

# Materials Research Facility

Project lead: Dr Steven Van Boxel



**MATERIALS  
RESEARCH  
FACILITY**



**UK Atomic  
Energy  
Authority**

The UKAEA's **Materials Research Facility** at Culham in Oxfordshire specialises in processing and analysing radioactive materials, to support research in fission, fusion and particle accelerator design. We can take material that is far too radioactive for a university laboratory but does not need to be handled at a nuclear licensed site. The MRF has been funded by EPSRC, through the **NNUF** and **Henry Royce Institute** initiatives, as well directly by Government.

The materials inside both fission and fusion reactors face a unique combination of high temperatures and fast-moving neutrons. Developing materials that can survive for long periods in these conditions is therefore a high priority for the nuclear industry. Data from MRF helps researchers understand the properties of materials for:

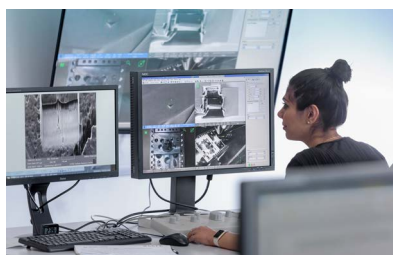
- Existing nuclear power stations and designs for future, more efficient power stations
- Fusion reactors
- Particle accelerators – for targets and other components that operate in an extreme environment.

In MRF we can cut and prepare samples in hot cells, using remote handling systems, up to TBq levels (Cobalt-60 equivalent). The resulting smaller specimens, which have much reduced radiation levels, can then be

analysed on site in shielded enclosures (up to GBq levels) or at university laboratories. MRF uses advanced scientific methods and specialist equipment to perform microstructural analysis, mechanical testing and thermo-physical characterisation, and has a range of equipment to prepare samples for these tests. MRF also has an experimental area for tritium, beryllium and other hazardous materials.

Scientific equipment can be operated remotely from the MRF control room by users after training. The training will allow the user to operate the equipment safely and focus on the science that needs to be done, with support available from in-house experts.

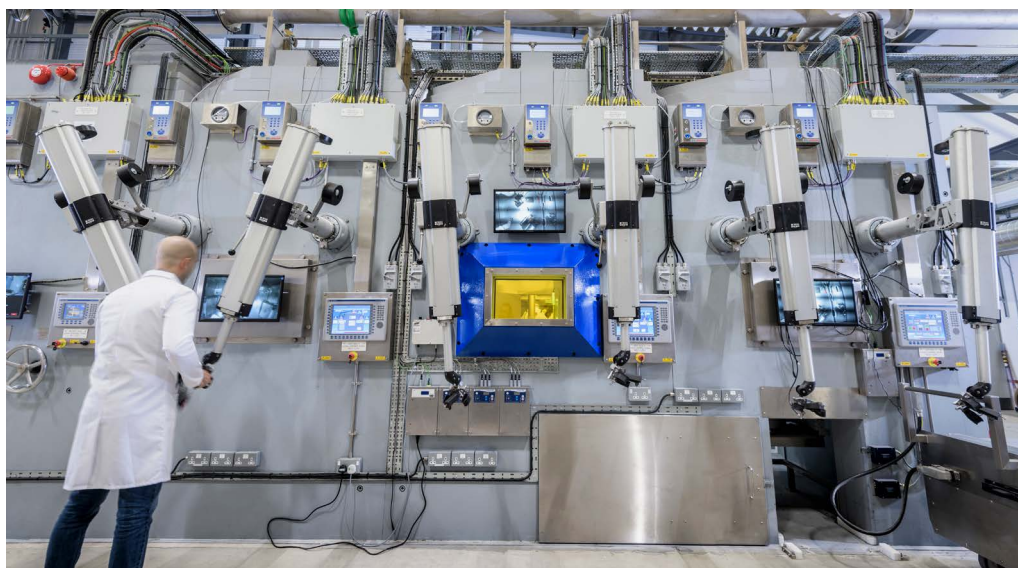
For more information on the equipment and the MRF visit **our website**, consult the **MRF Brochure**, or use our **contact form**.



Radioactive sample preparation using FIB



Operator and manipulator arms as seen from inside the hot cell



Hot cell wall with operator using manipulator arms

## Contact details

Please use the **contact form on the MRF website** to initiate a discussion about your potential project.

## Availability

MRF was available for access by external users at the time of going to press. Up-to-date information about availability, in light of the COVID situation, is available at <https://www.nnuf.ac.uk/materials-research-facility>.