INTRODUCTION

The School of Physical Sciences at Kent offers you the opportunity to participate in groundbreaking science in the fields of astronomy, chemistry, forensics and physics. With strong international reputations, our staff provide expert teaching, plausible ideas, well-designed projects, first-class training and unrivalled enthusiasm within a stimulating academic environment.

The School has grown significantly in the last few years and has benefitted from investment in a brand new state-of-the-art, multimillion-pound teaching wing with modern laboratory equipment and computational facilities to accelerate our research.

Leading-edge research
The size and strength of our academic body generates a vibrant research culture and has led us to achieve an outstanding international reputation in many areas. The School achieved excellent results in the most recent Research Assessment Exercise, with 25% of our research ranked as “world-leading” and our Functional Materials Research Group ranked 2nd nationally in the Metallurgy and Materials discipline.

Wide-ranging topics
Our principal research covers a wide variety of topics within chemistry, physics, astronomy and forensics. This ranges from specifically theoretical work on surfaces and interfaces, through mainstream experimental condensed matter physics, astrobiology, space science and astrophysics, to applied areas such as biomedical imaging, forensic imaging and space vehicle protection.

Interdisciplinary approach
Much of the School’s work is interdisciplinary and we have successful collaborative projects with members of the Schools of Biosciences, Computing, and Engineering and Digital Arts at Kent, as well as an extensive network of international collaborations.

Innovative Forensic Imaging team
The School has an innovative research team in Forensic Imaging, bringing together physics and forensic science. The team is developing a computerised photo-fit system and new methods for producing images in facial recognition (see p19). Students can take advantage of this leading research expertise by choosing the optional module in forensic imaging on the taught MSc, or by undertaking a postgraduate research degree with the Forensic Imaging team.

Expert teaching
Our world-leading research feeds directly into the School’s teaching, which means you benefit from our expertise on the very latest breakthroughs and advances in scientific research.

Students on Forensic programmes are taught not only by our expert in-house lecturers, but also by industry specialist lecturers from the Home Office, the Forensic Science Service and the Forensic Explosives Laboratory. We also have strong collaborative links with the Forensic Science Service, Kent Police, local health authorities and with biotechnology, chemical and pharmaceutical companies in the UK and Europe.

Physics teaching is delivered by our lecturers who are leading scientists in their field, such as astrophysicists, who regularly use the most advanced telescopes in the southern hemisphere, and by expert guest lecturers, such as scientists in the space industry and medical physics practitioners.

Highly rated
The School is one of only five institutes nationally to be fully accredited by the Forensic Science Society and endorsed by SkillsMark under the Skills for Justice programme. In addition, Kent was ranked 4th in the UK for overall satisfaction for Physics in The Guardian University Guide 2014. and achieved 85% overall student satisfaction for Chemistry in the National Student Survey 2013.
Excellent facilities

As a student in the School of Physical Sciences, you have access to newly refurbished state-of-the-art laboratories as well as first-class facilities for modern research in physical sciences. These facilities include a dedicated firearms and ballistics kit, forensic investigation equipment, FT-IR microscopy, NMR spectrometers (including solutions at 600 MHz), Raman spectrometer, X-ray fluorescence, atomic absorption and scanning electron microscopy.

Among the major instrumentation and techniques available on the campus are several infrared and UV-visible spectrometers, two powder X-ray diffractometers, atomic absorption in flame and graphite furnace mode, gel-permeation chromatography, gas chromatography, analytical and preparative high-performance liquid chromatography (including GC-MS and HPLC-MS), mass spectrometry (electrospray and MALDI), scanning electron microscopy and EDX, various microscopes (including hot-stage), differential scanning calorimetry and thermal gravimetric analysis, dionex analysis of anions and automated CHN analysis. For planetary science impact studies, there is a two-stage light gas gun.

Strong links

The School is a leading partner in the new South East Physics Network (SEPnet), a consortium of ten universities in the south-east, acting together to promote physics in the region through national and international channels. The School benefits from £12.5 million of funding from the Higher Education Funding Council for England (HEFCE), creating new facilities and resources to enable us to expand our postgraduate research training portfolio.

The School’s research is well supported by contracts and grants, and we have numerous collaborations with groups in universities and major research institutes around the world. In particular, we have strong links with universities in Germany, France, Italy and the USA. UK links include King’s College, London and St Bartholomew’s Hospital, London. Our industrial partners include BAE Systems, New York Eye and Ear Infirmary, and Ophthalmic Technology Inc, Canada. The universe is explored through collaborations with NASA, ESO and ESA scientists.

Funding opportunities

We are pleased to offer a number of postgraduate funding opportunities each year, ranging from small grants to full scholarships. These include Graduate Teaching Assistantships (whereby postgraduate research students receive financial support in return for teaching), Engineering and Physical Sciences Research Council (EPSRC) and Science and Technology Facilities Council (STFC) funded studentships, as well as CASE awards for suitably qualified UK candidates. For further information, see www.kent.ac.uk/pgfunding
STUDENT PROFILE

Reeya Oogarah, from Mauritius, is studying for a PhD research degree in Chemistry.

What attracted you to study at Kent?
I came here to do my BSc (Hons) degree in Forensic Science because the course came first in the UK in the National Student Survey and I was impressed with the programme structure. As I had been here for four years, I knew the academic staff and decided to stay on to do a PhD.

What are you researching?
I’m working on solid state chemistry materials, namely chalcogenides, making new compounds which contain oxygen, selenium and sulphur, which is toxic. I’m synthesising these compounds and I will then investigate their properties (electronic, magnetic, photocatalytic). I aim to investigate where the atoms sit in the crystal structure, at what angle and at what distance and, as per their property measurements, I will infer what their use might be in practical settings such as engineering.

What are you particularly enjoying about your studies here?
I’m enjoying the amount of knowledge I’m gaining, in particular from my supervisor, who is so passionate about her subject. I am attending training courses to expand my grasp of the subject area, in neutron diffraction, powder diffraction and Rietveld refinement.

How are you finding the supervision process?
We send emails every day to let each other know what we’re doing and we have a meeting each week on a specific day. She’s always there when I need her and I’m there when she needs me – it’s a collaborative process.

How are you funding your PhD?
I have a 50th Anniversary Scholarship from Kent, which partly pays my tuition fees and all of my accommodation/living expenses.

As a research student, what support do you get?
The Graduate School offers a lot of support and organises events and workshops, for instance, to improve your presentation skills and writing skills. For physical sciences, the School is accredited by the Royal Society of Chemistry (RSC) and the RSC organise a lot of events so you can meet other chemists and collaborate with them if you need to.

What career are you interested in?
Ideally I’d like a career in the international oil industry, in a research capacity based off-shore if possible. Teaching is always a possibility, my mother and brother are teachers so it’s in the family, and I’ve been tutoring people for quite a while. I enjoy it because I love sharing knowledge.

What does doing a further degree give you that a first degree doesn’t?
It gives you a better chance of getting a job and having a second degree makes you stand out from the crowd in the job market. You are that bit older and, having done a PhD or a Master’s, you are more mature and because of that better prepared for the world of work.

