



University  
of Glasgow

College of Science  
& Engineering

# GRADUATE SCHOOL POCKET GUIDE

# WORLD CHANGERS WELCOME

# JOIN US AND MAKE YOUR MARK



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After my PhD in New Zealand, I travelled half way round the world to do a short research project at the University of Glasgow. I came for the world-leading equipment and the exceptional quality of the people. It's been so good, that over 12 years later I'm still here. Join us to start your career the right way.

DR TIM DRYSDALE

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The School of Geographical and Earth Sciences (GES) at Glasgow is a vibrant hub of activity with connections across the globe. Our research tackles some of the world's most pressing issues, from increasingly toxic oceans to the spread of infectious disease, and advances our understanding of how to deal with these, from political activism to experimenting with how we narrate our own and others' place in the world.

PROFESSOR DEBORAH DIXON

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We have an exciting and diverse research portfolio here at the School of Chemistry. My research group is focused on new energy storage materials: we develop new synthetic routes to nanoparticles for use in Li-ion batteries and we use an extensive range of characterisation tools to try to discover how these materials change their structure under operation. This is such a fast-changing research landscape and to realise our aims, we collaborate with expert research groups within the School and internationally and my students often make use of state-of-the-art facilities at the school and also at facilities such as the Diamond Light Source and the ISIS Neutron and Muon facility.

DR SERENA CORR

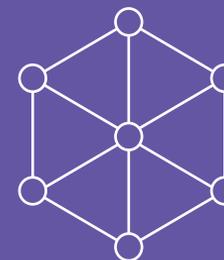
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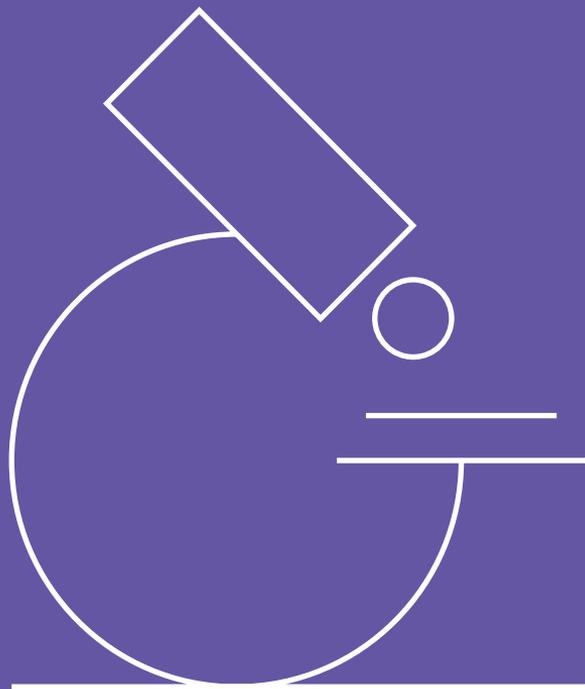


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## OUR RESEARCH

Research students study in one of our seven Schools, or at the Scottish Universities Environmental Research Centre (SUERC). A number of our Schools are ranked in the UK top ten (Guardian University Guide 2015) and all include academics of international renown. We can offer you expert guidance and supervision and the skills you will need to advance your career, whether this ends up being in academia or industry.



CHEMISTRY



COMPUTING  
SCIENCE



ENGINEERING



GEOGRAPHICAL AND  
EARTH SCIENCES



MATHEMATICS  
AND STATISTICS



PHYSICS AND  
ASTRONOMY



PSYCHOLOGY



SUERC

For more information on each school please go to:  
[www.glasgow.ac.uk/colleges/scienceengineering/schools/](http://www.glasgow.ac.uk/colleges/scienceengineering/schools/)



## OUR STUDENTS

The College is home to more than 600 students from over 55 countries and over the last five years in excess of 500 students have successfully completed their PhD or Research Masters. Below some of our students share with you their exciting research and experiences of life as part of our Graduate School.

### ALEX VASIEV SCHOOL OF ENGINEERING

Cell Origami: Self-folding 3D nano-patterned scaffolds for tissue engineering



I came to Glasgow because I wanted to find the best engineering faculty. The Glasgow campus won me over with its atmosphere and green spaces, but ultimately I chose a PhD here because of the research and the people in the School of Engineering.

I make self-assembling cellular niches for the manufacture of artificial organs. The idea is to take patient stem and create simulated organ tissue using engineered containers which mimic their native configurations. There is a fantastic nanofabrication centre in Glasgow ([www.jwnc.gla.ac.uk/](http://www.jwnc.gla.ac.uk/)), which I consider the best in the UK which has melded mechanical, electrical, and biomedical engineering. We use a lot of techniques handed down from the microelectronics industry to make these 'bio interfaces'.

