



Best research in key areas

Continuing league table rises

Record-breaking student satisfaction

Best graduate employment record



3 QUEEN'S ANNIVERSARY PRIZES

Best research in key areas

Our researchers are changing the world in vital fields such as safe water, sustainable energy, telecommunications, disease control and health.

We are proud to have won three Queen's Anniversary Prizes in recognition of this groundbreaking research, as well as four other Queen's Awards, making an impressive total of seven since 1991.

12TH IN THE GUARDIAN UNIVERSITY GUIDE 2013

Continuing league table rises

Our top-12 placing in the latest *The Guardian University Guide* – seven places higher than last year – reflects the upwardly-mobile status of the University of Surrey.

We also climbed three places to 26th in the 2013 *The Times Good University Guide* and recorded a six-place improvement by securing 22nd position in *The Complete University Guide*.

90% SATISFACTION RATING IN NATIONAL STUDENT SURVEY

Record-breaking student satisfaction

The results of the latest National Student Survey (NSS) revealed that our students are happier with their studies at Surrey than ever before.

A record-breaking 90 per cent of respondents expressed their satisfaction with the quality of their higher education, a rise of three per cent from 2011. The result helped us climb an impressive 17 places to 15th in the overall NSS table.

95% GRADUATE EMPLOYMENT

Best graduate employment record

We have a track record spanning more than 15 years of being recognised as a leading light in graduate employment. The latest figures, showing that 94.8 per cent of our recent graduates were in employment or further study, are evidence of that trend continuing.

Our renowned professional training year, which provides students with valuable practical experience to complement their academic development, is key to this success.

* Figures from the Higher Education Statistics Agency (HESA)

99%

Source: latest available Research Assessment Exercise data

World-class research

The last Research Assessment Exercise (RAE) brought official recognition for the quality of our research.

It rated 99% of our research world-leading, internationally excellent, or recognised either nationally or internationally, of which 88% and more than half our research units were rated world-class or internationally recognised. It also placed four of our research areas – Sociology, Electric and Electronic Engineering, General Engineering and Allied Health Professions and Studies – in the UK's top ten.

A selection of this year's research successes are profiled on pages 16 to 37.

Award-winning academics

We recently won the Queen's Anniversary Prize for our world-leading research into the sustainable provision of safe water, the most prestigious honour a UK university can attain. Turn to pages 8 and 9 for more information.

This was the third time our academics have been honoured with this prize: in 1997, we won the award for our pioneering work in satellite technology, while in 2002, the prize recognised our world-changing innovations in lasers, ion beams and optoelectronics. We have also received the Queen's Award for Export Achievement, the Queen's Award for Technological Achievement and two Queen's Awards for Enterprise.

Enterprising attitudes

Few universities can match our ability for enterprise.

Whether it's supporting our students and academics as they turn their inspiring ideas into profitable business propositions, working with commerce and industry to share our expertise for everyone's benefit, or creating our own spin-out companies to maximise the impact of our world-class research, our naturally entrepreneurial culture has achieved success after success.

For more on our enterprising initiatives turn to page 33 and pages 52 to 55.

of our research units are rated world-leading, internationally excellent, or recognised either nationally or internationally.

Qualifications that work

We have been a leading light in graduate employment for more than 15 years.

This has much to do with the success of our Professional Training Year, which allows students to develop professional and personal skills during year-long placements with major companies across a range of sectors at home and abroad.

Our success in this area is highlighted on pages 46 and 56.

A cultured environment

In addition to our world-class research activity and cutting-edge teaching and learning, the University of Surrey is an increasingly vibrant cultural hub.

From playing an integral part in the preparations of more than 250 athletes competing at the 2012 London Olympics (pages 48 and 49) to developing the world's first digital symphony orchestra (pages 34 and 35), we play an important part in fostering opportunities in sport, music and art.

A truly international outlook

The abilities of our talented students and staff extend well beyond our Surrey campus.

Whether through the international collaborative research projects fostered through the Universities Global Partnership Network (page 57) or students taking a professional training year overseas, the University of Surrey nurtures a truly global outlook.



An overview of 2011-12 from the Vice-Chancellor

Like the Team GB athletes in the London 2012 Olympics, Surrey has put in a strong performance over the past 12 months resulting in record achievements and awards.

Our meteoric rise up the league tables, especially in *The Guardian* where we rank 12th in the UK, is one of the year's major success stories and acknowledges the continuing improvements to our academic offering. The results of this year's National Student Survey, where we climbed an impressive 17 places, and our shortlisting to 3rd place in *The Sunday Times* University of the Year Award 2011, further reflects our exceptional progress in delivering the best experience we possibly can for our students.

As a result, we are attracting more highly-talented applicants than ever before and since 2006 we have seen a significant increase in our undergraduate entrance standards. Our average A-Level grades on entry in 2011-12 were AAB, meeting the Government's new threshold for unlimited recruitment which is introduced next academic year.

Providing access to world-class sporting facilities is just one example of how we are meeting student needs and this summer they had the exciting opportunity to train alongside Olympic athletes. Surrey Sports Park hosted over 250 Olympians and their coaching teams including the US triathletes, Chinese synchronised swimmers and the Team GB basketball team as they made their final preparations for the London 2012 games.

Much like the Olympic promise, here at Surrey we are inspiring a generation through our groundbreaking research which is addressing this century's most pressing challenges and receiving international recognition. We were honoured to be awarded the prestigious Queen's Anniversary Prize for Higher Education for our research into safe water and sanitation which is helping to safeguard many lives and communities worldwide. This is the third time Surrey has received this accolade.

The effects of the Government's reforms to university funding and student number controls have continued to dominate the Higher Education headlines and Surrey, along with all UK universities, will be entering a very different environment for the sector in the new academic year. Taking a leaf from Team GB's training book, Surrey has set very clear goals to maximise our success and ensure we prosper as a thriving university of excellence. We will continue to strive for the highest standards in our teaching, scholarship and research and we are confident of even greater achievements in this critical period ahead.

Professor Sir Christopher Snowden
FRS, FEng
President and Vice-Chancellor



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Royal recognition for water research



“The Queen’s Anniversary Prize acknowledges that Surrey’s research in crucial fields such as safe water and sanitation is second-to-none.”



THE QUEEN’S
ANNIVERSARY PRIZES
FOR HIGHER AND FURTHER EDUCATION

2011

THE University received royal recognition for its world-leading research into the world of water with the award of the Queen’s Anniversary Prize.

Announced by the Royal Anniversary Trust on behalf of Her Majesty The Queen, the prize came in the 2010-12 Diamond Jubilee Round and recognised Surrey’s 30-year track record in improving access to safe water around the world.

The award is the most prestigious honour open to a UK university and President and Vice-Chancellor Professor Sir Christopher Snowden was delighted for Surrey to become one of a select few institutions to have won the prize for a third time.

The University previously received the award in 2002 for its work in the fields of ion beam applications and optoelectronic devices and in 1996 for engineering for the space industry and teaching and research for satellite operations.

Sir Christopher said: “The Queen’s Anniversary Prize acknowledges that Surrey’s research in crucial fields such as safe water and sanitation is second-to-none.”

During the last three decades, Surrey’s focus on water has helped the University develop a global reputation for excellence in research and practise among academics, governments and non-governmental organisations.

Its Centre for Osmosis Research and Applications has been responsible for innovations including Manipulated Osmosis Desalination, a system that produces clean drinking water by removing salt from sea water in a very efficient fashion.

With the Centre striving towards a mission of providing affordable access to water for drinking and irrigation around the world, Centre Director Professor Adel Sharif said the Queen’s Anniversary Prize was a “significant endorsement” of its work.

Surrey’s expertise has also helped communities in Patagonia through the Water for Life project. Run by Professor Neil Ward and PhD researchers, the project saw University staff working with children from six schools in Argentina to carry out analyses of the water in the Rio Negro and Rio Colorado rivers.

Professor Ward said: “The Prize is recognition both of our work here at the University and the efforts of local communities in Argentina. It underpins the importance of what we do.”

The biennial Queen’s Anniversary Prize was formally awarded at Buckingham Palace.

Surrey continues rise up league tables



theguardian

12th



Student Experience Survey

15th



15th



Table of Tables

19th



21st



22nd



26th

SURREY'S status as one of the leading universities in Britain was further cemented in the latest round of national league tables.

With the number of AAB A-Level students joining the University at an all-time high, tables from major outlets including *The Times* and *The Guardian* recognised Surrey as one of Britain's top higher education establishments.

The Guardian University Guide marked no fewer than 14 of 22 subjects inside their respective top 20s with the University as a whole achieving 12th place – seven positions higher than last year's ranking of 19th.

Professor Sir Christopher Snowden, the University's President and Vice-Chancellor, commented: "On behalf of all colleagues at the University, I am delighted with our continued progress and recognition in *The Guardian League Table*. Surrey continues to demonstrate its qualities as a leading university."

The Times Good University Guide ranked Surrey 26th in its latest tables, an improvement of three places on the previous year. It also awarded seven of Surrey's subjects top-ten

placings, including hospitality and tourism, sociology and mechanical engineering.

The *Guide* bases its ranking on a number of key criteria, including research quality, student experience, entry standards and graduate prospects.

Sir Christopher said: "We are delighted to see Surrey's continual improvements in performance and reputation reflected in this year's *The Times Good University Guide*."

"The rise in the rankings is a testament to how hard the University of Surrey has been working not only to meet students' needs, but to surpass their expectations and deliver an outstanding student experience."

Surrey achieved another improvement in the latest *Complete University Guide* after it gained six places to be ranked 22nd in the UK. Subjects including chemical, civil and mechanical engineering and materials technology were placed in the *Guide's* top ten.

In addition to dramatically strengthening its position in the overall league tables, Surrey's excellent reputation among its students was reflected in the *Times Higher Education Student Experience Survey*. The publication placed the University 15th in the UK, ahead of institutions including Nottingham, Bath, Exeter, Kent and Sussex.

Surrey also recorded its highest-ever overall rating in the National Student Survey, with more than 90 per cent of students expressing satisfaction with the quality of their course. The result promotes the University to 15th in the overall table, up 17 places from 2011.

"Surrey continues to demonstrate its qualities as a leading university."



Professor Sir Christopher Snowden receives his Knighthood from The Queen

Knighthood for University's Vice-Chancellor

SURREY'S President and Vice-Chancellor's services to engineering and higher education earned him a Knighthood.

Professor Sir Christopher Snowden, who joined the University in 2005, received the award in the Queen's 2012 New Year Honours.

The distinguished academic, engineer and businessman said he was "deeply honoured and very grateful" to receive the accolade.

He added: "I would like to express my sincere appreciation and thanks to colleagues at the University of Surrey and Guildford and more widely in the higher education and engineering professions.

"I am also extremely grateful to my wife and family for their constant support and patience over many years. I look forward to continuing to promote engineering science and to acting as a strong advocate for higher education."

Sir Christopher's leadership of the University of Surrey has helped it achieve consistent improvements in national league tables and seen it attract double the number of undergraduate applicants over the last six years.

Entry standards have been increased to an average of AAB at A-Level, while Surrey's reputation for research performance and graduate employment has continued to be among the best in the sector.

Prior to joining the University, Sir Christopher was Chief Executive Officer of Filtronic ICS. He was appointed a Fellow of the Institute of Electrical and Electronics Engineers (IEEE) in 1996, received the 1999 Microwave Prize of the IEEE Microwave Theory and Techniques Society and was awarded the Royal Academy of Engineering's Silver Medal in 2004 for his outstanding contributions to the UK microwave semiconductors industry.