What advice would you give to someone thinking about taking a research degree at Kent?
If they are thinking of studying in the sciences, I’d advise them to look at the facilities available to them and to think carefully about what they want to study to make sure it is right for them. When you study for a PhD, you are specialising in your chosen field and you need to be passionate about it because you’re going to spend a lot of time working on it. All PhD students feel a bit lost to begin with; you walk into a lecture theatre and think ‘What am I doing here?’ But after a few weeks when you get into the work, that passes and it just clicks.

DID YOU KNOW?
As a postgraduate student at Kent, you not only have the support of the Graduate School but also access to a careers service, counselling support and other student support services.
IMPRESSIONS CAREER PROSPECTS

A postgraduate qualification from Kent opens up a wealth of career opportunities by providing an impressive portfolio of skills and specialist knowledge.

As well as providing a first-class academic experience, we want you to be in a good position to face the demands of a tough economic environment. Employers recognise that a postgraduate qualification demonstrates a wide range of skills. At Kent, we provide a comprehensive package of skills development programmes, careers advice, and volunteering and paid work opportunities to help enhance your career prospects.

Skills training
During your programme, you acquire a high level of academic knowledge and specialist practical skills. Kent also helps you to develop key transferable skills that are essential within the competitive world of postgraduate employment, such as the ability to adapt to challenges, analyse complex real-world problems and develop original ideas, that can be applied to all aspects of employment.

The Graduate School
The Graduate School co-ordinates the Researcher Development Programme for research students, in which you can access a wide range of lectures and workshops. These provide training, personal development planning and career development skills. The Graduate School also delivers the Global Skills Award programme for students following taught programmes of study, which is specifically designed to consolidate your awareness of current global issues and improve your employment prospects.

Exciting career options
Kent has an excellent record for postgraduate employment: over 90% of our postgraduate students who graduated in 2012 found a job or further study opportunity within six months.

All programmes in the School of Physical Sciences equip you with the tools you need to conduct research, solve problems, communicate effectively and transfer skills to the workplace, which means our graduates are always in high demand. Our links with industry not only provide you with the opportunity to gain work experience during your degree, but also equip you with the general and specialist skills and knowledge needed to succeed in the workplace.

We constantly monitor how well our programmes meet the demands of today’s increasingly competitive job market. The School’s Forensic Science programmes are taught not only by in-house academic lecturers, but also by expert practitioners from industry.

Graduate destinations
Typical employment destinations for graduates from the Physics programmes include power companies, aerospace, defence, optoelectronics and medical industries. Typical employment destinations for graduates from our Forensic Science/Chemistry programmes include government agencies, consultancies, emergency services, laboratories, research or academia.

Careers Advice
Our Careers and Employability Service can help you to plan for your future by providing one-to-one advice at any stage in your postgraduate studies. It also provides online advice on employability skills, career choices, making applications and interview skills.

Further information
For more information on the careers help we provide at Kent, visit our Employability web page at www.kent.ac.uk/employability
Fatma Salahioglu graduated from Kent in 2013 with a PhD in Chemistry. She now works as a Research Scientist for the Institute of Chemical and Engineering Sciences (ICES) in Singapore.

Why did you choose Kent?
I chose Kent because it offered one of the best forensic science courses among the UK universities. After I started studying at Kent, I knew that I had made the right choice. After graduating with a BSc (Hons) in Forensic Science, I carried on at Kent to do my PhD. The reason for staying on, besides falling in love with Canterbury, was the variety of research projects available to me in chemistry, which gave me the opportunity to use the skills and knowledge I had acquired during my undergraduate studies (especially in Analytical Chemistry).

What attracted you to the course?
In forensic science and chemistry, Kent provides a pleasant research environment, a variety of state-of-the-art analytical instruments and great supervisors. Having studied forensic science, getting the chance to do a PhD in Chemistry (still within my area) equipped me with a wider range of skills and expertise, giving me better opportunities in terms of job prospects.

What did you particularly enjoy?
I enjoyed everything I studied and did research on. In particular, life on the campus was great. Canterbury is an amazing little ‘city’, not too big and crowded, yet still lively because of the number of students.

How did you find the supervision process?
Everyone has a unique style of working; therefore you must choose your supervisors accordingly. My supervisor was the perfect choice; I liked working mostly on my own and at my own pace, but he was always there whenever I needed advice or help. Other people in the department were also extremely helpful.

What are you doing now?
I am working as a research scientist at one of the government laboratories under the Agency for Science, Technology and Research (A*STAR) in Singapore. My general area of work is in analytical chemistry.

How have your studies helped you in your current role?
My PhD research area was mainly on analytical chemistry, particularly in Raman spectroscopy. Not many institutions have a state-of-the-art Raman spectrometer, but Kent provides its researchers with one. This enabled me to gain expertise on Raman spectroscopy, which is an emerging and valuable tool for non-destructive analysis of samples. At the Institute of Chemical and Engineering Sciences in Singapore, they use many advanced analytical instruments, including Raman spectrometers. The hands-on experience I had on spectroscopy and analytics at Kent has greatly helped in my current role.

What advice can you offer potential research students?
Make sure you choose a project that you will enjoy researching for the next three years. Bear in mind that not everything will go smoothly all the time; so if you don’t have passion for your chosen subject, you may end up not enjoying your research experience. Don’t be afraid of trying any new idea that comes to your mind – you never know what doors it will open for you, but do not stray too far off your research area. Not many people realise that doing a PhD means you gain a lot of experience and knowledge in a tiny area of research. You probably won’t have time to do everything you come up with. Stay focused.

GRADUATE PROFILE

Fatma Salahioglu graduated from Kent in 2013 with a PhD in Chemistry. She now works as a Research Scientist for the Institute of Chemical and Engineering Sciences (ICES) in Singapore.

Why did you choose Kent?
I chose Kent because it offered one of the best forensic science courses among the UK universities. After I started studying at Kent, I knew that I had made the right choice. After graduating with a BSc (Hons) in Forensic Science, I carried on at Kent to do my PhD. The reason for staying on, besides falling in love with Canterbury, was the variety of research projects available to me in chemistry, which gave me the opportunity to use the skills and knowledge I had acquired during my undergraduate studies (especially in Analytical Chemistry).

What attracted you to the course?
In forensic science and chemistry, Kent provides a pleasant research environment, a variety of state-of-the-art analytical instruments and great supervisors. Having studied forensic science, getting the chance to do a PhD in Chemistry (still within my area) equipped me with a wider range of skills and expertise, giving me better opportunities in terms of job prospects.

What did you particularly enjoy?
I enjoyed everything I studied and did research on. In particular, life on the campus was great. Canterbury is an amazing little ‘city’, not too big and crowded, yet still lively because of the number of students.

How did you find the supervision process?
Everyone has a unique style of working; therefore you must choose your supervisors accordingly. My supervisor was the perfect choice; I liked working mostly on my own and at my own pace, but he was always there whenever I needed advice or help. Other people in the department were also extremely helpful.

What are you doing now?
I am working as a research scientist at one of the government laboratories under the Agency for Science, Technology and Research (A*STAR) in Singapore. My general area of work is in analytical chemistry.

