MATERIALS AND ENGINEERING
RESEARCH INSTITUTE

Postgraduate research at MERI

Sheffield
Hallam University

Why study a research degree?

Studying for a research degree is very different from undertaking taught undergraduate or postgraduate work.

At PhD level, the aim is to make a novel contribution to your area of study. This involves taking a comprehensive overview of the current state of the art, making intensive investigation into the areas identified as being ripe for development and producing a final thesis in which you present your new work in the context of the background material.

You work independently under the guidance of your supervisor with the aim of contributing new understanding to your area of study. As well as gaining expertise in your chosen field, you also develop broader skills such as effective planning and how best to communicate your ideas with a range of audiences. By the end of this process, a successful student finds they have developed both their subject and themselves. You gain the expertise to build a successful career whether you intend to stay within academia, or work in another area such as industry.

Studying for a research degree offers the exciting prospect of working at the forefront of knowledge and the opportunity to become an independent researcher.

Materials and Engineering Research Institute (MERI)

The Materials and Engineering Research Institute was established in 1990 as an institute committed to world-class, multidisciplinary research. MERI offers a vibrant community in which postgraduate researchers work closely with experienced academics and industrial collaborators to develop their knowledge and expertise in materials and engineering research. We specialise in research relevant to real life.

Our research activities are supported by a large advanced equipment base, ranging from the latest electron microscopes to high performance computing hardware.

Our current areas of research are:

- Nanotechnology
- Corrosion Technology
- Materials & Fluid Flow Modelling
- Polymers, Composites and Spectroscopy
- Robotics and Automation
- Solar Cells
- Infrastructure Management
- Thin Films Technology
- Plasma Vapour Deposition Coatings
- Electronic Materials
- Systems Modelling
- Mobile Machining
- Sustainability

Research Assessment Exercise (RAE) - 2008 results

Unit of Assessment 29 - Metallurgy and Materials

The Materials and Engineering Research Institute's (MERI) position as the leading post-92 university in this Unit of Assessment has been confirmed by the RAE 2008 result.

As measured by the quality of its research, weighted by the number of staff submitted, MERI was ranked first out of the seven submitted post-92 universities in the UK, and 11th out of 20 across all the UK universities who submitted in this area (both figures by ResearchResearch). 75 per cent of MERI's submission was judged to be internationally recognised and obtained a THES average score of 2.15.

Unit of Assessment 37 - Library and Information Management

MERI also contributed to the University's success in the Library and Information Management submission. The University is now ranked first out of the 12 submitted post-92 Universities in the UK and sixth out of 21 submitted universities across all higher education institutions. 60 per cent of this submission was judged to be internationally recognised.

PhD completion rates

For the last four years, over 70% of our full-time PhD students have successfully completed within 4 years.

‘Doing a research degree is really challenging – that is why it is also hugely rewarding’

Professor Doug Cleaver

Head of Postgraduate Research, MERI

How is a research degree different from an undergraduate or postgraduate degree?

Doing a research degree is really challenging – that is why it is also hugely rewarding. Unlike a taught degree, very little is provided in a neat, pre-ordered fashion. The onus is on you to gather information from disparate sources, measurements and calculations and then decide how best to use these in your investigations. Ultimately, the aim is for you to further your subject by making an “original contribution”. You will broaden your skills base, become increasingly self-reliant and autonomous, gain confidence in presenting your work and discussing related material. You will also gain considerable experience of project planning and delivery. By the end of your research degree, you will have taken control of your project and you will be the expert.

What is so special about MERI?

MERI is focussed on delivering high quality research and industry-focussed consultancy. As a result, it is a very close knit and friendly community – people are very approachable and everyone is on first name terms. Research students are crucial to our continued success as they represent the core of our research effort. Over the years many of our key advances have been generated from within PhD and MPhil projects.

What are the facilities like for the students?

All students have standard provision of desk/computer/access to phone as well as the specific experimental or computational equipment and consumables required to perform their research project. There is also a wealth of relevant expertise and a genuine research environment.

How are the students supported once enrolled on a research degree?

In addition to their immediate supervision, students also benefit from dedicated departmental administrative support. Further, there is academic oversight of student processes and progress, through which Research Methods training is delivered and staff-student communications ensured. We aim to achieve an open door policy and encourage our students to raise potential difficulties sooner rather than later.

Do you have any advice for people considering a research degree?