More recently, he was awarded the IEEE 2009 Distinguished Educator Award and the 2012 European Microwave Association Outstanding Career Award.

He is a Fellow of the Royal Academy of Engineering, Institution of Engineering and Technology, Royal Society and City and Guilds Institute and was appointed to the Prime Minister's advisory Council for Science and Technology in 2011.

In addition to the role as Surrey's President and Vice-Chancellor, Sir Christopher is Vice-President of Universities UK for England and Northern Ireland.

Laser legend launched lecture series



Professor Alf Adams

THE man widely recognised as the "grandfather of modern lasers" delivered the first of a fascinating new series of annual lectures.

Professor Alf Adams, who joined the University of Surrey in 1967, presented *Semiconductor Lasers Take the Strain* to a packed house at The Royal Society in London.

The lecture series has been introduced to showcase the groundbreaking research conducted at Surrey. The inaugural session was hosted by the University's Professor Jim Al-Khalili, himself a widely-respected quantum physicist and broadcaster.

Professor Alfred "Alf" Adams is a Distinguished Emeritus Professor of Physics at Surrey, where he founded the University's optoelectronics group and helped to establish the Advanced Technology Institute.

He is best-known for his 1986 discovery that the electronic band structure of quantum well lasers could be significantly improved by deliberately growing the active layer in a state of strain.

His work led to the development of laser diodes that play an intrinsic and pervasive role in the world around us, including telecommunications, CD and DVD players, medical equipment and supermarket checkouts as well as underpinning modern broadband technology.

The development was recently ranked as the fifth most important UK scientific discovery of all time.

A day to remember

GENERATIONS of graduates returned to campus as Surrey hosted its inaugural International Alumni Day.

More than 1,400 alumni, guests and business representatives were present for the occasion, which featured 65 individual events including talks and lectures, hands-on activities, tours and social gatherings.

With graduates playing an important role in Surrey's story, Alumni Day was an opportunity for the University to share its recent advancements with the people who have helped to shape it.

Chris Gethin, Director of Development, said: "Our alumni are our best advocates and ambassadors – days like these not only keep them informed of Surrey's latest developments and achievements but also renew their passion and pride in their University."

The day's programme was headed by a series of speeches and lectures, with Lord Browne of Madingley joining President and Vice-Chancellor Professor Sir Christopher Snowden for the keynote speech.

TV's *Bionic Vet*, Dr Noel Fitzpatrick, discussed the crossover between human and animal medicine, while further sessions covered everything from how London won the 2012 Olympic bid to what is being done to clear detritus from space.

Many departments laid on tours and interactive activities for graduates and Surrey Sports Park allowed visitors to try a range of Olympic-themed sporting activities.

Alumni were also able to take advantage of arts performances throughout the day, culminating in the world premiere of the Symphonova digital orchestra.



Stars' achievements honoured at degree ceremonies



WORLD-renowned scientist Lord Robert Winston was among a host of influential figures awarded honorary degrees by the University of Surrey during 2012.

The broadcaster was joined by big names including comedian Sandi Toksvig and Professor Alf Adams, the grandfather of modern lasers, in receiving the awards during the summer graduation ceremonies.

Lord Winston is Professor of Science and Society at Imperial College, London as well as being a member of the University of Surrey's Council, Chancellor of Sheffield Hallam University and Chairman of the Royal College of Music.

He said: "I'm privileged to receive this unjustified honour and I will do my utmost to support this outstanding University which continues to flourish and grow at a time when higher education is under increasing pressure."

Danish/British presenter Sandi Toksvig is well known for taking charge of Radio 4's *The News Quiz* as well as a number of other television and radio shows.

She has spent many years living in Surrey and said it was a "particular" delight to receive the honorary degree from the University.

Other recipients of honorary degrees during 2012 included the Reverend Victor Stock, Dean of Guildford Cathedral, and the Right Reverend Jonathan Frost, current Bishop of Southampton and former coordinating chaplain at the University of Surrey.

Distinguished civil engineer and Surrey alumnus Michael Glover, former EADS Astrium Chief Technical Officer Robert Lainé and visiting Surrey Professor Hussain Al-Shahristani were also honoured.

Grammy success for Surrey graduate



A SURREY graduate scooped a Grammy award for his role in creating pop sensation Adele's smash-hit album *21*.

Music producer Jim Abbiss was part of a team of technicians to pick up the prestigious Album of the Year prize in honour of their work on the record, which is the biggest-selling album of the 21st century to date.

Jim, who graduated from Surrey's world-famous Tonmeister course in 1988, previously worked on Adele's debut release *19* as well as the Arctic Monkey's Mercury Music Prize-winning *Whatever People Say I Am, That's What I'm Not*.

Surrey celebrated further success at the Los Angeles-based awards as fellow Tonmeister graduate Sam Okell won his second Grammy in two years.

Sam, an alumnus from 2001, was triumphant in the Best Historical Album category thanks to his work in mastering the deluxe edition of Paul McCartney & Wings' *Band on the Run* album.

His success came hot on the heels of last year's ceremony when Sam won the same category in recognition of his work in remastering the entire back catalogue of The Beatles.

Dr Russell Mason, a Senior Lecturer in the Institute of Sound Recording at the University of Surrey, said: "We were delighted to hear of the success of Sam and Jim in the recent Grammys, adding to the long list of awards won by Tonmeister graduates in music, film and television."

Surrey space expert receives aerospace award



Professor Sir Martin Sweeting

SATELLITE pioneer Professor Sir Martin Sweeting joined a select group of the biggest names in aerospace after receiving a prestigious international award.

The Director of the University's Surrey Space Centre was named as the 2012 recipient of the von Karman Wings Award.

Selected for the honour in recognition of his contribution to the aerospace industry and academia, Sir Martin joins an illustrious list of former winners that includes NASA astronaut Buzz Aldrin and science fiction writer Arthur C Clarke.

Speaking after receiving the Award from the Aerospace Historical Society and the Graduate Aerospace Laboratories of the California Institute of Technology, he said: "It is a privilege to be recognised with the von Karman Wings Award and to share this accolade with the visionaries and innovators that I so greatly admire.

"During my career, small satellites have developed from being a

research curiosity to become instrumental in scientific research, better understanding our planet and satellite navigation. I am thrilled to have played a part to make this all happen."

Sir Martin's selection for the Award recognises his pioneering work in developing the concept of rapid-response, low-cost and highly-capable small satellites for Earth observation, communications and space science.

He founded Surrey Satellite Technology Limited (SSTL) in the 1980s with a vision to change the economics of space to make it more accessible to all.

Using commercial, off-the-shelf technology, SSTL has forged a new market for small, advanced satellites, with the organisation launching 39 of the devices since 1981.

Sir Martin is regarded as a leading authority on satellite technology by groups including NASA and the European Space Agency and was knighted in the 2002 New Year

Honours for services to the small satellite industry. He is also a Distinguished Professor at Surrey and a Fellow of the Royal Society.

Professor Sir Christopher Snowden, President and Vice-Chancellor of the University of Surrey, said: "Martin has enormous energy. He inspires everyone around him, as a leader but also as an innovator – he has all the characteristics of a true space entrepreneur.

"Martin's work setting up SSTL and at the Surrey Space Centre was extremely important to the University. For many people, space and Surrey are synonymous. He has created a legacy that will go on for many, many decades to come."

"I am thrilled to have played a part to make this all happen."

Research



Real-world research

WITH a reputation as a world-class, research-intensive institution, the University of Surrey's dynamic and exciting environment is home to groundbreaking work on a global scale.

Over the past 12 months, our academics have continued to produce pioneering research that delivers relevant solutions to the challenges of the world we live in.

From advances in mobile communications to the development of environmentally-friendly consumer technology, our research is exemplified by its practical applications.

At the heart of our approach is a drive to ensure that our people work together across traditional academic boundaries. Whether it is a space scientist combining their skills with an environmental expert or an economist teaming up with a psychologist, the focus on inter-disciplinarity helps to bolster real-world impact.

Professor Steve Williamson, Vice-President and Deputy Vice-Chancellor, Research and Innovation, explained: "Our commitment to cross-disciplinary working is exemplified by our research networks, which are based around themes such as water, energy and food.

"These networks are led by individual academics – sometimes two – who are provided with support from our Research and Enterprise Support (RES) staff.

Our commitment to cross-boundary research is evident in the fact that members of at least two faculties must be represented on a project before it qualifies for support from RES.

In addition to assisting with bid writing and business development, RES helps our inter-faculty teams with everything from meeting organisation to the dissemination of targeted funding opportunities to network members."

The following research stories are an indication of how this collaborative working has borne fruit and delivered real societal and economic impact over the last year.

"Our commitment to cross-disciplinary working is exemplified by our research networks, which are based around themes such as water, energy and food."

Cellular success



“The calibre of the new 5G Centre set out in our bid will enable the UK to lead this rapidly-expanding segment of the global digital economy.”

WORLD-LEADING research into the next generation of mobile and internet access will be conducted at Surrey after the University won a £35 million funding bid.

The money, of which £11.6m comes from the Government with a further £24m from mobile operators and infrastructure providers, will be used to develop a 5G Innovation Centre at the University.

The Centre will focus on stimulating significant expansion in UK telecommunication research, development, innovation and the provision of broadband mobile internet services.

Professor Rahim Tafazolli, Head of Surrey's Centre for Communication Systems Research, said it will also provide significant benefits for economic growth in the UK.

“There are massive challenges and opportunities facing the sector,” he added. “The global telecommunications industry, valued at \$2.1 trillion per annum, is already responsible for six per cent of world GDP.

“Mobile communications data traffic is expected to increase 1,000-fold by 2020, by which time there will be an estimated 50 billion Internet-capable devices.”

Professor Tafazolli explained that while the UK had played an active role in the creation of 2G cellular standards, it has “fallen behind” in the succeeding 3G and 4G standards.

He said: “The University's industry partners have identified this proposal as the single biggest opportunity for the UK to regain a world-leading position in the development of 5G technologies and for the development of vibrant businesses.”

With more and more handheld devices being used to run applications over mobile networks, there is a greater need for the introduction of advanced 5G technologies that maximise the use of the available radio spectrum and allow for greener technologies and solutions.