How have your studies helped you in your current role?
My PhD research area was mainly on analytical chemistry, particularly in Raman spectroscopy. Not many institutions have a state-of-the-art Raman spectrometer, but Kent provides its researchers with one. This enabled me to gain expertise on Raman spectroscopy, which is an emerging and valuable tool for non-destructive analysis of samples. At the Institute of Chemical and Engineering Sciences in Singapore, they use many advanced analytical instruments, including Raman spectrometers. The hands-on experience I had on spectroscopy and analytics at Kent has greatly helped in my current role.

What advice can you offer potential research students?
Make sure you choose a project that you will enjoy researching for the next three years. Bear in mind that not everything will go smoothly all the time; so if you don’t have passion for your chosen subject, you may end up not enjoying your research experience. Don’t be afraid of trying any new idea that comes to your mind – you never know what doors it will open for you, but do not stray too far off your research area. Not many people realise that doing a PhD means you gain a lot of experience and knowledge in a tiny area of research. You probably won’t have time to do everything you come up with. Stay focused.

IMPRESSIVE CAREER PROSPECTS
Kent has an excellent record for postgraduate employment: over 90% of our postgraduate students who graduated in 2013 found a job or further study opportunity within six months.
There is a range of taught postgraduate programmes on offer, so you can choose the degree that reflects your interests. Below is an explanation of what the different degree programmes offer.

The School of Physical Sciences offers the following taught postgraduate programmes:

**Taught**
- Forensic Science GDip
- Forensic Science MSc

**Taught research**
- MSc Physics (EuroMasters)

### Forensic Science GDip

**Location:** Canterbury  
**Attendance:** One year full-time  
**Start:** September  
**Entry requirements:** A first degree or diploma in a science subject or equivalent. Admission may be possible with exemptions for advanced standing and credit accumulation.

The programme provides a broad and balanced foundation to the science and law that underpins forensic practice and methodology in modern society. This includes detailed knowledge of the physical techniques and methods of assay, analysis and examination used by forensic scientists, together with the essential chemical and biological knowledge required for understanding forensic evidence and its presentation.

On completion of the programme, you will be able to proceed to further study in the forensic area or in aspects of chemistry, physics or bioscience that are relevant to forensic and related practices.

#### Course content

Please note that the list below provides an example of the types of modules that are typically on offer. Exact modules vary from year to year. Please contact us for more information:

- Six modules drawn from: Criminal Law for Forensic Scientists; Firearms and Ballistics; Fires and Explosions; Forensic DNA Analysis; Forensic Expert Witness Skills; Forensic Physical Methods; Image Processing; Law of Evidence for Forensic Scientists.
- Advanced Forensic Science Project

#### Assessment

Assessment is by examination and coursework.

### Forensic Science MSc

**Location:** Canterbury  
**Attendance:** One year full-time  
**Start:** September  
**Entry requirements:** Minimum 2.1 degree in forensic science or a forensic-related subject.

This course is for graduates with a strong grounding in forensic science who wish to advance their knowledge of the field. The programme prepares you for a professional role in forensic science within the criminal or civil judicial system, police or forensic practice, or research. You develop command, control and management skills that will enable you to present expert evidential incident reports at court to the highest standard.

You also develop your knowledge and understanding of advanced laboratory analytical methods applied to forensic investigation. This enables you to select the most appropriate analytical techniques for forensic investigation and to use a wide range of advanced analytic apparatus to evidential standards.

At the end of the degree, you will have gained the skills and knowledge to recognise and solve forensic-related problems at an advanced level. In addition to enhancing the employment opportunities and career prospects of graduates in forensic science and related subject areas, this

“The MSc in Forensic Science offers higher level training than is found in undergraduate forensic science degrees, enabling its graduates to undertake more senior forensic roles. There is also a strong emphasis on research methodology, allowing you to develop new forensic procedures as well as embark on a research career in a variety of scientific areas.”

Michael Went  
Professor of Chemistry and Forensic Science
The programme helps you to develop an integrated and critical understanding of forensic science to prepare you to undertake a PhD in any associated discipline.

Course content
Please note that the list below provides an example of the types of modules that are typically available.

- Advanced Forensic Project Laboratory
- DNA Analysis and Interpretation (from 2015)
- Fires and Explosions
- Incident Management
- Physical Science Research Planning
- Substances of Abuse
- MSc Research Project

Assessment
Assessment is by examination and coursework.

MSc Physics (EuroMasters)
Two-year programme, 120 ECTS credit equivalent.

The School offers an exciting two-year Master's degree in Physics in partnership with the South East Physics Network (SEPnet), which includes the universities of Kent, Hertfordshire, Portsmouth, Queen Mary London, Royal Holloway London, Southampton, Surrey, Sussex and the Open University.

The programme involves both a taught and research component. In the first year, you follow a taught Master’s course, which includes specialised research, and in the second year, you undertake an advanced research project with the option to change locations to a SEPnet partner university or research institution. This may include Cern, Switzerland, the UK’s Rutherford Appleton Laboratory, ISIS, Diamond or the National Physical Laboratory. The School of Physical Sciences at Kent offers EuroMasters research strands in Atomic and Condensed Matter and Astrophysics.

The MSc in Physics (EuroMasters) is fully compatible with the European Credit Transfer Accumulation System (ECTS) across the European Union and other collaborating European countries, and qualifies students to pursue a PhD or a career in physics upon completion. It is also open to UK entrants.

SEPnet scholarships are available for this programme, which cover tuition fees and may provide up to €13,000 towards living expenses; please state your interest when making enquiries or when applying.

Course content
The list below is an example of the types of modules typically available.

Year 1
- Biomedical Optics
- Magnetism and Superconductivity
- Particle and Quantum Physics
- (Physical Science) Research Planning
- Research Review
- Space, Astronomy and Solar System Science

Plus optional modules drawn from:
- Advanced Cosmology and Interstellar Medium
- Rocketry and Human Space Flight
- Topics in Functional Materials.

Year 2
- Research Project

CONTINUED OVERLEAF
This is a selection of modules offered on taught postgraduate programmes in the School of Physical Sciences at Kent.

**Advanced Cosmology and Interstellar Medium**
This module provides an in-depth study of selected astrophysics material to prepare you for entry to a research degree in the field of astronomy and astrophysics.

The first part concerns the origin of stars and the nature of the space in between the stars while the second part looks at the early origins of galaxies with associated material ranging from inflation to quasars. An emphasis is placed on observational astronomy.

**Advanced Forensic Project Laboratory**
Through lectures, tutorials and laboratory experiments, this module provides you with hands-on experience of a range of advanced chemical and physical laboratory techniques. These include atomic absorption spectroscopy, NMR spectroscopy, X-ray fluorescence, X-ray diffraction, Raman spectroscopy and UV-vis/fluorescence. You are then asked to design and conduct an experiment on a particular instrument with the assistance of a supervisor.

**Advanced Forensic Science Project**
In this module, you develop research methods and skills in order to prepare you for a research career either in industry or at doctorate level. The module also provides you with training in and experience of communicating research results orally and in writing. In addition, you deepen your knowledge of a specialised area of forensic science. Students work individually on a project topic chosen from a list under the guidance of a supervisor.

