THE UNIVERSITY OF MANCHESTER

PARTICULARS OF APPOINTMENT

FACULTY OF SCIENCE & ENGINEERING

SCHOOL OF MECHANICAL, AEROSPACE & CIVIL ENGINEERING

RESEARCH FELLOW IN ADVANCED GAS-COOLED REACTOR STRESS ANALYSIS

VACANCY REF: S&E-12542

Salary: Grade 7 £39,992 to £49,149 per annum

Hours: Full time

Duration: Starting as soon as possible until 31 October 2021

Location: Oxford Road, Manchester

Enquiries about the vacancy, shortlisting and interviews:

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or Dr Abbie Jones

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The University of Manchester

The University of Manchester was created in 2004 by bringing together The Victoria University of Manchester and UMIST, two of Britain's most distinguished universities, to create a powerful new force in British Higher Education. The University of Manchester provides an exciting environment for teaching and learning with a city centre campus alive with student activity day and night.

The vision for the University of Manchester is to be one of the finest universities in the world. The University is one of the largest in the UK and has teaching and research in more subjects than any other single-site British University. Students benefit from unrivalled facilities while staff benefit from an environment which is fast emerging as a centre for research excellence.

Faculty of Science and Engineering

The Faculty of Science and Engineering is large and comprehensive with nine Schools: Chemical Engineering & Analytical Sciences; Chemistry; Computer Science; Earth, Atmospheric & Environment Sciences; Electrical & Electronic Engineering; Materials; Mathematics; Mechanical, Aerospace & Civil Engineering; and Physics & Astronomy. Together with research institutes including: Manchester Institute for Biotechnology, Dalton Nuclear Institute and Photon Science Institute, Thomas Ashton Institute and the University of Manchester Aerospace Research Institute (UMARI), the Faculty represents a diverse portfolio of research and teaching of the highest quality.

Many of the major advances of the 20th century began in this Faculty, including the work by Rutherford leading to the splitting of the atom and the development of the world's first modern computer. Today, research activities remain at the cutting-edge and the Faculty now generates more than a third of the total research income for the University.

The School of MACE

The School of MACE is the largest engineering School within the Faculty of Science and Engineering at the University of Manchester. Manchester was the birthplace of the engineering discipline, and MACE has historical routes in the Institute of Mechanics in founded in 1824. Today the School hosts 1300 undergraduate and 450 postgraduate students, delivers undergraduate programmes across Mechanical, Aerospace and Civil Engineering, and MSc programmes in both technical engineering subjects and management. With 120 academic staff, 90 technical and support staff, and 300 postgraduate research students and post-docs, the School is **at the forefront of engineering education** in the UK.

The School hosts world-leading academic researchers in areas including structures in extreme environments, innovative manufacturing, engineering resilient systems, modelling and simulation, aerospace engineering and nuclear engineering. Research activities are connected into a range of research institutes and centres including the Dalton Institute, the Modelling & Simulation Centre and MACE has a leading node of the interdisciplinary Tyndall Centre for Climate Change Research. Research active academics are strongly encouraged to engage in multi-disciplinary research through collaborating with colleagues across Manchester's Schools, Faculties and Institutes, and coordinate activities supporting the University's specialist beacon areas, for example Addressing Global Inequalities, Advanced Materials and Energy.

overall Purpose of the Job:

The RF will be expected to work in close collaboration with the ONR in order to create, develop, and analyse finite element models and methods. S/he will also be involved in other research projects on graphite material properties models.

Key Responsibilities, Accountabilities or Duties:

- to conduct individual and collaborative research projects on development of fracture models of nuclear graphite; the contribution to the development and maintenance of materials property models; sensitivity studies of stress analysis of graphite bricks using finite element analysis; and mathematical modelling of whole core behaviour i.e. the

interaction of whole and damaged bricks as the core ages and is subject to various operational transients.
- to provide day-to-day management of NGRG team ONR based research projects, including supervision and training of students, or PDRAs.
- to prepare ONR quarterly reports and forward planning documents,
- to participate in interactions with the Regulator, other universities, other similar research centres, and the nuclear industry,
- to assist in the preparation of proposals and applications to external bodies to securing funding and contracts for research projects,
- and to publish high quality research reports and publications

Post holders are required to familiarise themselves with the University's equality and diversity policies and to actively support these wherever possible.

PERSON SPECIFICATION

Essential Knowledge, Skills and Experience*:*

The successful applicant will possess

- a PhD (or equivalent) in STEM subject, preferably with extensive experience in the use of the finite element method in static problems, preferably using ABAQUS.
- a record of scientific achievement demonstrated by publication in high quality peer review journals, and
- a proven track record in the application of modelling methods appropriate nuclear engineering

He/she will be able to demonstrate experience in

- Proficiency use of the finite element method in as well as knowledge of nuclear engineering and ideally some experience of nuclear graphite

In addition, the candidate is expected to have

- a background of working within the higher education system,
- experience of working on joint industrial and academic projects, and proven project management skills,

plus the ability to

- liaise confidently and effectively with a range of individuals,
- work independently and as part of a team,
- present in both written and oral publications,
- meet deadlines and prepare deliverables
- contribute to broader management and administrative processes, and assess and organise resources.

Desirable:

It is desirable that successful applicant has

- a knowledge of, and experience in, nuclear materials and/or graphite, and
- postdoctoral or higher level scientific experience