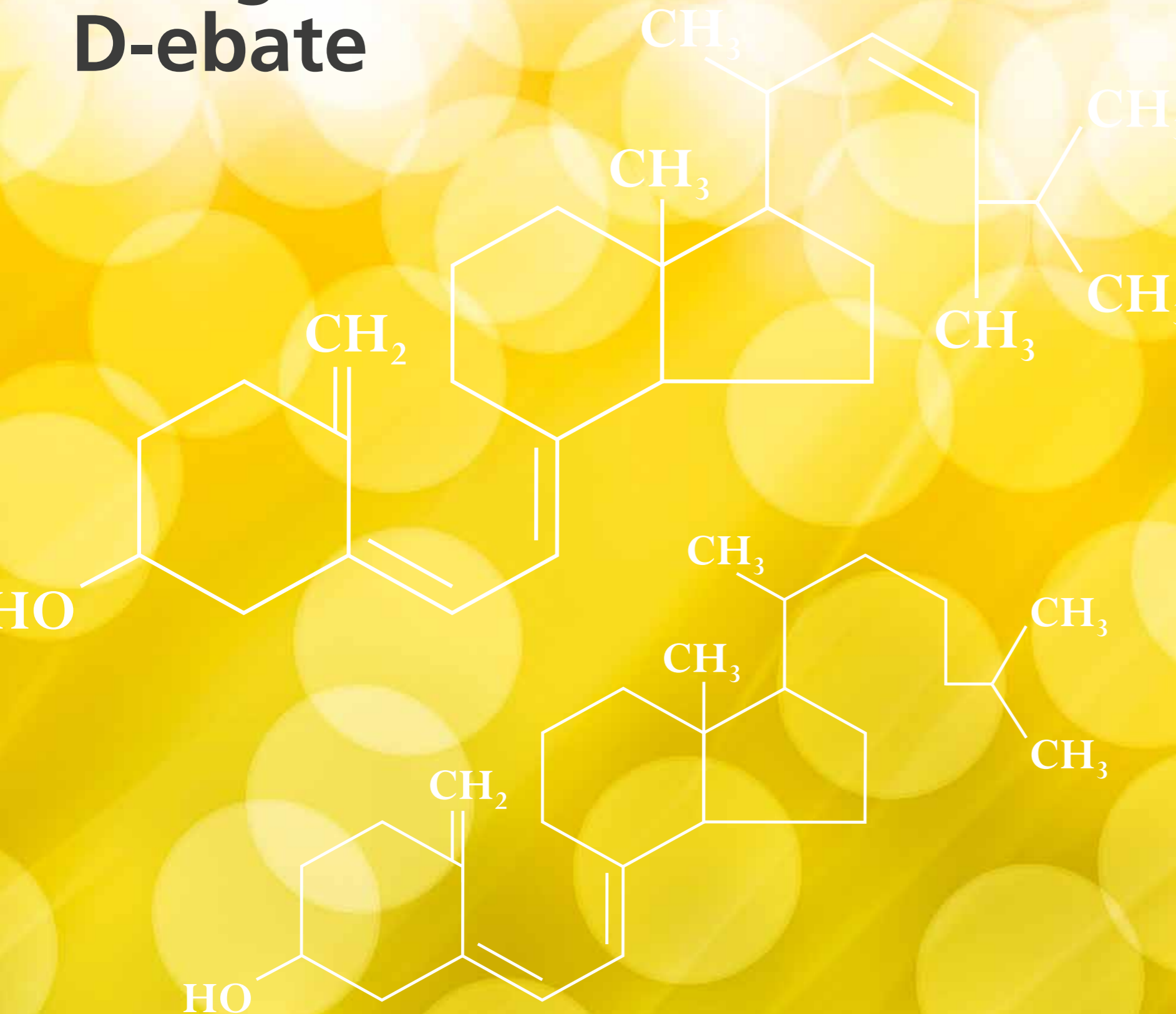
The need is recognised by the consortium of companies which has invested in the funding, including Huawei, Samsung, Telefonica Europe, Fujitsu Laboratories Europe, Rohde & Schwarz and AIRCOM International.

Professor Sir Christopher Snowden, President and Vice-Chancellor of the University of Surrey, described the funding success as a “major coup” for the University, its industry partners and the economy.

He added: “The calibre of the new 5G Centre set out in our bid will enable the UK to lead this rapidly-expanding segment of the global digital economy.

“It consolidates the leading position of our own Centre for Communications Systems Research in Europe and paves the way for the further development of our long-term strategic partnerships with major global telecommunications organisations and significant inward investment into both Surrey and the UK.”

The great D-debate



IMPORTANT changes could be made to the food industry as a result of research into vitamin D conducted by Surrey academics.

A University study discovered that vitamin D3 is more beneficial to human health than its close relative vitamin D2, when given as a supplement at a high dose.

Vitamin D, which is known as the “sunshine” vitamin, is important for bone and muscle health and is obtained through natural sunlight as well as food.

Professor Susan Lanham-New and her colleagues in the Nutritional Sciences Department recently won the £0.75M Vitamin D grant from the Biotechnology and Biological Sciences Research Council (BBSRC). She said: “We know that vitamin D is vital in keeping us fit and healthy, but what has not been clear is the difference between the two types of vitamin D.

“It used to be thought that both types were equally beneficial, however, our analysis highlights that our bodies may react differently to each and that vitamin D3 could actually be better for us.”

Dr Laura Tripkovic from the Department presented the work at the 2012 Vitamin D International Conference held in Houston, USA and the findings were published in the *American Journal of Clinical Nutrition*. Dr Tripkovic analysed the results of ten studies comparing the health benefits of vitamins D2 and D3.

Contrasting data from more than 1,000 people, the researchers found a “clear favouring” of vitamin D3 supplements in raising vitamin D serum levels in humans.

They are now conducting a further study to see if the same results are found when using lower doses of both vitamins added to food rather than taken as stand-alone supplements.

Dr Tripkovic and the D2-D3 study team will look at 350 people to find out if – and why – vitamin D3 is better, while also considering factors including gender, ethnicity and genetic make-up.

Professor Douglas Kell, Chief Executive of the BBSRC said: “With a growing and ageing population, this kind of research is vital to help us ensure that as many people as possible are able to stay healthy and active as they get older.

“This is a clear example of how a greater understanding of the basic bioscience underpinning human health could lead to an increase in healthspan to match our increase in lifespan.”

“It used to be thought that both types of vitamin D were equally beneficial, however, our analysis highlights that our bodies may react differently to each and that vitamin D3 could actually be better for us.”

Research uncovers potential harm of health supplement

TAKING supplements of a naturally-occurring mineral linked to a number of health benefits may actually be harmful to humans, a Surrey academic has discovered.

In a study published in *The Lancet*, Professor Margaret Rayman, Professor of Nutritional Medicine reviewed existing evidence about the effects of selenium intake on people from across the world.

She found that for those who already have enough of the micronutrient in their diet – including a large proportion of the population of the United States – taking selenium supplements could lead to health problems including the onset of type-two diabetes.

Found in soil and foods, selenium guards against poor immune

function and cognitive decline and has been shown to enhance male fertility, produce antiviral effects and provide some protection against cancers of the prostate, lung, colorectal area and bladder.

Its therapeutic range is narrow, however, and high levels of the substance can have harmful effects. Professor Rayman's research is especially important as the usage of selenium in dietary supplements has increased significantly over the past decade.

Previous research into the effects of selenium has been mixed, a fact Professor Rayman believes is caused by the differences in selenium levels and genetic background of people from different parts of the world.

She said: "The crucial factor that needs to be emphasised



is that people whose blood plasma selenium is already 122 or higher should not take selenium supplements.

"However, there are various health benefits – and no extra risk – for people of lower selenium status who could benefit from raising their status to 130-150, a level associated with low mortality."

Body clocks blamed for tired teens

TEENAGERS who struggle to get out of bed in the morning may be victims of a natural shift in their body clocks, according to Surrey researchers.

A Royal Society-funded study conducted by the University's sleep experts monitored sixth form students' sleep patterns using Actiwatch devices which measured movement and rest.

And the results aligned with previous research that suggests a shift in the circadian rhythm during



adolescence causes sleep-producing hormones to be produced later at night.

Researcher Joanne Bower explained: "This means that teenagers are awake later in the evening and find it difficult to rise early in the morning.

"The need to get up for school and other activities creates a short window of opportunity for sleep and can lead to persistent sleep deprivation."

Nine students were tested during the two-week study, which took place directly before and after the clocks went forward and one hour of sleep was lost.

The participants managed an average of fewer than seven hours of sleep each night, suggesting they were suffering from sleep deprivation which can affect concentration, memory and mood.

Derk-Jan Dijk, Professor of Sleep and Physiology at the University of Surrey, said: "This project is a good example of how academic research can have a real impact on the lives of young people in our society."

Keeping our troops fighting fit



THE British military is set to benefit from groundbreaking research into how nutrition affects Service personnel's performance.

Experts from the University of Surrey have been working with the Ministry of Defence to conduct three studies looking at the nutrition of troops before, during and after deployments.

All three projects have been run in collaboration with Dr Joanne Fallowfield's Applied Physiology Team at the Institute of Naval Medicine in Gosport and looked at the prevalence of stress fractures in trainee Royal Marines. They have already resulted in changes to the Force's entry requirements.

Professor Susan Lanham-New, Head of the Department of Nutritional Sciences, explained: "We followed 1,100 Royal Marines at the training centre in Lympstone and measured aspects including fitness, blood and bone health for 32 weeks of training. We then looked at those who suffered stress fractures and those who didn't.

"Our work showed that you are more likely to suffer a stress fracture if you are above or below a certain body weight and that information has been used to change the entry requirements for the Royal Marines.

"This is the first time anyone has looked into the topic in this depth. Stress fractures are a huge problem for the military, so this research is a strong impact case."

With two awards already received in recognition of the inaugural project, Surrey's nutrition experts have been quick to continue helping the military.

Their second study, the Armed Forces Feeding Programme, examined the effect of nutrition – including that received from ration packs – on three sets of troops, two from the Army and one from the Royal Marines.

The in-depth research monitored personnel's fitness, energy and illness levels and even included blood tests on samples taken during deployment and flown back to the UK.

Professor Lanham-New explained: "We are looking at a whole range of factors to ask the question of whether we are properly looking after the nutrition of our Service personnel.

"We are in the process of submitting papers on that and we have found big changes in body weight, body composition and vitamin D levels, with the latter increasing ten-fold during deployment."

The third study focuses specifically on the nutrition of troops injured in combat and has involved Dr Fallowfield's and Professor Lanham-New's team tracking wounded personnel from theatre to Headley Court via the Queen Elizabeth Hospital in Birmingham.

Solar solution

IT may sound like an idea based more in science fiction than science fact, but laser beams fired at Earth from space may form part of our future energy solution.

Under a revolutionary project conducted in partnership with EADS Astrium, Surrey researchers are testing new technology that could ultimately allow solar power to be collected in space and beamed back to Earth ready to be used in a variety of applications.

Professor Stephen Sweeney, based at the University's Advanced Technology Institute and Department of Physics, said that the system has been made a possibility thanks to recent advances in kit and equipment.

He explained: "To make this feasible, you need a high-powered laser and appropriate photovoltaic (PV) cells to convert the light back into electrical energy. We've developed these now and have been doing a lot of work with them."

Although harnessing the sun's rays to provide clean energy is not a new idea, current methods of collection have significant drawbacks.

Power can only be collected in the daytime, making solar-sourced energy ineffective overnight, while cloud cover can also impact on the amount of power generated.

But one of the chief enemies of efficiency is the atmosphere, which absorbs some of the sunlight as it passes through on its way to Earth.

With the space-based system, the energy would be sent via a narrow infrared laser at a frequency that retains a far higher percentage of the power. In addition, technology in the PV cells receiving the beams has

already resulted in an efficiency of 40 per cent, with a rate of around 70 per cent achievable.

"The idea is that if you can capture the energy directly in space then you are making the process more efficient," continued Professor Sweeney. "You are constantly receiving energy."

The space-age set-up may be a few years from making it into orbit, but Professor Sweeney and his team have successfully conducted tests on terra firma by transmitting energy across a giant Airbus hanger in Germany.

Those tests, which have involved firing lasers over distances of about 100m, have given the scientists an idea of how much power can be transferred. The next steps are further development of the laser and PV cells and an air-based experiment.

Should the work yield a viable system, its potential applications around the globe are hugely exciting. From providing power to areas isolated by natural disasters to keeping military patrols on the road, laser-based solar energy could have a major impact on the world around us.

Professor Sweeney added: "Longer term, there are other high-volume power delivery applications that this could meet. If you put these cells on the ground or even on a vehicle or backpack, you could deliver power anywhere. It's very flexible."

Planet-friendly coatings crafted by Surrey researchers



INNOVATIVE new coatings made possible by Surrey researchers' work could dramatically lower the transport industry's carbon footprint.