**Biomedical Optics**
This module introduces you to the concepts of propagation of light into the tissue and optical imaging methods, with an emphasis on confocal microscopy and white light interferometry for optical coherence tomography. You acquire an understanding of the interaction of low power optical waves with the tissue and of the principles of white light interferometry applied for imaging tissue. You also gain a sound knowledge of the principles of fluorescence, adaptive optics, confocal microscopy and optical coherence tomography applied in imaging the eye and the skin.

**Criminal Law for Forensic Scientists**
This module introduces you to aspects of the procedure and practice of the criminal process. You gain a grounding in the concepts and principles underlying criminal law and look at specific offences, in particular relating to homicide and non-fatal offences, which are especially relevant to forensic science students.
Fires and Explosions
The investigation of causes of fires is one of the most difficult studies undertaken by forensic scientists. This module includes the study of combustion and explosion, flammability, ignition and chain reactions. The forensic aspects are illustrated with case studies.

Forensic DNA Analysis
In this module, you cover the following topics: polymerase chain reaction (PCR); DNA sequencing; genetic fingerprinting case studies; interpretation of DNA profiles; mitochondrial DNA analysis, statistical evaluation of results; forensic sample preparation and additional biological indicators; sample preparation for DNA analysis; examination of body fluids; basic principles of DNA fingerprinting in a forensic setting; analysis of DNA from single cells; forensic applications of DNA analysis in non-violent crimes; comparison of the advantages and disadvantages of DNA-based and non-DNA based analytical techniques; forensic entomology; forensic botany.

Forensic Expert Witness Skills
The end product of almost every forensic scientific investigation consists of presenting the results to law authorities. In this module, we discuss topics important to the presentation of expert forensic evidence. You gain knowledge of the importance of forensic contribution in the context of disclosure of expert evidence, courtroom evidence, case documentation, report writing and statement preparation.

Forensic Physical Methods
You are introduced to forensic physical methods in developed countries, equipping you to think critically in relation to these methods and their application. Areas covered include: crime scene management, interviews and evidential procedures; fingerprints; contact and trace evidence marks and impressions; forgery and document analysis; and incident photography. The module involves a number of practical sessions in the laboratory.

Image Processing
This module provides students with knowledge of the key principles of imaging and image processing, to inform them of the real-world applications of the material presented and provide a learning environment in which some of these principles can be tested and used in a practical way. Students are introduced to the MATLAB programming language thus allowing them to implement many of the image processing techniques discussed in the lectures.

Firearms and Ballistics
This module covers a range of interesting topics, such as:
- a modern multidisciplinary approach to ballistics
- cartridge case and bullet analysis
- external ballistics
- gunshot residue analysis
- internal ballistics
- introductory thermodynamics of weapon systems
- modern ballistics research
- serial number restoration
- suppressors
- trajectory analysis
- wound ballistics
- sharp-force trauma
- shooting scene reconstruction
- the effects of Improvised explosive Devices (IEDS)
- weapon failure.

Incident Management
You cover incident management from a tactical/regional and national/strategic perspective using the four-stage model: identification, preparation, mitigation and recovery. Through lectures, critical evaluation of case studies, real-time and simulated incident exercises, and the preparation and presentation at court of incident command reports, you examine a range of accidents and incidents, including air accident, marine accident, rail accidents, terrorist attacks, and industrial, nuclear and chemical incidents.

You are required to explore all aspects of scene and major incident management, disaster planning and related legislation. This encompasses emergency management and planning legislation, damage limitation, evacuation plans, logistical support, inter-agency operation and co-operation, personnel management, evidence prioritisation, preparing incident reports and presenting such reports at court.
Magnetism and Superconductivity
This module covers the following topics: electrons in solids; introduction to properties of superconductors, thermodynamics and electrodynamics of superconductors, Type I and Type II superconductors, the flux lattice; superconducting phase transitions; microscopic superconductivity, correlations lengths, isotope effect, Cooper pairs, Froehlich Interaction, BCS theory; High Tc superconductors, superfluids, liquid helium; magnetism, magnetometry and measuring techniques; localised and itinerant magnetic moments, spin and orbital moments, magnetic moments in solids; paramagnetism; exchange interactions, direct, indirect and superexchange, magnetic structures, ferro, ferri, antiferromagnetism; neutron and X-ray scattering; spin waves, magnons; and magnetic phase transitions.

Law of Evidence for Forensic Scientists
The role of evidence in a courtroom is technical but its rules reflect core principles of the due process of law. It is becoming increasingly important for forensic scientists, who may act as expert witnesses, to have an understanding of these rules and their operation in the trial process. This module considers the position of forensic evidence within the trial process, the rules governing the recognition of such evidence and the perception of its value in the trial. In addition, matters such as the function of the judge and jury, burden and standard of proof, and hearsay are considered from a central focus of how they relate to forensic evidence.
MSc Research Project (Forensic Science)

You undertake an individual Master’s-level research project working under the guidance of a supervisor. The project allows you to deepen your knowledge in a specific area of research and prepares you for a research career either in industry or at PhD level. You also gain experience of communicating research results orally and in writing.

Numerical, Statistical and Analytical Skills

This module develops mathematical tools and the critical assessment of data. It provides you with the basis for understanding chemical arithmetic, the quantitative analysis of reacting chemical and enzymatic systems, reaction kinetics and the application of statistics in a forensic context. Laboratory work gives you experience of a range of analytical investigations with forensic applications, using several types of advanced instrumentation.

Particle and Quantum Physics

You are introduced to the basics of modern quantum theory and particle physics. Topics covered include: approximation methods, perturbation theory, variational methods; classical/quantum mechanics, measurement and the correspondence principle; uncertainty principle and spin precession; key experiments in modern quantum mechanics (Aharonov-Bohm, neutron diffraction in a gravitational field, EPR paradox); experimental methods in particle physics (accelerators, targets and colliders, particle interactions with matter, detectors, the LHC); Feynman diagrams, particle exchange, leptons, hadrons and quarks; symmetries and conservation laws; hadron flavours, isospin, strangeness and the quark model; weak interactions, W and Z bosons.

(Physical Science) Research Planning

In this module, you develop a number of skills related to the planning and preparation of a research proposal. You learn how to search and retrieve information from a variety of locations (books, databases, websites), and produce a professional document such as a grant proposal for funding a research activity in a direction of your choice. You also have the opportunity to present your grant proposal in front of members of staff.

Research Project (EuroMasters)

You undertake an individual research project working under the guidance of a supervisor. The project allows you to deepen your knowledge in a specific area of research and prepares you for a research career either in industry or at PhD level. You also gain experience of communicating research results orally and in writing. Past students’ work has led to publication in scientific journals.
Research Review
In consultation with a member of staff, you choose a topic within a physics discipline and write an article based on that topic suitable for publication in the scientific literature as a review article. You are assigned a tutor who can advise you on the subject and direct you to the relevant literature when required.

Rocketry and Human Space Flight
This module introduces the concept of the human occupation of space, via discussion of space medicine and the International Space Station. You study aspects of the design and operations of spacecraft, and gain sufficient knowledge of spacecraft systems to enable you to move on to specialist employment or research in the field.