My supervisor is great, leaving me to find my own solutions, but with a steer down the correct path, so that I can drive my own ideas forward.

The School of Engineering is divided into five research divisions and therefore you can always find advice and technical support if a problem arises outside your group's area of expertise. Everyone has always gone to great lengths to help with paperwork, organise conference travel, and provide training and guidance to ensure progression throughout my studies.

I would like to stay in biomedical engineering but in industry or commerce, with my own company making medical devices. The University has provided good career development courses and career advice, and useful information about obtaining commercial enterprise funding or research grants. This will definitely be of benefit to me in my chosen career.

## SOUM CHOWDHURY

### SCHOOL OF COMPUTING SCIENCE

Exploring the usability and security of multiple graphical passwords in authentication



I found out through the Kolkata British Council that the School of Computing Science is one of the top-ranked in the UK. Having received MSc offers from other universities including Manchester, Edinburgh and Bristol, Glasgow was my first choice because of the vast amount of research in the field of human computer interaction and information retrieval. I also loved the city, with information from sources like Discover Glasgow and Lonely Planet helping me make my decision.

I obtained an MSc with distinction and my dissertation helped me to secure a fully-funded PhD.

My PhD research has been well supported by regular supervisor meetings and advice, which has helped me to publish many papers in some of the world's top conference proceedings. I also benefitted from University and Graduate School doctoral training, which had helped me sharpen my academic writing, time and project management, and presenting and networking skills. Furthermore, the university has one of the best libraries in the UK with great amenities and a huge collection of books.

The Graduate School has always helped with administrative issues and organised many PhD meet and greets, which helped me meet research students from other fields and share new experiences. They also kept me informed about research activities, conference opportunities in Glasgow, the UK and internationally, helping me build contacts for collaborative work after the completion of my PhD, as well as travel scholarships available for PhD students irrespective of their nationality. In short as a PhD student, the Graduate School opened many avenues and opportunities for me.

My research involves recognition based graphical authentication systems (RBGSs). Most people find it difficult to remember alphanumeric (text)

passwords. With an increasing number of passwords required, people tend to forget them and adopt unsafe strategies like writing down the passwords. RBGSs use a set of images selected by the user from a collection presented by the authentication system as passwords and has been proposed as one potential solution to minimise the above problems. These systems rely on recognition of images, which is a less mentally demanding task than recalling a text password. The main aim of my research is to examine the usability of multiple image passwords in their current state-of-the-art and their vulnerability to written descriptions. Based on the results of five user studies conducted over a period of 12 months we concluded that RBGSs are not usable with their current state-of-the-art. Hence we propose a new scheme 'image passwords with hints' (PHAS), which will ease the burden of remembering many passwords and prevent the use of unsafe strategies to store or disclose them to others.

I have recently submitted my thesis. There are many post doc-opportunities in the field of data privacy-information retrieval and I am delighted to be taking up one as a Research Associate here in Computing Science at Glasgow.

## AKIKO SASAKI

### SCHOOL OF CHEMISTRY

Exploiting Satellite Transitions  
of Half-Integer Quadrupolar  
Nuclei in Solid State NMR



My life in Glasgow dates back to my undergraduate study. Glasgow was my first choice to study BSc Chemistry as it is known for high teaching quality (and I was fascinated by the appearance of the main building and its striking architecture!).

The high teaching quality and excellent research mean that there is a great atmosphere in Glasgow for young researchers. Staff in the School of Chemistry are helpful and friendly and Graduate School staff are professional and reliable.

I belong to a solid-state NMR group. My research involves development and application of high-resolution NMR techniques for half-integer quadrupolar nuclei in solid-state. I've been focusing on NMR "difficult" nuclei, aiming to expand the applicability of solid-state NMR to a variety of disciplines. My PhD is partly funded by a leading company in the field of NMR technologies and an internship opportunity has been offered in the final year of my PhD. My supervisor is one of the very few experts in solid-state NMR in the UK and also renowned internationally. It is a great experience to work for and receive advice from a leading expert in my field of interest.

I'm not only keen to thrive as a researcher but also have been enchanted by the joy of teaching through demonstrating experience in undergraduate laboratory sessions alongside my PhD study. Following my PhD studies, I would like to look for opportunities to work internationally, making use of the experiences and communication skills acquired during my Glasgow life.