A team of physicists at the University has created a process that can be used to create coatings that reduce the drag resistance of ships and aeroplanes, allowing them to use less fuel.

The plastic coatings feature small bumps and ridges ranging in size from less than one millimetre to a couple of centimetres which can be customised to suit individual vessels and aircraft.

Professor Joseph Keddie, of the Department of Physics, said: "It's an exciting prospect to have an impact on the energy consumed by planes and ships through a straightforward, inexpensive technology.

"Our process can create coatings with nearly any desired texture to meet the particular requirements of an application.

"This new technology has grown out of several years of polymer and colloids research within the Soft Matters Physics Group in collaboration with industrial partners. Our Knowledge Transfer Account project will help to transfer our research ideas into industrial manufacturing."

The new process, known as infrared radiation-assisted evaporative lithography, uses beams of infrared light to heat certain spots on wet coatings made of tiny plastic particles in water.

When the hotter spots evaporate, the plastic particles are guided into their place.

The Surrey team is now collaborating with six companies through funding from an Engineering and Physical Sciences Research Council Knowledge Transfer Account to develop ways for industrial manufacturers to use the process to create coatings to decorate household goods.

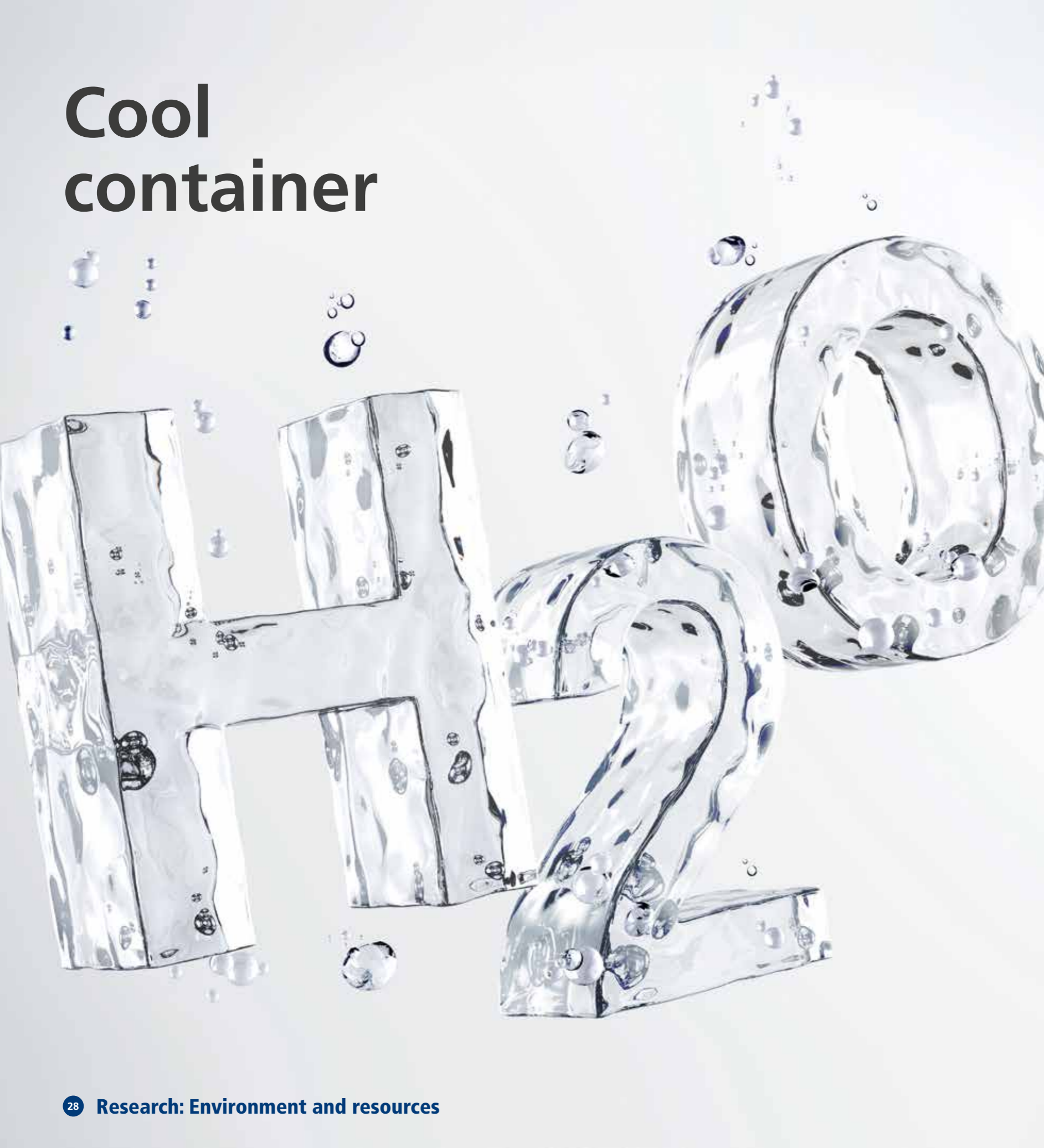
The coatings carry a lot of potential for developing exciting new designs for domestic products thanks to their attractive visual appearance and interesting textures.

Dr Argyrios Georgiadis, whose experimental work paved the way for the new technology, said: "Our novel process uses fundamental concepts of science to create practical objects with tremendous aesthetic appeal."

In addition to aiding the transport and domestic goods industries, the coatings could be used in high-tech applications such as the creation of micro lenses for products including cameras, photocopiers and solar cells.

"It's an exciting prospect to have an impact on the energy consumed by planes and ships through a straightforward, inexpensive technology."

Cool container



A REVOLUTIONARY self-cooling drinks dispenser that could bring a wealth of environmental benefits was unveiled at the University of Surrey.

Created by US firm, the Joseph Company, in partnership with Surrey Professor Roland Clift, the CHILLCAN® can be reduced to 15 degrees below ambient temperature simply by pushing a button on the unit's base.

The device, which was unveiled at the 20th anniversary of the University's Centre for Environmental Strategy (CES), is much more climate-friendly than refrigerated chiller cabinets, requiring no power consumption and producing fewer greenhouse gases.

Professor Clift said: "Helping the development of the CHILLCAN has been a unique opportunity to apply the kind of systems thinking we have developed in CES to a potentially disruptive high-volume consumer product.

"We have been able to help by using life cycle assessment (LCA) to ensure that the whole supply chain is environmentally sound. LCA has shown where best to launch the can; to replace drinks dispensers which may be badly maintained, leaking energy and refrigerant."

The button on the CHILLCAN's base releases pressurised carbon dioxide into the inner layer of the can, where it is absorbed on to activated carbon which has been recovered from biological waste such as coconut shells.

Once there, the CO₂ – which is recovered from waste gases that would have gone into the atmosphere anyway – absorbs heat, in turn cooling the drink which can then be consumed in the normal way from the top of the can.

Mitchell Joseph, Chief Executive of the Joseph Company, said the CHILLCAN represented a "technological breakthrough" for the beverage industry.

He added: "The potential take-up is huge. What could be more convenient than a drink which cools down when you want it, rather than relying on polluting dispensers or having to carry an ice box to the beach or on a camping trip?"

"It's all the better for its good environmental profile."

The next stage in the development of the CHILLCAN system is the recovery and re-use of existing chiller units.

"The potential take-up is huge. What could be more convenient than a drink which cools down when you want it, rather than relying on polluting dispensers or having to carry an ice box to the beach or on a camping trip?"

Drinks research highlights the dangers of short-term strategies

USING mergers and acquisitions as a means of achieving short-term gains can lead to negative long-term consequences, Surrey-led research into the drinks industry has concluded.

The University headed an international team of business management experts in studying the fortunes of major breweries Carlsberg, Heineken, Anheuser-Busch (A-B) and Scottish and Newcastle (S&N).

They found that the two firms which decided to pursue an aggressive, high-risk international acquisition strategy between the early 1990s and 2006 – A-B and S&N – ended up over-extending themselves and were eventually taken over by their competitors.

By contrast, family-controlled Carlsberg and Heineken were less influenced by short-term stock market interests and expanded more slowly over the same period, acquiring only those businesses their years of international experience told them they could run well.

Mike Geppert, Surrey Business School's Professor of Comparative International Management and Organisation Studies, explained: "These companies are still independent and highly successful.

"Our conclusion is that, in some sectors, a predominance of short-term stock market considerations can actually damage the long-term value of a business.

"We acknowledge that this might not apply to all industrial sectors, but our main point remains: the stock market does not always create value. Rather, it can sometimes destroy long-term value which in some cases might have been better preserved through concentrated forms of ownership."

The study, which was published in the *British Journal of Management*, found that shareholder-driven acquisition strategies at A-B and S&N led to high-risk managerial decisions which "certainly contributed" to the fall of the companies.

Professor Geppert added: "This is especially true in the case of S&N. The case of A-B is more complex, but bad minority influence of the Busch family, plus shareholder pressure, led to the same result."

By comparison, the family and foundation forms of ownership and the lower shareholder value driven financial pressures in evidence at Heineken and Carlsberg, supported more sustainable and moderate managerial risk-taking profiles and strategies.

"Our conclusion is that, in some sectors, a predominance of short-term stock market considerations can actually damage the long-term value of a business."

Research supports small business success

SURREY research into the common factors behind successful businesses may provide a welcome boost to Britain's troubled economy.

With as many as 55 per cent of start-up businesses known to fail within their first five years, top-20 accountancy firm Kingston Smith LLP commissioned the University to try and identify how success is achieved among small and medium-sized enterprises (SMEs).

Joining forces with Surrey Business School, the firm's research project – Success in challenging times: Key lessons for UK SMEs – sought out the experiences of more than 1,000 business leaders from across the country.

Kingston Smith partner and Surrey alumnus Paul Samrah said: "We were looking at what makes people succeed in these times and what has helped them. It could have been any number of things – for example, luck, a confident strategy, talented sales people or good IT or training."

The results of the research (see summary in box below) will be of particular interest at a time of such global financial instability.

Although Britain has successfully navigated its way through economic troubles in relatively recent memory, Paul argued that we are now in a "different situation" to that experienced in the last recession.

"On a positive note, IT is much more advanced so reporting and managing information is much more timely than it has been, giving greater ability to make decisions quickly," he explained.

"However, the recession is worse than ever before and people are looking at every cost and every

opportunity and weighing up whether it is worth their time going for new contracts.

"It's not always about chasing the pounds – the decision now is between keeping things lean and mean and avoiding growth or taking the decision to grow and accepting the risks that go along with that."

The in-depth study was conducted by an expert team from Surrey Business School, headed up by Professors David Gray and Mark Saunders.

Among the topics examined during the project were what success looks like for SMEs, how successful businesses cope with new competition and market fluctuations, and how significant digital media is in gaining a competitive advantage.

But above all of those, Professor Gray said that today's tricky business environment means that simply surviving is the first and foremost objective for many SMEs.

He added: "One of the themes in our research is the importance to businesses of critical information being delivered at just the right time.

SME success factors

Finance: Use more than one source of finance to both start and sustain their business

Social capital, social media and the web: Consider direct referrals and search engine optimisation as central to their success

Innovation: Be willing to find new ways of doing things and encourage employees to think and behave innovatively

"SMEs also look to support from mentors, advisers and business networks in developing their strategic thinking, sharing information and getting access to resources.

"We very much hope that this report will prove valuable on all these counts."

Although it is Surrey's academics that have conducted this important piece of work, the University's role stemmed from the initial involvement of Surrey Enterprise.