Space, Astronomy and Solar System Science
How can astronomy be carried out from Earth’s orbit and how can the solar system be explored by spacecraft? How has our solar system evolved and what is its composition? This module looks at space astronomy, the exploration of the solar system, solar system evolution, extra-solar planets and special topics, including the Kuiper Belt, Titan, solar system dust, terrestrial impacts and a current solar system science space mission.

Substances of Abuse
This module provides a comprehensive overview and understanding of the common illicit substances of abuse, including regulations, syntheses and preparations, pharmacokinetics and forensic analyses.

“As a postgraduate student, I was more involved in the workings of the School and it was lovely to feel I had such a fundamental role. PhD study allowed me to undertake new challenges and gain a lot of new experiences, increasing my knowledge continuously. Having a postgraduate degree also demonstrates you can go that little bit further in your education and you’ve got the dedication to succeed.”

Holly French
PhD Chemistry
RESEARCH DEGREES

The School of Physical Sciences is an internationally recognised research-led department and a centre of excellence in several fields of chemistry and physics. We offer a dynamic environment in which to conduct research across a range of topics in the physical sciences.

Our research programmes

The School of Physical Sciences offers the following research degree programmes:

Physics MSc, PhD
Chemistry MSc, PhD

Location: Canterbury.
Attendance: MSc one year full-time or two years part-time; PhD three years full-time or five years part-time.
Start: At any time, preferably in September.
Entry requirements: A first or second class honours degree in chemistry or physics. We also consider applicants with degrees in computer science, electronics, biochemistry or other closely related disciplines.

Research programmes are suited to students who have a clear idea of a topic they would like to investigate in detail. The MSc by Research entails producing a thesis of 130-150 pages; the PhD programme demands a high level of research and analysis, resulting in a thesis of between 160-225 pages.

Supervision

We make every attempt to allocate you to a supervisor directly in your field of interest, consistent with available funding and staff loading. When you apply, please give specific indications of your research interest – including, where appropriate, the member(s) of staff you wish to work with – and whether you are applying for a studentship or propose to be self-funded. A number of example research projects are published on our website. However, we also welcome applications from students who wish to devise their own research project within the broad fields of expertise of our academic staff.

For some guidelines as to who might be best suited for supervision in a range of areas, please refer to the research groups listed overleaf. Further information on staff research interests can be found on p20.

Research training

The School of Physical Sciences encourages all postgraduate students to develop their transferable skills. We work closely with Kent’s Graduate School which co-ordinates the Research Development Programme for all postgraduate and postdoctoral researchers at the University.

Transferable skills training is designed to equip you with a full range of skills that will improve your effectiveness as a researcher, and ensure that you are not only highly qualified but employable in a variety of careers by the end of your research project.

We require all new postgraduate research students to complete a skills-training audit. The expectation is that new postgraduate research students will undertake the skills audit during the autumn term of their first year as part of their induction/probation process.

The School has developed a comprehensive Personal Development Plan to help research students develop their transferable skills each year. In addition to the Personal Development Plan and the requirement for students to fulfil ten days of Personal Development training each year, you are also required to attend a minimum of six colloquia in physical sciences or related subjects in order to maintain a breadth of academic knowledge in the sciences. We also recognise that transferable skills may be developed and fostered during the course of your research degree. Different mechanisms are used to support learning and skills development as appropriate, including self-direction, supervisor...
The Group is developing systems in collaboration with a variety of different national and international institutions to extend the OCT capabilities, from systems dedicated to eye imaging to systems for imaging skin and tooth caries. Distinctively, the OCT systems developed at Kent can provide both transverse and longitudinal images from the tissue, along with a confocal image. The New York Eye and Ear Infirmary is now evaluating a copy of our instrument, which blends fluorescence, confocal and OCT technologies.

Another project is evaluating the capability of OCT in the conservation of fine art, in collaboration with Nottingham Trent University, the National Gallery and the British Museum. Spectroscopic analysis using OCT is another area of active research with wide implications in medicine, industry and art, which aims to add spectral information to the depth-resolved information. The Group also conducts more fundamental research on polarisation-sensitive OCT, eye tracking and oximetry, which all address different aspects of the basic OCT technique.

In addition, research students benefit from the specific skills training workshops offered by the University’s Graduate School – see www.kent.ac.uk/graduateschool for details.

Research groups

Applied Optics Group
Optical sensors
This activity largely covers research in the fundamental properties of guided wave interferometers, and their application in fields ranging from monitoring bridge structures to diagnostic procedures in medicine.

Staff
Dr George Dobre.

Biomedical imaging/optical coherence tomography (OCT)
OCT is a relatively new technique which can provide very high-resolution images of tissue, and has a major application in imaging the human eye. We are investigating different in-fibre configurations to increase the rate at which images are acquired without compromising the depth penetration.

The Group is developing systems in collaboration with a variety of different national and international institutions to extend the OCT capabilities, from systems dedicated to eye imaging to systems for imaging skin and tooth caries. Distinctively, the OCT systems developed at Kent can provide both transverse and longitudinal images from the tissue, along with a confocal image. The New York Eye and Ear Infirmary is now evaluating a copy of our instrument, which blends fluorescence, confocal and OCT technologies.

Another project is evaluating the capability of OCT in the conservation of fine art, in collaboration with Nottingham Trent University, the National Gallery and the British Museum. Spectroscopic analysis using OCT is another area of active research with wide implications in medicine, industry and art, which aims to add spectral information to the depth-resolved information. The Group also conducts more fundamental research on polarisation-sensitive OCT, eye tracking and oximetry, which all address different aspects of the basic OCT technique.

Staff
Dr George Dobre, Professor Adrian Podoleanu.

Forensic imaging
The research of the forensic imaging team is primarily applied, focusing on mathematical and computational techniques, and employing a wide variety of image processing and analysis methods for applications in modern forensic science. The Group has attracted approximately £850,000 of research funding in the last five years, from several academic, industrial and commercial organisations in the UK and the US. It also collaborates closely with the Forensic Psychology Group of the Open University.

Current active research projects include:
• the development of high-quality, fast facial composite systems based on evolutionary algorithms and statistical models of human facial appearance
• interactive, evolutionary search methods and evolutionary design
• statistically rigorous ageing of photo-quality images of the human face (for tracing and identifying missing persons)
• real and pseudo 3D models for modelling and analysis of the human face
• generating ‘mathematically fair’ virtual line-ups for suspect identification.

Staff
Dr Stuart Gibson, Dr Christopher Solomon.
Functional Materials Group

Research in the Functional Materials Group is concerned with synthesis and characterisation of functional materials, as exemplified by materials with useful optical, catalytic or electronic properties, and with an emerging theme in biomaterials. The Group also uses computer modelling studies to augment experimental work. The research covers the following main areas:

Amorphous and nanostructured solids

Our main interest lies in inorganic solids (primarily ceramics and glasses) which possess useful functional properties (e.g., electrical, optical, catalytic) stemming from their composition and/or nanostructures. Research includes the synthesis of novel materials, the experimental characterisation of their atomic and nanoscale structure and the computer modelling of these structures and associated properties. Understanding these complex materials demands the use of a range of advanced modern characterisation methods. The truly atomic scale probes available to us are X-ray absorption spectroscopy, and X-ray and neutron diffraction. Porosimetry and analogous techniques, such as small angle scattering, allow us to probe length scales approaching microns. Our work relies on access to world-class international facilities such as the ISIS pulsed neutron source at the Rutherford Appleton Laboratory, and the ILL neutron and ESRF synchrotron x-ray sources in Grenoble (France). Advanced computer modelling and simulation methods are increasingly being integrated with the experimental work.

