Faculty of Engineering  
School of Chemical and Process Engineering

Research Fellow in Laser Gain Materials Processing Dentistry  
(Fixed Term until 31 March 2016)

You will work on a collaborative European project to develop a new laser system for dental restoration at the University of Leeds. This project involves the design, fabrication and optimisation of rare-earth doped glass for laser gain medium engineering and demonstration for 1 micron and 1.5 micron.

You will work independently and design glass for laser gain medium demonstration and will have experience in laser diode operation and laser cavity engineering. You will be required to work safely in various laboratories used for characterisation and laser/spectroscopic research. You will be expected to work with both clinical and non-clinical teams in this research project, and are expected to collaborate with academic and industrial partners, organise research results for writing reports and disseminate the findings at international conferences and in leading scientific journals. You will have a first or upper second class (or equivalent) undergraduate degree in Engineering, Mathematics or Physical Science as well as a PhD (or close to completion) in a laser photonics/optics or related field.

‘The University of Leeds’ commitment to women in science has been recognised with a national accolade. The University and the Faculty of Engineering have received the Athena SWAN Bronze Award in recognition of our success in recruiting, retaining and developing/promoting women in Science, Engineering and Technology (SET).’

The University offers generous terms and conditions of employment, a wide range of benefits, services, facilities and family friendly policies. Full details are available on the Human Resources web pages accessible at www.leeds.ac.uk/hr/index.htm

University Grade 7 (£31,656 - £37,768 p.a.)

Informal enquires to Professor Animesh Jha, tel+44 (0)113 343 2342, email a.jha@leeds.ac.uk.

Closing Date: 22 November 2015

Interviews are expected to be held on Friday 27 November 2015

Job Reference: ENGPE1032

Click here for further information about working at the University of Leeds www.leeds.ac.uk/info/20025/university_jobs
Job Description

Responsible to: Head of School
Reports to: Professor Animesh Jha, Principle Investigator

Job Summary

You will work on a collaborative European project to develop laser(s) for hard tissue applications. Within the consortium of UK and Italian partners (academic and industrial), you will research gain medium and laser cavity engineering. You will also be involved in the research on engineering experiments using Raman, Visible/Near-IR lasers, diode drivers and should be familiar with laser safety procedures. Work will therefore involve setting up the relevant laser and broadband light source optics platform, demonstrating laser action, characterising the performance, and writing research papers for publications in peer-review journals on the work completed.

Main Duties and Responsibilities

- Generate and pursue independent and original research ideas in Photonics, Materials Science, Optics and Laser Physics.
- Complete work on structural characterisation of novel tellurite glass compositions and prepare all data, and lead on the writing of a paper for journal submission.
- Complete characterisation of the saturable absorption properties of cobalt doped tellurite and phosphate glass samples, using z-scan type techniques.
- Undertake synthesis of cobalt doped glass ceramic and spinel materials and characterise as above.
- Prepare results of cobalt doped materials and lead writing of a journal paper.
- Undertake characterisation work and data analysis of Bi/Yb doped materials.
- Actively seek opportunities for the growth of the research via further engagement with third parties, with prior consultation with the industry and academic supervisors.
- Initiate proposals for research projects and play a constructive role in obtaining research funding and funding grant proposal writing.
- Participate in writing research reports and high quality papers for publication or other recognised forms of output, observing safety rules.
- Prepare presentations of research results for major international conferences, workshops and formal project progress meetings.
- Participate in regular fortnightly progress meetings (internal and/or multi-partner teleconferences) to the research group and industrial partners, preparing and presenting research results and any relevant documents where appropriate.
- Being a member of an active research group, it is expected that collegiality is demonstrated to help and support each other in the research team. This is essential for creating a research pro-active environment by exchanging information, supporting others and receiving support whenever needed. Such support will involve training and supervision of PhD and UG students, PDRA colleagues, and general safety and laboratory induction.
- Work within and apply the standard operating procedures, health and safety regulations and quality assurance procedures.
- Any other duties as may reasonably be required, commensurate with the grade of the post.
Key Working Relationships

Professor Animesh Jha, UK and Italian Partners.

Career Expectations

The University of Leeds is committed to developing its staff. All staff participate in the Staff Review and Development scheme and we continue to work with individuals, supporting them to maximise their potential.

Progression to a higher grade is dependent on an individual taking on an increased level of responsibility. Vacancies that arise within the area or across the wider University are advertised on the HR website - [http://jobs.leeds.ac.uk](http://jobs.leeds.ac.uk) - to allow staff to apply for wider career development opportunities.