Student members of the entrepreneurial firm impressed Paul with their knowledge and enthusiasm, with the Kingston Smith partner admitting they were the "oil that got the project's wheels turning".

He said: "We came across them at a business networking function and this project developed from there.

"They had very sensible heads on their shoulders and demonstrated they could talk the language of entrepreneurs.

"They were also efficient and knowledgeable and knew exactly how Surrey Business School could be brought in."

Cash flow and liquidity: Proactively monitor their cash flow and liquidity

Learning orientation: Believe that learning gives them competitive advantage

Advice and support: Be more willing to seek external advice

Outsourcing and exporting: Have the flexibility to adapt to changing market conditions.

Entrepreneurs open retail test-bed



From left: Dan Speller, student entrepreneur Jody Sayers and his clothing range, *Benson and I*, and Felicity Crane

THE first permanent student retail incubator unit of its type in the United Kingdom has opened at the University of Surrey.

Known as Studio, the space allows budding entrepreneurs to test their business ideas out in a real retail environment without many of the risks usually associated with start-up companies.

Situated at the heart of Surrey's campus, Studio has enough space to host up to six businesses, providing student shoppers with a wide range of options.

Surrey Enterprise Retail Director Felicity Crane said: "If a student at the University has a business idea they wish to test, Studio is the perfect environment for them.

"The space has been designed to be flexible, so virtually anything can be sold, providing it meets our application criteria.

"The flexibility of the space also allows events to be held outside of opening hours or during them, to maximise Studio's use."

Surrey's status as a leader in student enterprise was confirmed when all six retail spaces were filled shortly after Studio's opening, with student businesses selling clothing, linen, homeware and electronic gadgets among those represented.

In addition to having access to the retail space, student entrepreneurs at Surrey are able to gain expert advice from the University's Entrepreneur-in-Residence, Nigel Biggs.

"If a student at the University has a business idea they wish to test, Studio is the perfect environment for them."

Music maestro



A SURREY musical maestro has unveiled the world's first digital symphony orchestra which plays in response to the gestures of a human conductor.

Dr Shelley Katz harnessed high-end research in areas including loudspeaker technology, gesture control and social science to create the Symphonova.

Featuring more than 50 speakers, each representing an individual instrument, the Symphonova allows a conductor – or symphonist – to control the audio output and produce live orchestral performances.

Any number of musicians of any ability can be plugged into the system, which Dr Katz has designed to allow the maximum amount of musical expression.

He said: "By supporting musicians, conductors and whole orchestras, in practice and performance, the Symphonova frees them to perform more creatively, allowing them to explore their full musical imagination.

"And by allowing musicians and whole ensembles more creative freedom to experiment and innovate, the Symphonova helps orchestras to push the boundaries of what is considered possible in orchestral performance."

The Symphonova is extremely versatile which benefits everyone from newcomers to seasoned performers.

The virtual orchestra's accurate and unfailingly-responsive output

makes it the perfect platform for conductors to develop their skills in a supportive, non-judgemental environment. As their skills develop, the orchestra can play works of increasing degrees of complexity.

Students or professional musicians can utilise the system to practise playing ensemble pieces with which they are unfamiliar, with the Symphonova's virtual musicians filling in any missing pieces.

The technology is also a valuable development for conductors wanting to demonstrate to live orchestras.

Dr Katz explained that the Symphonova helps with the "democratisation" of music by making high-quality orchestral performances available to much wider audiences.

He said: "Symphonova provides a platform for orchestras to extend their reach and presence into communities with music and performances that have never been possible before.

"It's a tool for social cohesion and welfare, bringing together individuals of all ages and from all parts of society to engage in a non-competitive, non-verbal and individually-tailored activity."

"Symphonova provides a platform for orchestras to extend their reach and presence into communities with music and performances that have never been possible before."

Bridging the digital divide



A SUITE of tools developed at the University of Surrey is set to drive greater communication among communities in the developing world.

Using a group of innovative devices, the Community Media (Com-Me) project empowers groups with low textual or computing literacy, or limited power or equipment to create and share a host of content.

Ranging from the Com-Phone, which allows people to build “narratives” of audio, video and text, to the Com-Tablet, which serves as a repository for created content, the project is designed to be open and free for its users.

Professor David Frohlich, Director of Surrey’s Digital World Research Centre, said: “Different elements of the toolkit can be used alone or together, depending on the needs of the community group involved.

“We have got used to thinking of the internet as the ultimate place to store and access digital information. But in regions where it is not accessible or affordable, other more local solutions have to be found.

“Mobile technology is part of that solution, particularly when it can be connected in ad hoc ways.”

In addition to the Com-Charge – a solar-powered community mobile phone charging station – the Com-Me suite is completed by the versatile Com-Cam (pictured above).

Comprising a low-cost camera mounted on a flexible, lamp-like frame, Com-Cam allows users to relay mobile phone content to any analogue TV through scart or audio-visual sockets.

As well as allowing for public sharing of pictures, internet sites and video clips from mobile phones, Com-Cam can be used for a number of other purposes.

The unit’s base, which was developed under a partnership agreement with University College Falmouth, can be flipped to provide a white background, allowing it to be used as an overhead projector or even a public microscope.

Trials conducted in India showed that Com-Cam was ideal for sharing text-based documents to a community group, while a further test run by a not-for-profit organisation in South Africa highlighted its benefit in magnifying individual stitches in a sewing class.

In addition to allowing communities without much equipment to create and share content, Com-Cam is also extremely cost-effective, with its electronic components costing just £10.

Professor Frohlich explained that the Com-Me toolkit is of particular benefit to rural communities where literacy rates can be below 50 per cent.

He added: “That’s a barrier towards the use of new technology and especially the internet because most interfaces and content are text-based. It’s quite a fundamental issue that hadn’t previously been tackled properly.

“We argue that the media capabilities of mobile phones can be used to support a new form of reading and writing in pictures and sound.

The resulting ‘digital stories’ can then be archived and shared more widely with technologies like Com-Tablet and Com-Me, both locally and further afield.

“Once that starts to happen, community information in local languages can radiate outwards to increasingly larger regions.”

Innovative interpretation



LEGAL interpreters working via videoconference in Europe now have a set of best-practice guidelines to follow thanks to the efforts of Surrey researchers.

With the need for interpreters in legal proceedings on the rise and the use of video links also increasing, a team from the University’s Centre for Translation Studies examined the quality provided by remote interpreting services.

They found that basic problems could be overcome through improved configurations and training, resulting in the European Council adopting the recommendations as a set of continent-wide guidelines. The Metropolitan Police also used Surrey to bring its interpreters up to speed.

Researcher Dr Sabine Braun explained that the findings are especially relevant as the European Union has recently reinforced the right to use an interpreter in criminal proceedings.

She said: “The possibility of using videoconferences to gain access to an interpreter has become so important that it is now referred to in European legislation.

Three to four years ago it was by no means clear whether video-mediated interpreting would be viable from the point of view of interpreting quality.”

The research, which was funded by the European Commission Directorate-General Justice, therefore investigated interpreting quality in videoconference settings through a series of comparative studies.

Mainly focusing on police interviews and comparing video-mediated and traditional interpreting, the team also experimented with different technical configurations such as altered room layouts and different screen positions to isolate the factors that produced the best – and worst – effects.

Analysis of the data showed a higher number of interpreting

problems and a faster decline of interpreting performance over time in video links, suggesting interpreters using technology suffered greater difficulties and a faster onset of fatigue.

Dr Braun added: “Based on these findings, we developed guidelines of good practice for video interpreting in criminal proceedings and designed and piloted training modules for interpreters and legal practitioners.

“The major conclusion is that a sufficient quality of interpreting performance must be regarded as essential. The viability of video interpreting must therefore override all considerations of cost savings.”

The Metropolitan Police’s use of Surrey’s expertise saw the University deliver 23 training sessions for a total of 341 interpreters – 89 per cent of the certified workforce.

Media milestones.

Higgs Boson



RENOWNED Surrey physicist Professor Jim Al-Khalili believes the discovery of the Higgs Boson, the so-called 'God particle', could pave the way for even greater scientific findings.

Speaking to the BBC's Pallab Ghosh, Surrey's Professor of Physics and Public Engagement in Science said that the development at the Large Hadron Collider (LHC) could be the key to unlocking the secrets of what makes up the building blocks of the universe.

He said: "The Higgs Boson's discovery would mean that we are on the right lines, that our picture of what everything is made of is correct.

"A lot of people think the whole reason for the Large Hadron Collider is to look for Higgs Boson but this is just the first step. Finding the Higgs Boson opens the doorway to future discoveries. There are other questions that need to be answered and other particles that may also exist."

Professor Al-Khalili went on to speculate that the development could help us gain a better understanding of dark matter, which is believed to account for about a quarter of the universe.

He added: "It may be that the particles that make up dark matter can also be found at the LHC and one of the exciting things about discovering the Higgs Boson is that it allows us to look in the right direction for these particles."

Beyond the Higgs Boson story, Professor Al-Khalili is a regular on BBC Radio 4, where he has been presenting the popular *The Life Scientific* series each Tuesday morning. The show features in-depth interviews with top scientists who tell the audience about their life and work, revealing where they get their inspiration and ideas from and what their discoveries mean for ordinary people.

Professor Al-Khalili's guests this year have included Professor Richard Dawkins, former Government scientific adviser Sir David Nutt, geneticist Professor Steven Jones and Surrey honorary graduate Professor Lord Winston.

"A lot of people think the whole issue of the Large Hadron Collider is all about looking for Higgs Boson but this is just the first step."

Spotlight on Surrey for 2012



UNIVERSITIES have been essential to the London 2012 Games, serving as a vital source of expertise, facilities and workforce, and the University of Surrey was no exception. The University-owned Surrey Sports Park had direct involvement in the preparations for London 2012 as an official pre-Games training camp venue hosting 17 Olympic and Paralympic nations. These activities were part of the University's wider *Celebrate Surrey* initiative to mark and participate in celebrations for London 2012.

Surrey academics and staff were involved in a number of research and educational initiatives linked to London 2012 as well as events to promote the sporting legacy. A number of Team Surrey athletes represented the University at the British Universities and Colleges Sport (BUCS) Outdoor Athletics Championships in the Olympic Stadium.

The University secured regular print, social, online and broadcast media coverage, including BBC World Service, CNN, Sky News and ITV News, reaching an audience of around 274 million in 218 different countries.

Cyber security



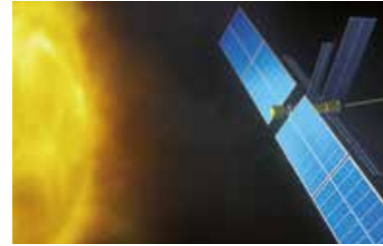
THE possibility of a group of hackers disabling the world wide web was the basis of a popular article published on the BBC's website by Surrey's Professor Alan Woodward.

The Department of Computing academic was writing in relation to "Operation Blackout", a threat made by the Anonymous collective to take down the top level of the net.

Stating that the group's claim to be able to break the Internet by targeting Domain Name Service (DNS) servers was possible in theory, Professor Woodward called for major departments – including US federal agencies – to make proper use of preventative technology such as domain name system security extensions.

He also warned that hackers could unleash a "torrent of data" by using the DNS network to attack itself, effectively rendering significant portions of the web unusable.

Energy from space



SURREY research aiming to provide the planet with solar energy via lasers from space featured extensively in *The National Geographic*.

Professor Stephen Sweeney spoke in the prestigious publication about his work to develop the futuristic technology, which is being carried out in partnership with EADS Astrium.

Describing the project as "bringing science fiction to life", *The National Geographic* quoted Professor Sweeney as identifying disaster areas and military sites as potential users of the high-tech energy.