Soft functional materials

One of the most exciting areas of contemporary materials research is the design of ‘soft’ functional materials organised at the nanoscale, using organic, organometallic, polymer and inorganic chemistry to investigate the synthesis of such materials. The functionality in these materials comes from one or two properties: (i) the self-assembly of varying constituent molecular or macromolecular sub units; (ii) the incorporation of biologically derived motifs. The materials are being developed as smart adhesive materials for biomaterial applications, self-assembling bioactive, electroactive and drug delivery vehicles and conducting/photoconducting liquid crystalline materials. The Group’s research incorporates a range of synthetic skills (peptide, ligand, polymer, heterocyclic, organometallic and inorganic synthesis), using fully equipped synthetic laboratories with the associated characterisation techniques (FT-IR, UV-Vis, 1H, 13C and 29Si NMR spectroscopy, polarimetry). The Group uses a number of means to examine the organisation of self-assembling materials including DSC, DMTA, polarising optical microscopy.
RESEARCH DEGREES (CONT)

X-ray diffraction, dynamic NMR spectroscopy and electron microscopy.

Staff
Dr Robert Benfield, Dr Stefano Biagini, Dr Barry Blight, Dr Simon J Holder, Professor Michael Went.

Theory and modelling of materials
The Group’s interest focuses on first principles modelling of rare earth materials, carbon nanotubes and oxides, and classical modelling of ionic solids and glasses. We primarily use first principles simulations to solve problems in condensed matter physics and materials chemistry.

In the case of ionic solids, we also use classical modelling to study properties that require computer calculations. First principles simulations are predictive and powerful tools, giving access to accurate energies and electronic structures. One strand of our research covers nanostructured materials, surfaces, oxides, carbon and water/ice in situations ranging from vacuum surface science to complex nanostructured battery electrodes. The related applications include filled and functionalised nanotubes, electrochromic oxides and battery materials.

Another strand of research covers first principles simulations involving relativistic quantum mechanics. These are needed to accurately model the properties of rare earth materials and relativistic effects in materials, including superconductivity. We also undertake classical modelling to study time-consuming properties, such as diffusion in ionic crystals and medium-range structure of glasses.

Staff
Dr Maria Alfredsson, Dr Donna Arnold, Dr Barry Blight, Dr Sam Carr, Dr Anna Corrias, Professor Mark Green, Dr Emma McCabe, Dr Gavin Mountjoy, Dr Emma Pugh, Dr Jorge Quintanilla, Dr Silvia Ramos-Perez, Professor Paul Strange.

Centre for Astrophysics and Planetary Science
The Centre’s research focuses on observational and modelling programmes in star formation, planetary science and early solar system bodies, galactic astronomy and astrobiology. We gain data from the largest telescopes in the world and in space, such as ESO’s Very Large Telescope, the New Technology Telescope, the Spitzer Telescope and the Herschel Space Observatory. We also use our in-house facilities, which include a two-stage light gas gun for impact studies.

Staff are involved in a wide range of international collaborative research projects. Areas of particular interest include star formation, extragalactic astronomy, solar system science and instrumentation development.

Staff
Professor Mark Burchell, Dr Dirk Froebrich, Dr Stephen Lowry, Dr Jingqi Miao, Dr Mark Price, Professor Michael Smith.
In early tests, volunteers were about twice as likely to recognise a face constructed through the algorithm-based software as through today’s photofit mugshots.

VisionMetric’s software products are used by 90 per cent of UK police forces as well as in 30 countries worldwide. The technology has also featured on television programmes such as Crimewatch, BBC Breakfast and Cowboy Builders – where it was used to track down rogue workmen.

"EFIT-V is a relatively new technology that is starting to make a real difference in crime-solving," says Dr Stuart Gibson of the Forensic Imaging Group. “The software is updated regularly to meet the needs of the police in the UK and security services abroad.”
The School of Physical Sciences comprises 35 academic staff who support teaching and research across a range of areas, and 17 emeritus and honorary staff.

Academic staff

Dr Maria Alfredsson: Senior Lecturer in Theoretical Materials
Core expertise
Quantum-mechanical modelling of clusters, surfaces and solids; inter-atomic potential calculations of defects and grain-boundaries; high pressure and temperature simulations; H-bonding.

www.kent.ac.uk/physical-sciences/staff/profiles/maria-alfredsson.html

Dr Donna Arnold: Senior Lecturer in Forensic Science
Core expertise
Synthesis and characterisation of bulk and nanostructured novel multiferroics (materials which exhibit electric and magnetic ordering); enhancement of the ferroelectric and magnetic properties of bismuth ferrite through chemical doping.

www.kent.ac.uk/physical-sciences/staff/profiles/donna-arnold.html

Dr Robert Benfield: Senior Lecturer in Inorganic Chemistry
Core expertise
The structure and bonding of metal clusters and nanowires; ordered arrays of metal nanowires contained within mesoporous alumina membranes, and nanoparticles of cobalt.

www.kent.ac.uk/physical-sciences/staff/profiles/robert-benfield.html

Dr Stefano Biagini: Senior Lecturer in Organic Chemistry
Core expertise
Ring-opening metathesis polymerisations; complex monomer syntheses; block copolymers, self-assembly, properties and applications; nuclear medicine; unnatural amino acid and peptide syntheses; radiolabelling; nanoparticles; surface modifications on silica magnetite.

www.kent.ac.uk/physical-sciences/staff/profiles/stefano-biagini.html

Dr Barry A Blight: Lecturer in Organic Chemistry
Core expertise
Synthesis of new self-assembled organic materials; supramolecular chemistry; metal-organic frameworks employed as heterogeneous organo-catalysts.

www.kent.ac.uk/physical-sciences/staff/profiles/barry-blight.html

Professor Mark Burchell: Professor of Space Science; Dean of the Faculty of Sciences
Core expertise
Hypervelocity impacts, very violent events typical of solar system impacts, including: impact cratering in ices, intact capture in aerogel, impact disruption of target bodies, oblique incidence impacts, astrobiology (survival of microbial life in impact events); detection of solar system dust using impact ionisation and other techniques; studies of comets, minor bodies and planetary and satellite surfaces; impact damage to space vehicles.