University Values

All staff are expected to operate in line with the University’s values and standards, which work as an integral part of our strategy and set out the principles of how we work together. More information about the University’s strategy and values is available at [http://www.leeds.ac.uk/comms/strategy/](http://www.leeds.ac.uk/comms/strategy/).
Person Specification

Essential

- A first or upper second class (or equivalent) undergraduate degree in Engineering, Mathematics or Physical Science as well as PhD (or close to completion) in a laser photonics/optics or related field
- Knowledge of laser experiments and laser optics, including experience in laser diode operation and laser cavity engineering
- Technical skills in materials characterisation
- Proven experience in research project management
- Proven experience in research report writing and research article journal publications
- Demonstrated excellent interpersonal, written and oral communication skills including the ability to present the results of scientific research in scientific journals, international conferences or technical reports and fluency in English language
- Experience in research lab management and safety compliance
- Proven ability to work both as part of an active research team, but also independently
- Willingness to work with academic and industrial project partners, and to travel to them as and when required
- Demonstrated originality, creativity and innovation in solving problems and introducing new directions and approaches
- Proven track record of peer-reviewed publications
- Knowledge and experience of solid-state laser device design and/or bioactive materials

Desirable

- Experience and knowledge of rare-earth ion spectroscopy
- Experience of research supervision
- Experience using some of the following techniques and equipment is highly beneficial: FTIR spectrometer; UV-vis-NIR spectrometer; Raman microscope; prism-coupler; fluorescence spectrometer; class I-IV lasers; liquid nitrogen handling; fibre drawing tower; XRD; DTA; DMA; SEM; EDX
Additional Information

The University offers generous terms and conditions of employment, a wide range of benefits, services, facilities and family friendly policies. Full details are available on the Human Resources web pages accessible at www.leeds.ac.uk/hr

The Partnership

The Partnership has been developed by students and staff and describes the mutual expectations of us all as members of the University of Leeds community. More information about the Partnership is available at http://partnership.leeds.ac.uk

Disclosure and Barring Service checks

A Disclosure and Barring Service (DBS) Check is not required for this position. However, applicants who have unspent convictions, cautions, reprimands and warnings, including any pending criminal proceedings must indicate this in the 'other personal details' section of the application form and send details to the Recruitment Officer at disclosure@leeds.ac.uk.

Disabled Applicants

The post is located in the School of Chemical and Process Engineering. Disabled applicants wishing to review access to the building are invited to contact the department direct. Additional information may be sought from Recruitment Officer, e-mail disclosure@leeds.ac.uk or tel + 44 (0)113 343 1723.

Disabled applicants are not obliged to inform employers of their disability but will still be covered by the Equality Act once their disability becomes known.

Further information for applicants with disabilities, impairments or health conditions is available in the applicant guidance.
Further information about the Faculty and School

Top 100 university for Engineering and Technology - Times Higher World University Rankings 2014.

The Faculty of Engineering is one of the largest engineering groupings in the UK with over 700 staff, 3,000 students and an annual turnover of around £60m.

Our focus is on providing research based teaching and supervision, inspiring our students and through this helping our students to achieve their goals and ambitions.

The range and scope of the our research is extensive and covers all of the major engineering disciplines, including cross cutting themes such as energy, materials, medical engineering and artificial intelligence, with theoretical, experimental and modelling work underpinning all areas.

This provides an ideal platform for multidisciplinary research, enabling us to undertake high-impact research in areas recognised as providing critical global challenges. Much of our research is linked to industry, with major collaborators throughout the UK and Europe. We have also aligned our Faculty with industry sectors such as digital technologies, energy, high value chemicals and medical technologies, and undertake further interdisciplinary research in areas as diverse as functional materials, robotics and water.

Teaching and research is delivered through the following five schools:

- School of Chemical and Process Engineering
- School of Civil Engineering
- School of Computing
- School of Electronic and Electrical Engineering
- School of Mechanical Engineering

There is a friendly atmosphere and student-focused approach to undergraduate and postgraduate education. We pride ourselves on the professionalism of our staff and the quality of the research environment, promoting excellence by offering a range of cutting edge programmes, many in conjunction with industrial sponsors and collaborators.

www.engineering.leeds.ac.uk

The School of Chemical and Process Engineering has a track record of high quality research delivered by world leading academics in three established centres of excellence: Energy and Resources Research Institute; Institute for Materials Research; Institute of Particle Science and Engineering.

With 100 academic and research staff and over 700 students the School is a major player in the field of chemical, process, energy, mining and materials engineering.

- Ranked 4th in the UK for Chemical Engineering by The Complete University Guide.
- Ranked 11th in the Guardian league table, 6th in the Times Good University Guide and 8th in the Sunday Times league table.
- Courses accredited by the relevant professional bodies (check website for full details).
- 85% of recent graduates have successfully secured positions with organisations or have gone on to further study. (2010/11 DLHE survey).
- Research feeds directly into teaching, which means students will learn about the latest developments within their subject from world-class academics.
- Over 800 students from 70 countries.
Access to excellent facilities including laboratories equipped with the latest technology for environmental monitoring and pollution control, and advanced energy systems such as fuel cells. Specialist facilities include X-ray diffractometers, scanning electron microscopes, a pilot scale chemical process and combustion plant, petroleum reservoir and rock deformation lab, all provide our students with a creative and stimulating learning environment.