He explained that the space-based approach benefits from having all its costs up front and from having an unlimited supply of free energy from the sun.

To read more on this story turn to pages 24 and 25.

Hot news



THE world's media turned to Surrey experts to find out the potential consequences of a solar flare that hit Earth during 2012.

The Daily Telegraph was among the news outlets that quizzed Surrey Space Centre's Dr Ben Taylor about how the burst of charged particles might affect power supplies and GPS navigation systems.

In a video posted on the newspaper's website, Dr Taylor explained that while solar flares are able to disrupt power on Earth, as happened with a blackout in Quebec in 1989, the most likely effect would be the Northern Lights being visible much further south than normal.

Dr Taylor's prediction proved to be accurate, as no large-scale events were reported during the storm in March.

Chirping up



A THREE-YEAR research project into the benefits of birdsong to human health has garnered coverage from national media including *The Guardian*, *The Daily Telegraph* and BBC Radio 4's *Today* programme.

Surrey academic Eleanor Ratcliffe is working with the National Trust and Surrey Wildlife Trust to explore the psychological impact birdsong has on people's mood, attention and creativity levels.

The research, funded by the Economic and Social Research Council as well as the two Trusts, will be used to explore the benefits of nature to quality of life, develop a concept of "living landscapes" and provide a better understanding of birdsong's contribution to restorative outdoor experiences.

It follows a campaign launched by the National Trust in 2011 which saw more than 10,000 people download an audio guide and listen to five minutes of birdsong in an attempt to combat the winter blues.

Studying sexism



RESEARCH suggesting that men's magazines may be legitimising hostile sexist attitudes received widespread international coverage.

The Daily Mail, the *Mirror* and *ABC News* were among the outlets to report on the project, which was conducted by psychologists from the Universities of Surrey and Middlesex.

Published in the *British Journal of Psychology*, the research revealed that most people could not distinguish between comments made about women by convicted rapists and magazine articles.

Additionally, most men who took part in the study identified themselves more with the language of the rapists.

Dr Peter Hegarty, of the University of Surrey's Psychology Department, said: "There is a fundamental concern that the content of such magazines normalises the treatment of women as sexual objects."

Learning and teaching



“We are different to most universities in that our placements are fully embedded in the curriculum. This is why Surrey graduates are so employable.”

Excellent education

SURREY'S focus on learning and teaching excellence has heralded further improvement in the University's student experience.

2012 has seen Surrey achieve an increased average undergraduate entry level of AAB, open new facilities and launch a recruitment drive that has brought a substantial number of new academics to campus.

This has resulted in a 90 per cent satisfaction rating in the latest National Student Survey, as well as a highest-ever 15th place finish, and significant league table gains, including rising to 12th in the latest *Guardian University Guide*.

The University's learning and teaching is based on a set of strategic priorities, the delivery of which was enhanced in 2012 by the formation of two new departments.

The Department of Higher Education focuses on providing leadership for the development of excellence, creating a framework for academics' teaching qualifications and ensuring consistent standards are maintained across the University.

The second new department – The Department of Technology Enhanced Learning – provides strategic direction in the innovative use of educational technology.

Surrey's dedication to embracing new developments was demonstrated in 2012 by the introduction of SurreyLearn, the University's new Virtual Learning Environment (VLE).

The secure system provides students with easy access to learning materials, module and programme information and guidance as well as forums, quizzes and online assignments.

The investment in SurreyLearn includes the integration of other IT systems, allowing students and staff to contact one another from within the VLE or access materials on tablet and mobile devices.

Surrey's status as an increasingly attractive proposition for career-minded students is borne out by its enhanced entry tariff. Undergraduates now achieve an average of 436 UCAS points, 111 more than five years ago and a figure which places the University in the top quartile in the United Kingdom.

The number of good degrees achieved by Surrey's students stands at 75.4 per cent, with completion rates also reaching a new high at 89.5 per cent.

And the University's longstanding record as a leading force in graduate employment has also continued, with a score of 94.8 per cent placing Surrey among the best institutions in the UK.

Professor Gill Nicholls, Surrey's Deputy Vice-Chancellor (Academic Affairs), said: “We are different to most universities in that our placements are fully embedded in the curriculum. This is why Surrey graduates are so employable.”

Student experience



Surrey moves up 17 places to 15th in the overall NSS tables

SURREY'S students are happier with the quality of their courses than ever before, the results of a national poll revealed.

Ninety per cent of respondents to the 2012 National Student Survey (NSS) expressed their satisfaction with their higher education, a rise of three per cent from 2011.

The result saw Surrey move up 17 places to 15th in the overall NSS table.

President and Vice-Chancellor, Professor Sir Christopher Snowden was delighted that Surrey's students rated their education so highly.

He said: "This is a testament to how hard the University has been working not only to meet students' needs, but to surpass their expectations and deliver an outstanding student experience."

Surrey's impressive performance in the NSS tables follows the implementation of an improved student experience strategy.

As well as a major overhaul of the "student welcome" week, the strategy has resulted in the opening of new facilities including the £13.3 million Library and Learning Centre.

Over the last few years the University has dramatically strengthened its standing across all major higher education league tables, including *The Guardian*, *The Times* and *The Sunday Times*.

"This is a testament to how hard the University has been working not only to meet students' needs, but to surpass their expectations and deliver an outstanding student experience."

Professionally-powered placements

SURREY'S students continued to be in great demand as the University's Professional Training Year (PTY) scheme flourished in 2012.

More than 1,000 placements were undertaken in the UK and further afield during the past academic year as businesses across a range of sectors recognised the potential of Surrey's young men and women.

The number of placements increased despite the turbulent state of the economy, a fact that Assistant Registrar (Quality Support and PTY) Dr Svetlana Reston said highlighted the value employers placed on the scheme.

She added: "We came into the downturn and a lot of people in industry suffered, but actually the number of schemes is getting higher and higher, especially in areas such as chemical engineering and maths, where the number of placements has doubled in three years."

"The students have a fantastic experience and they are a real asset for the businesses."

The PTY scheme, which makes placements an intrinsic part of the University's degrees, is a key factor in Surrey's impressive graduate employment record, which has been ranked as one of the best in the UK for the past 15 years.

During 2012, 40 per cent of students received graduate job offers as a result of their PTY placement, up from between 37 and 38 per cent in the recent past.

As well as giving participants the perfect opportunity to hone their professional skills, the scheme has been enhanced to provide equally-important personal development.

Dr Reston said that student assessments are now more focused on getting participants to think about how they can apply their experiences academically.

A PTY Student of the Year award has also been introduced, while returning students are encouraged to share their thoughts on the scheme with their second-year peers through presentations and posters.

Dr Reston said: "We spend a lot of time looking at how we can make sure that students do not just get something on their CV, but also receive the best possible learning opportunities."

"A lot of students come back motivated to do well during their final year and know what skills they will need to secure the best jobs when they graduate. They are more mature and understand what they need to do."

"The Professional Training Year is about developing students who have excellent professional and personal skills and will go on to be the very best ambassadors for the University of Surrey."



Emily Labhart, BA (Hons) Dance and Culture
Sadler's Wells, Creative Learning Assistant



Tom McFall, BSc Mathematics and Statistics
Virgin Trains, Business Analysis



Amelia Marchant, BSc Business Management
Goldman Sachs, Derivative Operations in the Bank Loan Servicing team

Dynamic developments

SURREY'S students now benefit from even more world-class facilities following a busy year of capital development at the University.

The centre of campus has been transformed with the construction of the state-of-the-art Library and Learning Centre, while residents at Manor Park have benefited from a modern hotel-style reception block and new accommodation.

Completing its first full year of operation, the new Library and Learning Centre – opened by Sir Alan Langlands, Chief Executive of HEFCE, in early 2012 – provides students with learning, teaching, retail and social spaces spread over four bright, spacious floors.

The building features a striking exterior and has been designed to fit into its surroundings, making access quick and easy for its users.

Professor Sir Christopher Snowden, President and Vice-Chancellor of the University of Surrey, said: "Here at Surrey, we understand that universities and their libraries operate as a focus for the community with a strong emphasis on learning and teaching."

"Both support the generation of new knowledge in an environment which encourages creative and independent thinking."

"This new building reinforces our ethos, extending the library's role as a hub of learning and study, and with the clear goal of putting the needs and wishes of students first in a calm and studious atmosphere."

The new reception block at Manor Park opened in mid-2012 and aims to provide Surrey students living there with a hotel-style level of service.

New studio flats on the development's second floor follow the high-spec theme, with granite surfaces, designer tiling and brushed steel fixtures among the top-quality fittings.

And the University looked to one of its own alumni to create an industry-leading social space at the centre of Manor Park.

Rhian Jones, a graduate of Surrey's International Tourism and Hospitality Management programme, has taken charge of Heart + Soul, a new café bar and restaurant which is situated within the new reception block.

The result of 18 months of research, planning and design, the venue has quickly become the hub of the Manor Park community.

Rhian said: "Heart + Soul is a unique concept and is very different to the offerings at traditional higher education facilities."

"The design and ethos of the place are based around our insights into the student world and attempt to create a 'home away from home' environment for the residents."

"This new building reinforces our ethos, extending the library's role as a hub of learning and study, and with the clear goal of putting the needs and wishes of students first in a calm and studious atmosphere."



Celebrate Surrey – London 2012

Surrey serves key Games role

SURREY Sports Park's (SSP) international pedigree attracted Olympic and Paralympic athletes from no fewer than 17 nations* ahead of London 2012.

More than 250 competitors in disciplines including swimming, table tennis, basketball and triathlon used SSP to put the finishing touches to their preparations ahead of competing on the Games' global stage.

The venue's prime location and excellent facilities, including an Olympic-sized swimming pool and purpose-built sports arena, made it an ideal choice for the world's elite athletes.

Chief Executive Paul Blanchard said: "We were delighted to welcome the Olympic and Paralympic athletes to the Sports Park – it was a great honour and privilege for all our staff and students."

Surrey Sports Park's Olympians and Paralympians performed well at both Games, with a number of athletes securing podium places.

Among the Olympic medal-winning contingent were Spanish swimmer Mireia Belmonte Garcia, who won two silvers, and Singaporean star Feng Tianwei, who took home a table tennis bronze.

China's synchronized swimmers won bronze in the women's duet and silver in the team competition, while Singapore's table tennis squad earned bronze in the team event.

Paralympic athletes who trained at SSP brought home an array of medals, with 16-year-old Guildford-based swimmer Hannah Russell leading the way with a silver in the S12 400m freestyle and bronze in the S12 100m butterfly.

The University's links with the Olympics were further enhanced by the appearance of sprinter Margaret Adeoye, a graduate of Surrey's Business Management programme.

The track and field star set a new personal best as she made it to the semi-final of the women's 200m, narrowly missing out on a place in the final in front of 80,000 people at the Olympic Stadium.

** For a full list of the Olympic and Paralympic teams training at Surrey Sports Park see page 50.*

"We were delighted to welcome the Olympic and Paralympic athletes to the Sports Park – it was a great honour and privilege for all our staff and students."