Main publications
Five papers in Science and over 150 refereed journal articles.

www.kent.ac.uk/physical-sciences/staff/profiles/mark-burchell.html

Dr Sam Carr: Lecturer in Physics
Core expertise
Theoretical condensed matter physics, in particular field theory and non-perturbative techniques applied to strongly correlated quantum many-body systems.

www.kent.ac.uk/physical-sciences/staff/profiles/sam-carr.html

Dr Anna Corrias: Reader in Chemistry
Core expertise
Preparation and characterisation of various materials: oxide glasses, amorphous alloys, nanocrystalline alloys and nanocomposites consisting of metal or metal oxide nanoparticles embedded in a silica matrix.

www.kent.ac.uk/physical-sciences/staff/profiles/anna-corrias.html
Dr George Dobre: Lecturer in Applied Optics

Core expertise
Optical coherence tomography; optical design; interferometric sensors; fibre optic sensors.

Mr Robert Green OBE: Senior Lecturer in Forensic Science

Core expertise
The practical applications of forensic science to solve both minor and major crimes. Research interests in the areas of: toxicology; the analysis of legal highs and other biometric projects.

www.kent.ac.uk/physical-sciences/staff/profiles/robert-green.html

Dr Dirk Froebrich: Senior Lecturer in Astronomy and Astrophysics

Core expertise
Earliest stages of star and star cluster formation; structure and properties of molecular clouds; structure analysis of star clusters.

www.kent.ac.uk/physical-sciences/staff/profiles/dirk-froebrich.html

Dr Stuart Gibson: Lecturer in Forensic Science

Core expertise
Digital image processing with forensic applications; machine learning; signal processing; computer vision; interactive evolutionary computation (IEC) and cognitive psychology relating to human facial appearance.

www.kent.ac.uk/physical-sciences/staff/profiles/stuart-gibson.html

Dr Simon J Holder: Senior Lecturer in Organic Chemistry

Core expertise
Synthesis and application of novel polymeric materials; polymerisation of dichlorodiorganosilanes to improve the yields, allowing for the first time the high yield synthesis of characterization of the nickel(i) oxide LaNiO2', *Journal of the American Chemical Society*, 121, 8843-8854 (1999, co-author).


‘Structure of the n=2 and n= member of the Ruddlesden-Popper compounds, Srn+1Sn3nO3n+1’, *Journal of Inorganic Materials*, 2, 35 (2000, co-author).


www.kent.ac.uk/physical-sciences/staff

Professor Mark Green: Head of School of Physical Sciences

Core expertise

Selected publications:

‘Sodium hydride as a powerful reducing agent for topotactic oxide deintercalation: synthesis and
Dr Jingqi Miao: Senior Lecturer in Theoretical Astrophysics

**Core expertise**
SPH numerical simulation of collapsing molecular clouds; effect of UV radiation on the Bright Rim clouds; DSMC modelling of space particles impacts on spacecraft; structures/formation of proplyds.

**Main publications**
- ‘Link between optical spectra, crystal field parameters and local environments of Eu3+ ions in Eu2O3 doped sodium disilicate glass’, *Physical Review* (2011, co-author);

www.kent.ac.uk/physical-sciences/staff/profiles/jingqi-miao.html

---

Mr Mark Johnson: Senior Lecturer in Forensic Science

**Core expertise**
Major incident management; evidence recovery and preservation; firearms; ballistics; collision analysis; court presentation and procedure.

www.kent.ac.uk/physical-sciences/staff/profiles/mark-johnson.html

---

Dr Stephen Lowry: Senior Lecturer in Astronomy and Astrophysics

**Core expertise**
Comets, asteroids, solar system, spacecraft and remote observation.

www.kent.ac.uk/physical-sciences/staff/profiles/stephen-lowry.html

---

Dr Emma E McCabe: Lecturer in Chemistry

**Core expertise**
Synthesis and characterisation of complex oxides and mixed anion systems for applications relating to energy and data storage; magnetic ordering; powder diffraction and Rietveld refinement.

www.kent.ac.uk/physical-sciences/staff/profiles/emma-mccabe.html

www.kent.ac.uk/physical-sciences/staff/profiles/gavin-mountjoy.html

**Professor Bob Newport:** Professor of Materials Physics  
**Core expertise**  
Atomic-scale structure of novel amorphous materials via an interdisciplinary approach using advanced probe methods such as neutron diffraction and synchrotron X-ray absorption spectroscopy, together with computer simulation and modelling and other complementary methods. Materials include bioactive glasses for tissue regeneration and drug delivery.  
**Main publications**  
www.kent.ac.uk/physical-sciences/staff/profiles/rj-newport.html

**Professor Adrian Podoleanu:** Professor of Biomedical Optics; Head of Applied Optics Group  
**Core expertise**  
Non-invasive imaging of tissue, especially optical coherence tomography and confocal microscopy applied to medical imaging and art conservation; optical sensing; fast optoelectronics.  
www.kent.ac.uk/physical-sciences/staff/profiles/adrian-podoleanu.html

**Dr Mark Price:** Senior Lecturer in Space Science  
**Core expertise**  
Experimentally based and computer modelling of hypervelocity impacts relevant to the evolution of solar system bodies.  
www.kent.ac.uk/physical-sciences/staff/profiles/mark-price.html

**Dr Emma Pugh:** Lecturer in Physics  
**Core expertise**  
Experimental condensed matter physics; magnetism, unconventional superconductivity, quantum condensed states; use of low temperature, high pressure and high magnetic field sample environments; use of central facilities including X-ray and neutron scattering centres.  
www.kent.ac.uk/physical-sciences/staff/profiles/emma-pugh.html

**Dr Jorge Quintanilla:** Lecturer/SEPnet Fellow in Condensed Matter Theory  
**Core expertise**  
Condensed matter theory, with special emphasis on symmetry and topology of superconductors, strongly-correlated electron systems and ultra-cold atomic gases. A broad range of analytical and computational techniques are applied, usually working with simple models that capture the essential physics of highly non-trivial quantum many-body systems. Some of the work is carried out in close collaboration with experimentalists.  
**Research group blog**  
www.cond-mat.org/  
www.kent.ac.uk/physical-sciences/staff/profiles/jorge-quintanilla.html

**Dr Silvia Ramos-Perez:** Lecturer in Materials Physics  
**Core expertise**  
Strongly correlated quantum matter. Atomic and electronic structure; characterisation of materials using microscopic probes available at large facilities such as X-rays, neutrons and muons; interest in materials with competing electronic order (such as superconductors or magnets) and emergent electronic order at interfaces.  
www.kent.ac.uk/physical-sciences/staff/profiles/silvia-ramos.html

CONTINUED OVERLEAF
Dr Dean C Sayle: Reader in Chemistry
Core expertise
Using Molecular Dynamics (MD) to simulate: nanoparticles, nanorods, nanosheets, nanoporous architectures, thin-films and interfaces, core-shell systems, grain-boundaries, dislocations, point defects and polymorphism. Applications include: catalysis, surface reactivity, solid oxide fuel cells and rechargeable Li-ion batteries, mechanical properties and nanomedicine. Atom-level models are generated by simulating: crystallisation, self-assembly and oriented attachment and nanocasting using silica scaffolds.

