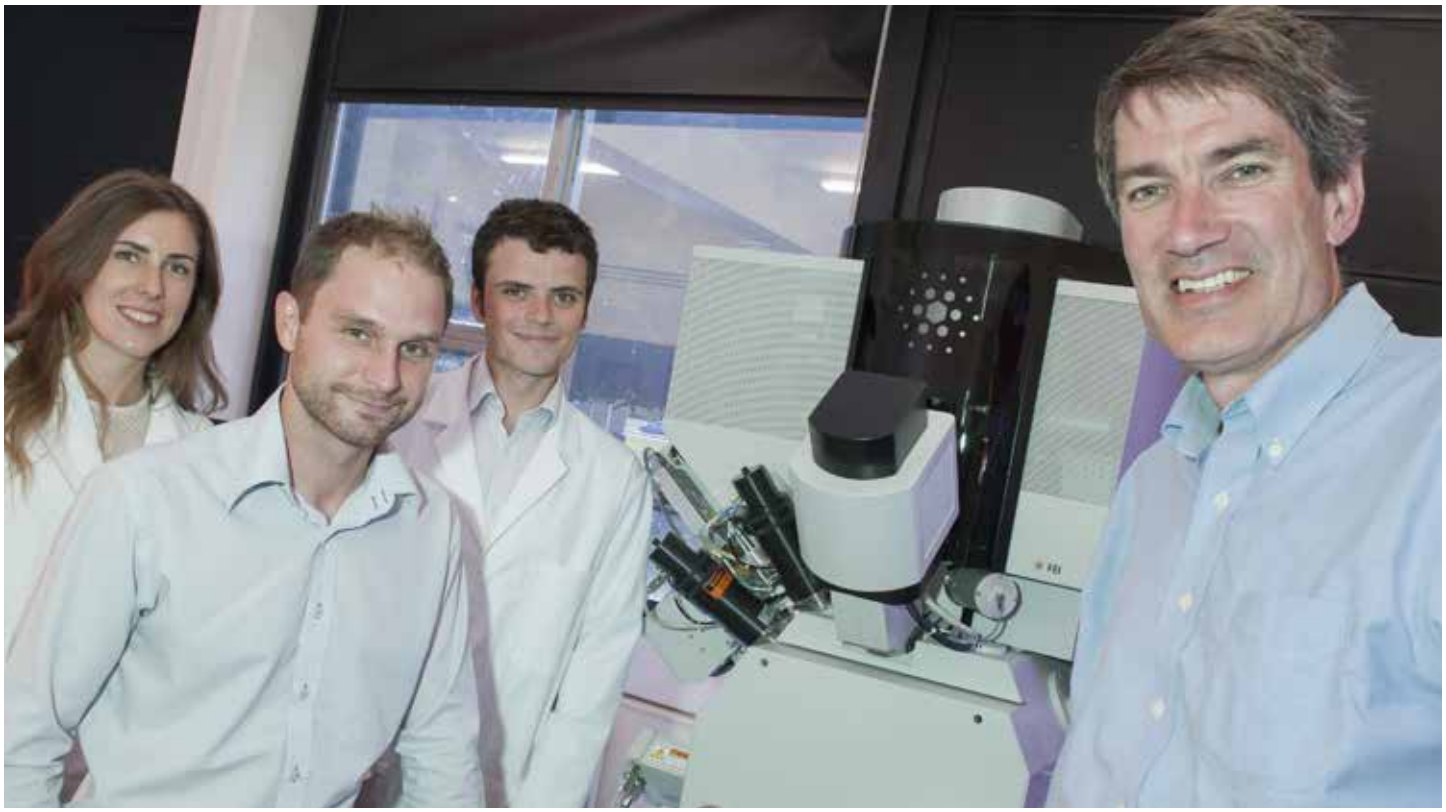
Part of the National Nuclear User Facility

NNUF
National Nuclear User Facility

UK Atomic Energy Authority

CCFE
CULHAM CENTRE FOR FUSION ENERGY

Introduction from Professor Steve Cowley



Culham's Materials Research Facility (MRF) is a valuable addition to the UK's suite of nuclear research laboratories. It will open in 2015 and we want to talk to potential users about how it can benefit their work.

The MRF will provide academic and industrial users – both in fission and fusion – with equipment for the processing and micro-characterisation of radioactive materials, for on-site analysis or taking back to the researcher's own lab.

With new build on the horizon, and the prospect of Generation IV and fusion entering the market later this century, it is vital for the UK to develop a first-class range of research facilities to meet the challenge. We are delighted to host the MRF as part of the National Nuclear User Facility, which is doing just that. This is one of the first NNUF projects and will complement companion facilities at NNL and Dalton Cumbrian Facility.

The MRF is a sign of the diversification from our traditional fusion programme to aid wider research communities. Other examples are the ADRIANA nuclear instrumentation project launched under NNUF, and the Remote Applications in Challenging Environments centre (RACE) being created at Culham.

By coming to use the Materials Research Facility, you will tap into our heritage of scientific excellence whilst accessing the latest technology to advance your studies. Please read about the facilities we offer and our plans to expand them in the future, and do contact us to discuss opportunities.