Margaret Adeoye, Team GB



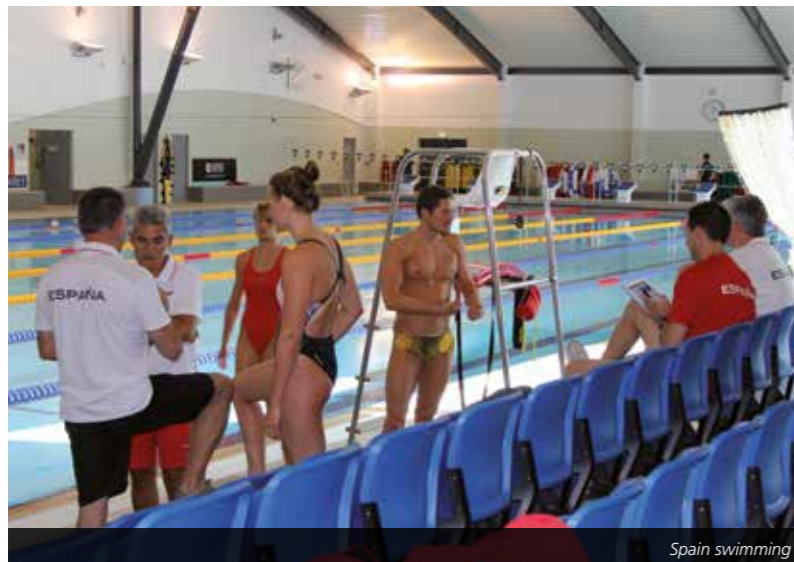
Nigeria basketball



Singapore table tennis



Hannah Russell (photo: Suzanne Nolan)



Spain swimming

International excellence: Nations training at Surrey Sports Park...

Olympic Teams

- Cayman Islands
- China
- Costa Rica
- Dominica
- Ecuador
- Estonia
- Great Britain
- Malta
- Mexico
- Mongolia
- Nigeria
- Philippines
- Singapore
- Spain
- USA

Paralympic Teams

- Great Britain
- Mauritius
- Sweden

Olympic Day

SURREY Sports Park (SSP) spread the Olympic spirit to hundreds of visitors during an action-packed open day ahead of the Games.

The world-class venue opened its doors to give members of the public the chance to sample everything from basketball to table tennis.

Held in parallel with the University's inaugural Surrey International Alumni Day, the Olympic Open Day comprised a mix of hands-on sporting sessions and demonstration events.

SSP Chief Executive Paul Blanchard said: "It was delightful to see so many members of the public visit for the Open Day and enjoy a range of different sports.

"It was a chance for us to showcase what we have on offer here at Surrey Sports Park and I think many people left very happy and inspired by what they experienced."

Among the athletes showcasing their skills during the day were Guinness World Record-holding freestyle football and basketball supremos Dan Magness and Tommy Baker.

International squash players Joe Lee and Tom Richards took part in an exhibition game, SSP-based Surrey Spartans Hockey Club played a friendly match against an invitational XI and guests were able to take part in sports including tennis, volleyball, fencing and climbing.

The event was also attended by Alumni Day Chair Professor David Allen and keynote speaker Lord Browne of Madingley, as well as many Surrey graduates who were seeing the venue for the first time.

Paul Blanchard added: "It was special to see the number of Surrey alumni that came over from campus. The majority were not lucky enough to have access to such a facility when they were studying here, so this visit was a real eye-opener, particularly with the presence on site of a number of Olympic athletes."

The Art of Sport



Hockey by Brian West



Olympic Rowing by Jeremy Houghton



Mark Hunter by Richard Booth

THE University played its part in the largest cultural celebration in the history of the Olympics when it welcomed a 2012-inspired art show to Surrey Sports Park (SSP).

Organised as part of the London 2012 Cultural Olympiad, the BT Art of Sport programme saw a number of Games-related pieces put on display at SSP.

Featuring sculptures, paintings and photography from 12 leading UK artists, the exhibition's works

were also on display at the University's Lewis Elton Gallery.

SSP Chief Executive Paul Blanchard said: "We are both excited and proud to have hosted the BT Art of Sport exhibition.

"It was a spectacular visual showcase of both the Games and some of the UK's leading artistic talent."

Among the works on show were sculptor Ben Dearnley's bronze and statuary marble recreations

of Olympic and Paralympic athletes Mark Foster, Leon Taylor and Ade Adepitan.

The stunning *Movement in Steel* mural by Barnaby Gordon was also on view at the Sports Park, along with works including watercolour paintings, pen-and-ink portraits and prints created using a range of creative media.

Surrey was the final stop for the BT Art of Sport programme ahead of its official unveiling at London's Clarendon Gallery.

Business, innovation and enterprise

Nurturing aviation industry advance

AIRPORTS around the world are set to benefit from a revolutionary new baggage scanner invented by a Surrey academic.

The brainchild of Dr Edward Morton, the Real Time Tomography (RTT) technology produces fast, accurate, high-resolution 3D images of scanned luggage.

Since being patented by the University and incorporated into Dr Morton's spin-out company CXR Limited, RTT has been sold to US firm OSI Systems and developed into a fully-working system by OSI's UK subsidiary Rapiscan Systems.

Dr Morton's invention represents the realisation of 12 years of work, which culminated in the trial of a prototype at Manchester Airport in 2009 and the installation of the first fully-functional systems at the transport hub in 2012.

Used for scanning hold baggage, RTT is capable of inspecting between 1,200 and 1,800 bags every hour, some four times faster than existing technology.

As well as reducing delays and making maintenance much easier, RTT is the first ultra-high-speed system to pass the European Civil Aviation Conference's standard three-threat detection test, the highest measure for the detection of baggage-borne explosive threats.

It also meets a new European directive requiring CT scanners to be used on all new baggage systems installed after 2012, with all non-CT scanners required to be replaced by 2018.

Ajay Mehra, President of Rapiscan, said: "All industries and businesses that process baggage, not just airports, now have access to superior threat detection technology that dramatically improves operational efficiency, offers a clear and concise return on investment and does not sacrifice any measure of security."

"All industries and businesses that process baggage, not just airports, now have access to superior threat detection technology that dramatically improves operational efficiency."

Business boosters



AN innovative University-run investment club pumped more than £8 million into Britain's economy during 2012.

Members of the not-for-profit Surrey 100 Club, chaired by Pro-Chancellor Dr John Forrest, provided the financial boost to start-up companies selected to pitch in front of them at the organisation's meetings.

Since its formation four years ago, the Club has invested more than £14 million in new businesses as well as providing specialist mentoring, support and training.

Keith Robson, University of Surrey Director of Research and Enterprise Support, said that the Club's entrepreneurs and business leaders help fledgling firms avoid falling into the "valley of death" before they get a chance to develop.

He explained: "It's a well-known fact that in the UK an awful lot of potentially very good start-up companies fall at the first hurdle because they can't access good bank loans.

"We have been working for four years to provide a solution and we consider this to be part of the mission of the University.

"While we charge our Club members a nominal fee to join, there is no charge for the presenting companies and we don't take a cut of any money they raise. We use specialist funding from the Higher Education Investment Fund which is awarded to universities that have demonstrated the ability to create economic impact. Surrey is one of the top in the country in that category."

The Surrey 100 Club's services begin with training provided by specialist staff who help to get new businesses ready for investment.

Around 95 per cent of the companies selected to go on and pitch to the Club's investors subsequently receive further support through financial backing or assistance from SETSquared Surrey, the University's business incubation and support network.

In addition to technology, companies representing the food, veterinary science and fashion fields are among those to have benefited from the system.

And with more than 50 high-calibre members looking to continue investing in some of the area's most promising young enterprises, Surrey is set to remain a key driver of economic growth.

Keith added: "The Government now expects universities to be excellent not just in teaching and research, but increasingly to act as agents of economic growth.

"The Surrey 100 Club was relevant when it was formed, but now it is crucial. It's quite an unusual model because there are very few universities that have something as active as this.

"This Club provides the potential to be a really long-term part of the University. It creates clusters of activity which is important because the days when government could throw in large sums of money are long gone."

Research Park – supporting growth



THE 144 tenant companies on the Surrey Research Park continue to have a significant impact on the regional and national economy. During 2012 there have been a number of major successes which include companies at both ends of the size spectrum, from SME to multinational.

Take Stingray, for example, which has developed some of the world's most advanced laser-based measurement systems for the oil industry. Growing from a staff base of two to 11 and having raised significant amounts of venture capital, it has now been acquired by the Norwegian geophysical data company TGS. Stingray's world-leading technology is proving critical to its new owner's business.

In March 2012, well-known computer games entrepreneur Peter Molyneux left Lionhead Studios, which he had previously sold to Microsoft, to start his third company, 22Cans, which has already grown from a team of three to more than 22 employees as it develops new games and innovations for mobile devices.

On a larger scale, BAE-owned Detica is currently strengthening its presence on site. Detica first moved to the Park as a business start-up in 1986 with 30 employees. It now employs more than 2,500 people based in the UK, Denmark, Ireland, Australia and the USA. During the year, the company took a lease on a large building on the Park for a further 300 highly-qualified members of the team.

In addition, the Surrey Satellite Technology Limited (SSTL) subsidiary, DMC International Imaging Ltd, which specialises in satellite-based data acquisition and its commercialisation, has expanded significantly. Similarly, Thomson Ecology has also shown incredible success, growing from just three people to in excess of 125.

"All these achievements in growth and expansion have been against a background of difficult trading conditions," said Surrey Research Park Director, Dr Malcolm Parry OBE. "What it shows is that a well-founded company in an active market

that sits in the right place on the Surrey Research Park can add huge momentum to the local economy."

Since the first tenant moved on to the Surrey Research Park in 1986, more than 600 companies have located there. It is one of only three such University-owned parks in the country.

"Those which have grown and posted significant successes this year are a microcosm of what has been achieved since the first occupiers set up on site," added Dr Parry.

"There is no doubt that the Park is a critical part of the contribution that the University makes to both the regional and national economies and during the current challenging economic times, that's something we certainly don't take for granted."

Internationalisation

Overseas opportunities

SURREY'S international outlook allowed scores more students to experience life overseas during their Professional Training Year (PTY) in 2012.

With the PTY an important part of their higher education experience, many students choose to spend it abroad to develop everything from foreign language skills to self-confidence.

A record high of more than 20 per cent of candidates spent their placement overseas during the 2011/12 academic year, with destinations including Australia, New Zealand, Peru and Canada.

Dr Svetlana Reston, who helps to oversee the Surrey PTY programme, said: "Going overseas is becoming an increasingly popular choice and it ties in with the University's mission to promote international links. The amount of students going abroad has risen from seven per cent to more than 20 per cent over the last few years.

"Many of the placements are found by the students themselves and they are also supported by the University to study a foreign language."

Soraya Meftah, a Biochemistry student, travelled to France for her training year and found her time abroad extremely beneficial.

She said: "I feel I gained a high level of independence and

adaptability as I had to deal with many more challenges and adapt to a different lifestyle.

"I have also added a language to my repertoire of skills that I can put on my CV, which should increase my employability and open a wider range of jobs that I can apply for."

Oliver Scheuregger, who is in the final year of a Music and Sound Recording degree, spent his placement year in Bavaria, Germany.

He was also glad to have had the chance to learn a foreign language and added: "It was a good opportunity to develop industry-related skills and contacts. Independence was also key as it massively improved my confidence."

Students who spend their PTY year in another part of Europe benefit from an Erasmus grant in addition to any salary from the European employer. As part of the Government's strategy to increase mobility to Europe, students do not need to pay tuition fees during this year, making the option of working or studying at a partner university in Europe very attractive. The Erasmus programme also enables students from partner universities to study or work at the University of Surrey, helping to diversify the student population.



Global gains



RESEARCH projects of international importance have been kick-started thanks to Surrey's participation in a thriving worldwide group.

Eight proposals to study topics including the environment and nanotechnology were given the go-ahead in the first round of a new fund from the University Global Partnership Network (UGPN), managed by the International Relations Office.