Be really clear on what your motivations are for doing a research degree. What do you want from it … what doors do you want it to open for you … where do you want to be at the end of your studies? Resilience and self motivation are key attributes for success in this type of study – everyone asks “Why am I doing this?” at some time or other – so it really is essential to have thought through these issues before embarking on a major research degree

‘Research students are crucial to our continued success as they represent the core of our research effort’

‘For me, a big city university was always ideal, and Sheffield just seemed like the perfect place to be’

Victoria Boyes

Full-time PhD research student

Phd title – The development of Stimuli responsive materials for wound management and other industrial applications

Why did you choose to go straight from undergrad to research?

Undertaking your own research is any aspiring scientist’s dream. Fresh from undergrad, I was given the opportunity to put my skills into practise and begin to truly develop as an independent researcher.
I decided to stay in full time education as a postgrad research student in order to put myself ahead of the intimidating number of BSc graduates in my area of study, to hone my skills as a scientist and enhance my career prospects.

What is a research degree?

A research degree involves in-depth training in research methods followed by the execution of a piece of original, supervised research. You are expected to periodically present your findings to the scientific community in the form of a poster or oral presentation, and eventually produce, defend and publish a written thesis. As daunting as this sounds, your director of studies and co- supervisor are on hand to help train and guide you at the initial stages, and help give you the confidence to work more and more independently as the course progresses.

How is it different from Undergraduate study?

You have to be very self-motivated to embark on a PhD. There is no rigid course structure, and time-management is entirely your own responsibility. I learned to organise my time effectively very quickly! Learning to motivate and organise yourself is an integral part of the job, and of course are valuable skills employers hold in favourable regard.

What support do you receive?

The whole team are incredibly supportive. My supervisor and I have regular meetings to monitor my progress and he is happy to discuss my project with me if I’m unsure where to go. There are specialists in MERI from many different scientific fields, and the researchers are more than happy to spend time discussing ideas and results with you, should you need some extra support.

What are the facilities like?

The department boasts well-equipped laboratories and a number of brand new analytical instruments, as well as computer resources and major analytical equipment.

What appealed to you about SHU and studying in Sheffield?

I was incredibly impressed with the buzz around campus when I first visited Sheffield Hallam, and I spent 4 very happy undergrad years here. With respect to my PhD, the facilities offered within MERI were excellent and my research project was, personally, very captivating. For me, a big city University was always ideal, and Sheffield just seemed like the perfect place to be.

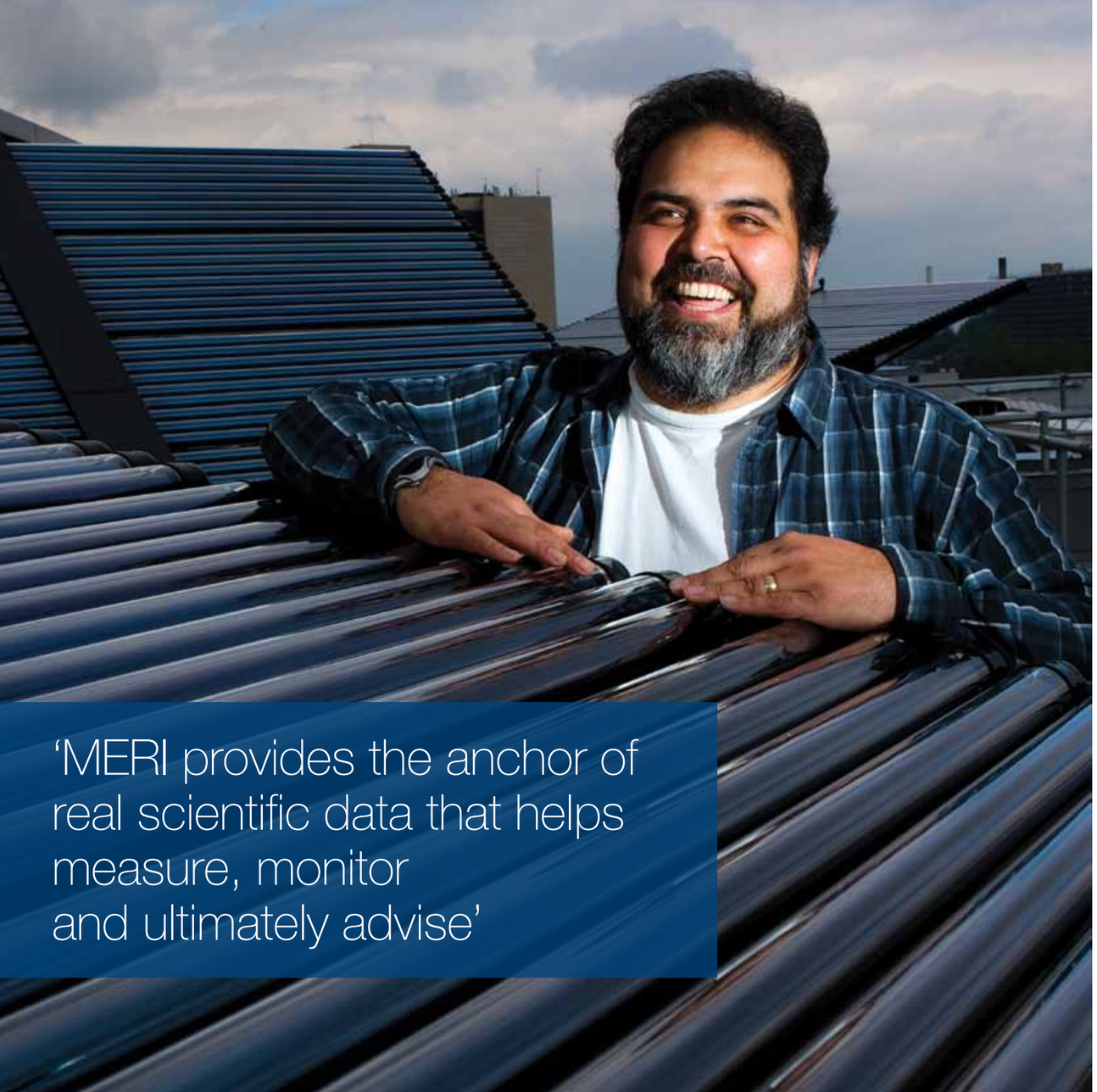
Do you have any advice for people considering a research degree?