Professor Steve Cowley
CEO, United Kingdom Atomic Energy Authority
and Head of Culham Centre for Fusion Energy

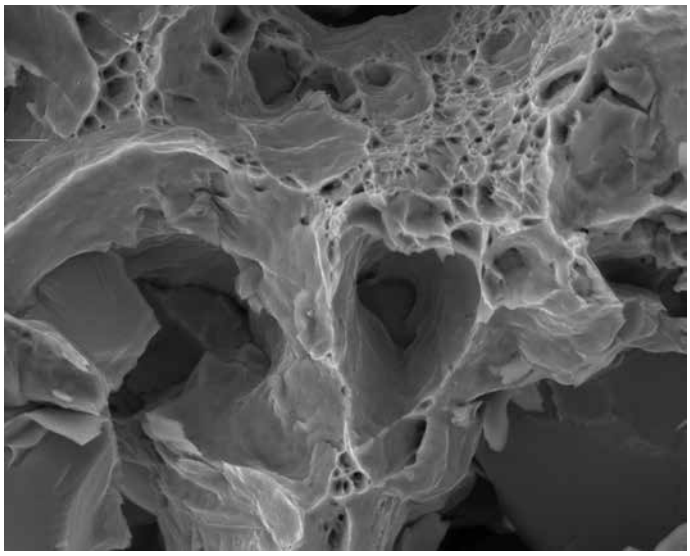
A unique resource for nuclear materials researchers in academia and industry

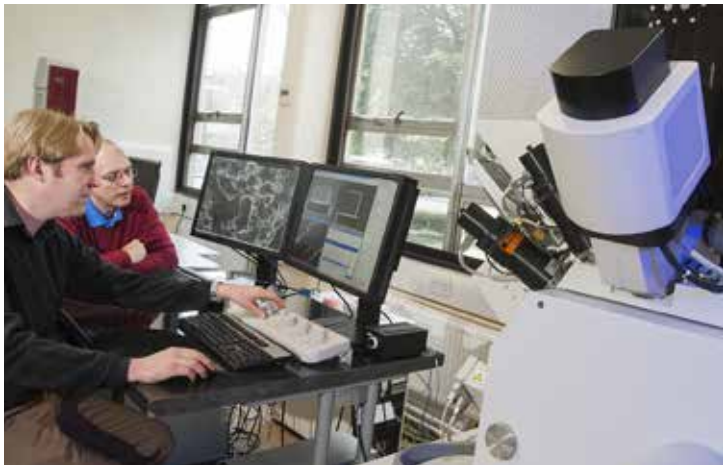
Materials research areas:

- **Lifetime extension for today's power stations**
- **Nuclear new build and Generation IV**
- **Fusion**

In 2015 a new purpose-built facility at Culham will open, allowing use for radioactive material, with hot cells for processing and micro-characterisation of neutron-irradiated samples. The MRF at Culham will bridge the gap between the university or industrial laboratory and large facilities at nuclear licensed sites, with affordable, convenient lab access. We will have the capacity to cut, polish and encapsulate individual Charpy-style samples up to the TeraBecquerel level for analysis either on-site or back at your institute.

There will also be a workshop and experimental area for tritium, beryllium and other hazardous materials.





Experienced staff from Culham Centre for Fusion Energy will operate the lab and provide users with support in sample preparation and analysis, as well as logistics advice for the transport of materials.

Analysis capabilities
(already available for non-active samples):

- Dual beam Focused Ion Beam
- Nanoindenter
- Scanning Electron Microscope with EDS and EBSD detectors
- Thermal desorption spectroscopy

Expansion is planned in future years to offer users a greater range of apparatus.

Current users

- University of Bristol
- University of Manchester
- University of Oxford
- ISIS Innovation
- Reaction Engines

How to apply for access

Please contact us regarding opportunities to use the existing materials laboratory at Culham or the new MRF, either for your own research or in collaboration with CCFE. Access models and costs will vary depending on your project, and we will be happy to advise you before you submit grant applications including the MRF.
To discuss the options, contact Martin O'Brien on 01235 466595 or email martin.obrien@ccfe.ac.uk.

The National Nuclear User Facility and Culham

The MRF at Culham is part of the UK's National Nuclear User Facility (NNUF). Established in 2013 as part of the Government's Nuclear Industrial Strategy, NNUF is a multi-site initiative that gives academia and industry access to internationally-leading experimental equipment for research on radioactive materials that cannot be examined at university laboratories. Funded by EPSRC, other NNUF facilities are at the University of Manchester's Dalton Cumbrian Facility and the National Nuclear Laboratory.

CCFE's other NNUF activity is the nuclear instrumentation project ADRIANA (Advanced Digital Radiometric Instrumentation for Applied Nuclear Activities). With funding from EPSRC, ADRIANA is providing instruments for use by industrial and university researchers at Culham and at partners the Universities of Lancaster and Liverpool. CCFE has four state-of-the-art high resolution gamma spectrometry systems with digital signal processing and analysis software. The ADRIANA equipment can be used to support power stations, nuclear security applications and decommissioning operations, as well as research projects.
For more information contact Steve Lilley on 01235 466802 or email steven.lilley@ccfe.ac.uk.

Research Councils UK Energy For a Low Carbon Future

Fusion research at Culham is funded jointly by the UK Research Councils' Energy Programme through the Engineering and Physical Sciences Research Council (EPSRC) and by EURATOM.

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