## MONAGENG KGWADI

### SCHOOL OF ENGINEERING

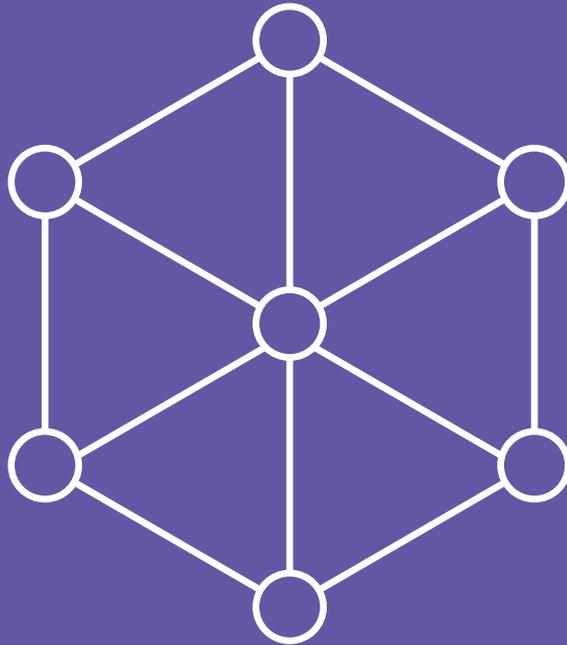
Environmentally Friendly  
Antenna Design for Advanced  
Internet of Things



I am Monageng Kgwadi, a first year PhD student from Botswana. My research involves designing environmentally friendly antennas for opportunistic use of unused bandwidth between TV channels known as TV White Spaces (TVWS) to increase communication bandwidth for the Internet of Things and broadband connectivity to remote locations. My project is funded by the Eleanor Emery Scholarship Scheme through the Glasgow Centre for International Development in partnership with the University of Botswana. The scholarship is aimed at staff development at the latter, and I intend to pursue a career in academia upon completion of my studies.

It is a privilege to be working under the tutelage of Dr. Tim Drysdale who has been overseeing my research. The rest of the University staff have been outstanding, as well as my fellow students.

My overall experience at the University of Glasgow has been exciting. Among the many world class research facilities the university has, I have recently started using the anechoic chamber (pictured) to take antenna measurements of our early antenna prototypes and I am looking forward to using the other research facilities. The School of Engineering also encourages and arranges outings for graduate students to unwind which I have taken up and thoroughly enjoyed. The research facilities available and the extra-curricular facilities at the University ensure a balanced student life.



## OUR ENVIRONMENT

We aim to provide all the support that research students need to make their time at Glasgow productive, enjoyable and fruitful. Our graduates leave ready to enter their chosen field and to make a positive difference to the world!

## EXPERTLY TRAINED

The University provides a sector-leading training programme for its research students offering skill development vital for a successful research career. The programme includes academic writing, financial planning, project management, consultancy, and public engagement.

## BUILDING ON INNOVATION

The Innovation Platform is a new training initiative which seeks to encourage students to think innovatively and to develop their entrepreneurial skills. It also provides practical support on, for example, prototyping and business case development.

## AMBITIOUS AND ENGAGED

The Graduate School held the first UK Science Slam in 2013. A Science Slam is an event at which researchers present their research in a way they have never done before, with props, visual aids, audience interaction, sound... Essentially there are no limits and the aim is to convey the purpose of your research to the public in a way in which even the non-expert can understand. This popular event has now become part of the annual calendar of activities for research students. It is events like this which create a sense of community in our Graduate School.

The University is also a participant in the international 3 minute thesis competition. Participants present their research verbally in just three minutes and with related content on only one PowerPoint slide. The winner of the final wins a £1000 travelling/research grant, as well as the opportunity to take part in a national competition, and, for the winners of this, an international, 3MT competition. The University-wide event has been won for two years in a row by Science and Engineering students (and we have also triumphed in the national and international competitions).

## RESEARCH WITH IMPACT

In addition to engaging with the public, researchers are now required to consider the impact of their research - this is particularly useful when it comes to applying for funding in the future or when applying your research

to industry. As such, the Graduate School holds an Impact Poster Event each summer where students have the opportunity to consider the environmental, social or economic impact of their research to an invited audience of industry and alumni.