Be prepared to work hard. Take pride in your work, believe and have confidence in it, and when the going gets tough, keep going! Most importantly, enjoy it while it lasts.

Anything else you would like to share?

Studying for a PhD certainly taught me the value of working hard, and is extremely rewarding. One way that my PhD at SHU has served me well is that it demands that I present my work in a variety of ways throughout the course. I have become much more confident in presenting my ideas to the scientific community, having confidence in my abilities and speaking my mind. This will help me enormously throughout my working life.

‘Choosing to do a PhD is undoubtedly the single best decision I’ve made in terms of preparing myself for a successful career.’



‘MERI provides the anchor of real scientific data that helps measure, monitor and ultimately advise’

John Grant

Part-time PhD research student

Full-time Senior lecturer in Sustainable Development and Town Planning

Phd title – An investigation into the resilience and adaption potential of the UK housing stock to climate change

You already have a day job, so why a PhD and why now?

I started out as a town planner and quickly became passionate about sustainability and how it can affect our lives. I found my way into teaching and specialise in sustainable development. I love my job teaching, but I am also a social scientist. I want to make sure that the planet is as green as it can be for my children and my children’s children.

My PhD will seek to investigate what the future may hold for us here, in the UK, with regards to energy efficiency in homes and what our options are for making that future bright. I will be focusing on the built environment and the social barriers which are currently retarding positive developments. Unfortunately there’s a “sell by” date on these options. If I don’t start my work, now there may be less impact for such work in the future. I believe we stand at a cross roads regarding our future and the environment. All of the preliminary work I’ve done to date points to a future that need not be bleak, but a positive step change is needed now in the way we live. I want, in some small way, to prove that there is an opportunity to make the future one of safety, security and engagement with the wider world.

So what is a social scientist doing in MERI?

That is a very good question! My work involves essentially looking at fuel poverty and how we can implement renewable methods to help improve the lives of people. We are hoping to establish a best practice strategy for housing developers to integrate renewable energy technologies into people’s homes. MERI provides the anchor of real scientific data that helps measure, monitor and ultimately advise what is and isn’t working within my projects.

What will a PhD add to your life/ career?

I’ve a long term goal to make people listen to me regarding the damage that is taking place to our planet. The thing is, people are much more likely to listen to a Doctor than they are a Mister. By carrying out my research I’m not only satisfying a personal task but am ultimately going to make a difference through doing it.

My PhD allows me to pursue my research legitimately with the assistance of the huge resources available through Sheffield Hallam and MERI and allows me access the skills of my supervisor and other researchers in this field.

Do you have any advice for people considering a research degree on a part-time basis?

You need to consider T.S.C. - time, support and commitment.