Main publications
‘The induction of angiogenesis by cerium oxide nanoparticles through the modulation of oxygen in intracellular environments, Biomaterials (2012, co-author).

www.kent.ac.uk/physical-sciences/staff/profiles/dean-sayle.html

Dr Christopher Shepherd: Lecturer in Forensic Science
Core expertise
Ballistics with a particular emphasis on the application of modern techniques to interrogate the wounding potential of different projectiles on the human body for forensic applications.

www.kent.ac.uk/physical-sciences/staff/profiles/christopher-shepherd.html

Professor Michael Smith: Professor of Astronomy
Core expertise
Star formation; molecular clouds; radio galaxies; shock waves; planetary nebulae.

Main publications

www.kent.ac.uk/physical-sciences/staff/profiles/michael-smith.html

Dr Chris Solomon: Reader in Physics
Core expertise
Digital image processing with forensic applications; facial modelling and facial composites, computer vision; interactive evolutionary and soft computing and cognitive psychology relating to human facial appearance.

www.kent.ac.uk/physical-sciences/staff/profiles/chris-solomon.html

Professor Paul Strange: Professor of Physics
Core expertise
Relativistic quantum theory, quantum coherence, super-oscillations, quantum mechanics and prime numbers, relativistic effects in materials, first principles calculation of the properties of condensed matter, the electronic and magnetic properties of rare earth materials. I am particularly interested in the borders between theories, particularly between classical and quantum theory, and between relativistic and non-relativistic physics.

Main publications

www.kent.ac.uk/physical-sciences/staff/profiles/paul-strange.html

Professor Michael Went: Professor of Chemistry and Forensic Science
Core expertise
Synthesis of new radio-pharmaceuticals; forensic analysis.

Main publications

www.kent.ac.uk/physical-sciences/staff/profiles/michael-went.html
General entry requirements

If you wish to apply for a higher degree, you must normally have a first or second class honours degree in a relevant or appropriate subject, or the equivalent from an internationally recognised institution (for more information on requirements for international qualifications, visit www.kent.ac.uk/internationalstudent/country).

You must hold a minimum of a 2.1 honours degree or equivalent in forensic science or a related subject for the MSc in Forensic Science, and a 2.2 honours degree or equivalent, preferably in physics, for the EuroMasters.

The Graduate Diploma in Forensic Science is best suited to those with a chemistry or biology background who wish to undertake a one-year training in forensic science. We therefore ask for a minimum of a 2.2 honours degree or equivalent in a science subject, preferably chemistry or biology.

For specific entry requirements, please refer to individual programme entries.

English language

The University requires all non-native speakers of English to reach a minimum standard of proficiency in written and spoken English before beginning a postgraduate degree.

You should provide us with one of the following: an IELTS certificate with a minimum score of 6.5, including 6.0 in reading and writing and 5.5 in listening and speaking or a Pearson Test of English (Academic) with a score of 62 (including 60 in all four subtests).

Please note: We only accept TOEFL tests taken before 18 April 2014; for details of the test scores we require see www.ac.uk/ems/eng-lang-reqs.

For further information, see www.kent.ac.uk/ems/eng-lang-reqs

If you do not reach the required standard, you may be exempt from providing an English test certificate. Please contact International Development for clarification (www.kent.ac.uk/internationalstudent/contact.html)

Making an application

You can apply for a Kent higher degree electronically via our website at www.kent.ac.uk/courses/postgraduate/apply

If you are applying for a research degree, it is strongly recommended that you contact the School of Physical Sciences in the first instance so that you have an opportunity to discuss your study plans with the Director of Graduate Studies.

A decision on your application cannot be made until all the additional paperwork has been received so it is important to send
Application deadline
There is no fixed closing date for research applications although we recommend you make your formal application as early as possible and at least three months before your intended start date. Applications for taught programmes should be made no later than 1 August.

If you wish to apply for on-campus accommodation, an application must be made online by the end of July.

Tuition fees and funding
For the most up-to-date information on tuition fees and funding, visit www.kent.ac.uk/pgfunding

Further information
For further information, visit www.kent.ac.uk/physical-sciences

For more specific enquiries, contact:
Professor Michael Smith,
Director of Graduate Studies,
School of Physical Sciences,
Ingram Building,
University of Kent,
Canterbury,
Kent CT2 7NH, UK

T: +44 (0)1227 827654
E: spsrecruit@kent.ac.uk

Admissions enquiries
T: +44 (0)1227 827272

Terms and conditions: the University reserves the right to make variations to the content and delivery of courses and other services, or to discontinue courses and other services, if such action is reasonably considered to be necessary. If the University discontinues any course, it will endeavour to provide a suitable alternative. To register for a programme of study, all students must agree to abide by the University Regulations (available online at: www.kent.ac.uk/regulations).

Data protection: for administrative, academic and health and safety reasons, the University needs to process information about its students. Full registration as a student of the University is subject to your consent to process such information.
Kent: the UK’s European university
Kent is known as the UK’s European university. Our two main UK campuses, Canterbury and Medway, are located in the south-east of England, close to London, and we also have study locations in Brussels, Paris, Athens and Rome.

We have a diverse, cosmopolitan population with 149 nationalities represented. We also have strong links with universities in Europe, and from Kent, you are about two hours away from Paris and Brussels by train.

World-leading research
A great deal of the University of Kent’s research has been ranked as world-leading in terms of originality, significance and rigour, according to the Government’s most recent Research Assessment Exercise. Kent staff were found to be engaged in research of international and world-class standing.

Strong academic community
At Kent, our postgraduate students are part of a thriving intellectual community that includes staff and students from all our locations. In addition to lectures, seminars and one-to-one supervisions, our students benefit from a rich and stimulating research culture.

A global outlook
Kent has a great international reputation, attracting academic staff and students from around the world. Our academic schools are engaged in collaborative research with universities worldwide and we offer a range of opportunities to study abroad and an approach that is truly global.

The Graduate School
As a postgraduate student, you also have the support of the Graduate School, which promotes your academic interests, co-ordinates the Research Development Programme and the Global Skills Award, and facilitates cross-disciplinary interaction and social networking.

Funding
Kent provides a variety of financial support opportunities for postgraduate students. These range from research studentships, location-specific funding, sport and music scholarships, and funding specifically for overseas fee-paying students. For further information, see www.kent.ac.uk/pgfunding

Enhanced career prospects
At Kent, we want you to be in a good position to face the demands of a tough economic environment. During your studies, you acquire a high level of academic knowledge and specialist practical skills. We also help you to develop key transferable skills that are essential within the competitive world of work.

Location
Canterbury

Faculty
Faculty of Sciences

School
School of Physical Sciences

Contact
School of Physical Sciences, Ingram Building, University of Kent, Canterbury, Kent CT2 7NH, UK
T: +44 (0)1227 823321
E: spsrecruit@kent.ac.uk

Applications
Online at www.kent.ac.uk/courses/postgrad/apply

Further information
For information about applying to Kent, or to order a copy of the Graduate Prospectus, please contact:
Recruitment and Admissions Office, The Registry, University of Kent, Canterbury, Kent CT2 7NZ, UK
T: +44 (0)1227 827272
F: +44 (0)1227 827077
www.kent.ac.uk

The University also holds Open Days and postgraduate recruitment events throughout the year. Please see www.kent.ac.uk/opendays
COME AND VISIT US

We hold Open Days and postgraduate events throughout the year.
For more information, see:
www.kent.ac.uk/opendays