## PRACTISE YOUR ENGLISH

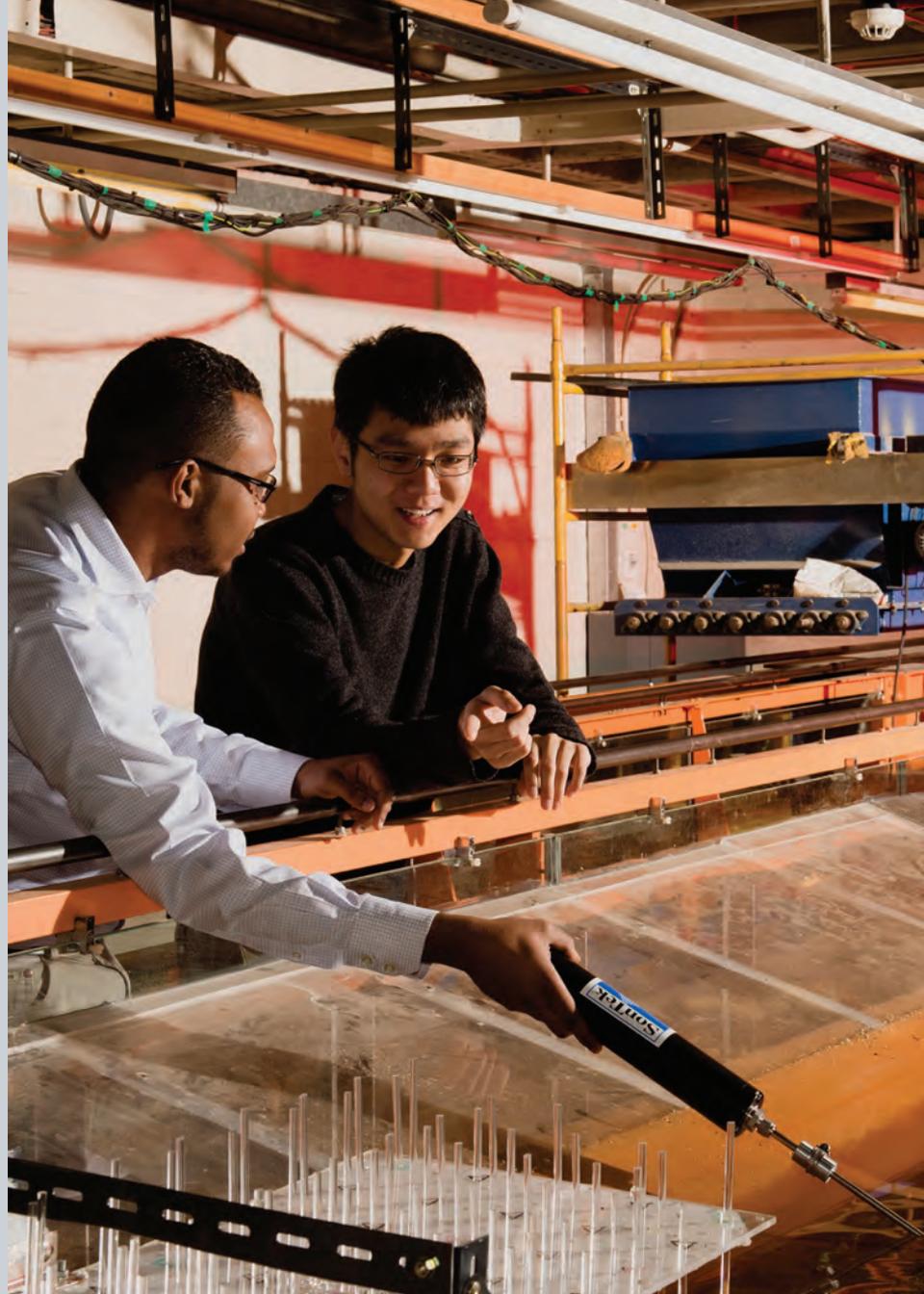
We have formal pre-sessional English classes, and the Graduate School also provides oral English tuition sessions, delivered by a current PhD student. This provides an informal opportunity to practise your spoken English, to meet other PhD students, and to ask any questions at all you might have about the idiosyncrasies of our language! The oral English sessions are very popular with our students and contribute to them being more confident in presenting their research and ideas and to communicating in English.

## WORKING TOGETHER

The Graduate School understands that commencing research studies can be a difficult or isolating time and therefore provides an annual residential event which brings students together to engage in team-building and social activities, and challenges relating to the issues facing researchers. The residential trips have included visits to Gretna Green in the South of Scotland and Edzell in the North. They are a chance for students to see some of the country, to make new friends and to have fun! The activities are lead by current students so it is also a good opportunity to get advice and to learn from their experiences.

## BROADEN YOUR HORIZONS

It is vital for our thriving research community that we provide students from all over the world with the opportunity for studying at Glasgow and are a truly international institution. However, we also consider it important for our students to have the opportunity to study outside Glasgow and to undertake mobility visits where they are provided with the opportunity to undertake fieldwork abroad or to work in renowned research groups at top international institutions. In the past two years, our students have undertaken funded trips to CERN, Harvard, Egypt, Bolivia, China and Greenland (to name but a few).



For more information contact the graduate school:

**SCIENG-GRADSCHOOL@GLASGOW.AC.UK**

For additional details of our research opportunities see:

**GLASGOW.AC.UK/RESEARCH/OPPORTUNITIES**



**WORLD  
CHANGERS  
WELCOME**