Do you have the time to complete a PhD? Anyone can set aside a few hours a week, but this will take me years to complete. This isn’t something to step into lightly.

Support - do you have the support of your employer and people at home? Sometimes the going gets really tough and it is good to know that you have a network around you. The people at MERI are here for as much as you need them but it is important to make sure the support continues when you’re not here too.

Commitment - like most challenging things, if you want something badly enough you need to be prepared for the hard work and have the determination to get you there. This isn’t always going to be easy, but hey, I’ve got a planet to save, so I’m in this for the long haul.

How we support your study

When you start your research degree at MERI, you are assigned a supervisory team consisting of two or three academics or external advisors. They guide your project, particularly in the early stages, and ensure that you have chosen an appropriate methodology.

As well as a dedicated desk and PC, you have full access to the library and online journals as well as extensive specialist facilities, including laboratories, experimental and computational equipment.

You attend a variety of courses and training sessions, some compulsory and others based around your personal development needs. There is also a weekly seminar programme and an annual student seminar day in which all first and second year students present their work to the department.

As a research student you spend the majority of your time working on your project and interacting with your supervisory team and fellow students, either at the university or on placement with an industrial partner.

You will get the opportunity to attend and present your work at conferences, both in the UK and internationally. By doing this you develop a network of useful contacts with researchers from other organisations broadening your experience and enhancing your employability.

Recently completed research degrees by MERI Students

Enhancing the Tribological Properties of CrN/NbN Nanoscale Multilayer PVD Coatings

Mechanical and Metallurgical Properties of Dissimilar Metal Joints using Novel Joining Techniques

Stencilled Hough Transform: Real-Time Tracking of Rigid Objects in Video Sequences

Thermal Curing of Concrete with Conductive Polymer Technology

Numerical and Experimental Optimisation of a High Performance Heat Exchanger

An Integrated Framework for Optimisation of Oil Field Production Area

Enhancement of the Fatigue Performance of Ti-6Al-4V Implant Products

3D Face Scanning and Alignment for Biometric Systems

Local Plastic Deformation in Pressure and Tensile Armour Layers of Flexible Risers

Fractal Architecture for Leagile Networked Enterprises

Development of 3-D Surface Data Acquisition Systems Using Non-Calibrated Laser Alignment Techniques

Role of Segregation and Precipitates on Interfacial Strengthening Mechanisms in Al-SiC MMC

Absorption Cooling from Low Grade Heat Sources in the Range 10kW - 100kW

Electrodeposition of Semiconductors for Application in Thin Film Solar Cells

Modelling Based Framework for the Management of Accident and Emergency Departments

Development of a Total Quality Management Framework for Libyan Health Care Organisations

Research and Development in Optical Biosensors for Determination of Toxic Environmental Pollutants

Mesh-Free Methods for Liquid Crystal Simulation

Hybrid Sol-Gel/ Polyaniline Coating for the Corrosion Protection of AA2024

Performance Investigation of a Naturally Driven Building Ventilation Terminal

Applying for a Research Degree

Length of study

Degree	Full-time	Part-time
MPhil	2 years' research	3 years' research
PhD Direct	3 years' research	5 years' research
PhD by confirmation	3 years' research, plus an optional year for writing up	5 years' research, plus two optional years for writing up
We also have split MPhil/PhD possibilities for students studying abroad.		

We have a thriving community of research students, studying topics across the full range of materials and engineering research pursued in MERI. We offer both MPhil and PhD research degrees. We have also recently introduced an Article-Based PhD. These degrees may be studied full-time or part-time.

PhD studentships

Funding may be available for some of our PhD projects. Our vacancy list can be found at
www.shu.ac.uk/meri/postgrad-research

How to apply

Complete the University application form. You can submit the form either online or by mail.

International applicants also need to include

- a photocopy or scanned image of the personal details page of your passport
- a photocopy or scanned image of any VISA details
- evidence of financial support, such as a sponsor letter
- evidence of suitable qualifications to support your application
- evidence of English language ability of IELTS 6.0 or above

Any general enquiry relating to postgraduate research admissions, including questions about the application form, procedures or documentation should be addressed to:

Senior research administrator
Materials and Engineering Research Institute
Sheffield Hallam University
Norfolk Building Room 501
Sheffield S1 1WB
UK

Phone 0114 225 3500
Fax 0114 225 3501
Email MERI-Student@shu.ac.uk

For more information please visit the MERI webpage at
www.shu.ac.uk/meri/postgrad-research

This information can be made available in other formats. Please contact us for details.

0647-04/10