The Network's partners – Surrey, North Carolina State University and the University of São Paulo – facilitated the projects by contributing more than \$180,000 to the inaugural UGPN Research Collaboration Fund.

Peter Shelley, Surrey's International Relations and Projects Officer, said that the pooled resources would allow academics from UGPN partner universities to deepen their collaboration by working together on specific projects.

He added: "This is seed funding that will enable research to get under way with a view to winning bigger bids in the future."

A total of 39 proposals were submitted during the first round of the UGPN Fund, covering disciplines as diverse as engineering, politics, film studies, genetics and urban planning.

Of the eight selected from that number, half have a project team containing at least one member from each UGPN partner institution.

Successful bids included *Creating carbon-neutral nations*, *The politics and public opinion of international trade: a comparative perspective* and an effort to form a UGPN-wide Genes and behaviour network.

The Network did not require applicants to follow particular research themes and Mr Shelley said the policy had resulted in a broad range being selected.

Professor Vince Emery, Pro Vice-Chancellor for International Relations added: "Creating solutions to global challenges requires multi-disciplinary international teams with the desire to work together in a coherent and focussed way. The UGPN provides a key platform for delivering these solutions."

Formed in 2011 and officially launched at Surrey, the UGPN aims to develop sustainable, world-class research, education and knowledge transfer through an active international network of universities collaborating in research, learning and teaching to benefit global society.

Future plans



New veterinary school to embrace links between human and animal health

A new world-class School of Veterinary Medicine will be launched at the University in 2014, constructed around the theme that human and animal health is intrinsically linked.

Surrey's new School of Veterinary Medicine will embrace the 'One Health – One Medicine' philosophy and will include the development of a research-led veterinary medicine degree programme with an emphasis on research, veterinary pathology and livestock medicine.

Currently, there are only seven schools of veterinary medicine in the country, and the development of the one at Surrey will be the first of its kind in south east England. The setting for the development at the heart of the University's Manor Park site will encourage collaboration of students and staff from different disciplines, with those studying towards a veterinary medicine qualification being exposed to cutting-edge technology in engineering and physics as well as receiving training in core business skills.

The new School will be delivered through collaborations with key partners that Surrey already has strong relationships with, including the Animal Health and Veterinary Laboratories Agency, the BBSRC Pirbright Institute, the Veterinary Medicines Directorate, Fitzpatrick Referrals, Liphook Equine Hospital and Westpoint Farm Vets. Over the coming year Surrey is looking to extend its relationships with regional veterinary practices.

Students will also be exposed to global issues concerning animal health through the University Global Partnership Network,

an exciting trilateral agreement between Surrey, North Carolina State and São Paulo Universities through teaching collaborations, summer scholarships and research exchanges.

Professor Lisa Roberts, Dean of the Faculty of Health and Medical Sciences, explained: "As a research-intensive university we have the expertise, reputation, technical and business skills which our students can benefit from, allowing us to train the veterinary leaders of the future. Combining state-of-the-art facilities, our partnerships and a campus location, the new School will provide a stimulating environment not only for undergraduates, but for the professional development training of qualified veterinary surgeons."

The University has already laid the foundations for the new School through its expansion of teaching and research activities in its Faculty of Health and Medical Sciences, including the launch of the BSc programme in Veterinary Biosciences in 2009 and a new MSc in Veterinary Microbiology in 2012. An MSc in Veterinary Pathology is also currently under development.

Throughout the next 12-month period Surrey will be involved in the recruiting of new academic staff, attracting the first cohort of students, and beginning building works in preparation for the opening of the new school in 2014.

Financial review

A further step in the right direction

THE University achieved a creditable surplus of £6.8m in 2011-12, said Chief Financial Officer David Sharkey.

He explained: "Although lower than the previous year's result, this means that, for the second year running, we have achieved a surplus on core University activities excluding the benefit of the Foundation Fund.

"The last 12 months have seen continued investment in areas of strategic importance. For example, we have improved the student experience through the implementation of a new virtual learning environment and further strengthened our research capability through the appointment of additional academic staff in key areas."

He continued: "The introduction of higher tuition fees means that student expectations will inevitably rise and we need to meet that challenge if we are to succeed in a more competitive higher education environment. We will continue to focus our resources on the areas that make a difference.

"The changes to the funding regime, and the uncertainties flowing from recent changes to government immigration policy, mean that there is the potential for much more volatility in the years ahead. We need to ensure that we have the financial strength to respond to any challenges that may arise. These results reflect a further step in the right direction."

Financial review

Introduction to summarised financial statements

The summarised financial statements comprise the consolidated results of the University (including its Foundation Fund) and its subsidiary companies, notably Surrey Sports Park Limited.

Income and expenditure

Consolidated results

The University achieved a consolidated surplus for 2011-12 of £6.8m. Although lower than the previous year's figure of £10.9m, this was a good result when viewed in the context of continuing challenges for both the higher education sector and the wider economy.

Consolidated income remained static at £211.3m (2010-11: £211.6m). Excluding the distorting impact in 2010-11 of £4.2m of tenant's fit-out costs for a new building on the Surrey Research Park, there was a modest underlying increase in income of 1.9%. Income remained well diversified.

Core University activities

The University's core activities include the activities of the Guildford School of Acting (now fully incorporated within the University) and Surrey Sports Park Limited. They exclude the activities of the Surrey Research Park which are reflected in the Foundation Fund accounts.

The University achieved a surplus on its core activities for 2011-12 of £1.2m. Although lower than the 2010-11 surplus of £5.4m, this reflected an improvement on budget.

Income from core activities grew by £3.6m (1.8%) to £201.7m. Tuition fee and educational grant income rose by £5.0m (6.5%) to £82.9m, with income from non-EU students rising £2.6m (8.1%) to £34.5m. Despite the strength of the University's research, it is proving challenging to grow income in the current economic climate and research income fell in 2011-12 by £0.4m (1.4%) to £27.5m.

Expenditure on core activities rose by £7.8m (4.0%) to £200.5m with staff costs (excluding restructuring costs) rising by £4.9m (4.7%) to £108.6m. This reflected the strategic decision to invest in academic staff to improve student staff ratios and to boost research capacity ahead of the Research Excellence Framework.

Foundation Fund

The Surrey Research Park, which is the Foundation Fund's main asset, delivered another strong financial performance despite the ongoing challenges in the commercial property market. Income for the year totalled £9.7m. This reflected an underlying increase of £0.4m (3.8%) once the distorting impact of £4.2m of tenant's fit-out costs in 2010-11 is excluded. The 2011-12 surplus of £5.6m was £0.1m up on the previous financial year.

Chart 1

2011-12 consolidated income showing percentage change from 2010-11

Funding Council grants	£46m (-4%)
Research income	£27m (-1%)
UK/EU UG/PG tuition fees	£29m (+3%)
Non-EU tuition fees	£35m (+8%)
Other/NHS tuition fees	£19m (+9%)
Other income	£44m (+1%)
Research Park/investments	£11m (-24%)



Chart 2

2011-12 consolidated expenditure showing percentage change from 2010-11

Staff costs	£111m (+5%)
Other operating expenditure	£71m (-3%)
Depreciation and interest	£23m (+3%)



Chart 3

Movement in consolidated net assets 2011-12

	£m
Consolidated net assets at 31 July 2011	201.8
Surplus for the year	6.8
Actuarial losses on pension schemes	(11.6)
Investment property revaluation	(6.1)
Other movements	(2.1)
Consolidated net assets at 31 July 2012	188.8

Balance sheet

Despite the £6.8m consolidated surplus for the year, consolidated net assets fell in 2011-12 by £13.0m (6.4%) to £188.8m. The single largest contributory factor was £11.6m of actuarial losses on the pension schemes. This was mainly due to a fall in gilt yields which has increased the cost of future liabilities.

The value of completed investment properties on the Surrey Research Park (shown in endowment asset investments) fell by £4.4m to £76.4m. Downward pressure on rents and the market driven demand for shorter contractual commitments were reflected in a year end negative revaluation adjustment of £6.1m. This was partly offset by £1.7m of capital additions.

Despite the pro-active approach taken by the Research Park management team to maintain occupancy levels, the Park's value remains well below its 2007 peak of £101m.

Cashflow

Available cash, defined as cash plus short-term investments, grew in the year by £1.2m to £65.4m. Offset against this were borrowings of £156.6m giving net debt at 31 July 2012 of £91.2m (31 July 2011: £98.5m).

Summary consolidated income and expenditure account for the year ended 31 July 2012

	2011-12 (£m)	2010-11 (£m)
Total income	211.3	211.6
Total expenditure	(204.7)	(200.8)
Surplus before taxation	6.6	10.8
Taxation and transfers from endowments	0.2	0.1
Retained surplus for the year	6.8	10.9

Summary consolidated balance sheet as at 31 July 2012

	2012 (£m)	2011 (£m)
Fixed assets	318.7	315.1
Endowment asset investments	42.2	48.4
Current assets	85.3	85.9
Creditors: amounts falling due within one year	(73.5)	(68.4)
Total assets less current liabilities	372.7	381.0
Creditors: amounts falling due after more than one year	(149.4)	(156.6)
Provisions for liabilities and charges	(1.6)	(1.4)
Pension liability	(32.9)	(21.2)
Total net assets	188.8	201.8
Deferred capital grants	56.6	58.5
Endowments	42.2	48.4
Reserves	90.0	94.9
Total funds	188.8	201.8

Capital investment

In terms of capital investment, 2011-12 was a slightly quieter year after a very intense period of development over the previous three years. Additions to fixed assets totalled £17.4m (2010-11: £21.7m).

The major scheme completed in 2011-12, at a cost of £5.0m, was a new reception building on the Manor Park campus. Opened in mid-2012, the building provides reception facilities for the current 1,600 rooms on site, with another residential block of 212 rooms due for completion in 2013 and further growth planned. In addition to the reception facilities, the building provides a social hub with catering facilities on the ground floor and 42 enhanced en-suite bedrooms on the two upper floors.

Summary

The University has performed strongly in the last 12 months, achieving a healthy financial surplus despite the challenging economic climate.

It enters 2012-13 from a position of financial strength, firmly focused on the need to invest for the future and deliver value for money across all its activities.

Independent auditor's statement to the University of Surrey ('The University')

We have examined the summarised financial statements of the University of Surrey for the year ended 31 July 2012 which comprise the summary consolidated income and expenditure account and the summary consolidated balance sheet, which are set out on page 64 of the University's Annual Review ('Annual Review'). The summarised financial statements have been prepared by the University Council for the purpose of inclusion in the Annual Review, as explained in the note.

This statement is made, in accordance with our engagement letter dated 21 November 2011, solely to the University, in order to meet the requirements of paragraph 36 of the Statement of Recommended Practice: Accounting for Further and Higher Education (2007). Our work has been undertaken so that we might state to the University those matters we have agreed to state to it in such a statement and for no other purpose. To the fullest extent permitted by law, we do not accept or assume responsibility to anyone other than the University for our work, for this statement, or for the opinions we have formed.

Respective responsibilities of the University Council and auditor

The Council has accepted responsibility for the preparation of the summarised financial statements in accordance with paragraphs 29 to 35 of the Statement of Recommended Practice: Accounting for Further and Higher Education (2007). Our responsibility is to report to the University our opinion on the consistency of the summarised financial statements on page 64 within the Annual Review with the full financial statements.

We also read the other information contained within the Annual Review and consider the implications for our report if we become aware of any apparent misstatements or material inconsistencies with the summarised financial statements.

Basis of opinion

We conducted our work having regard to Bulletin 1999/6 'The auditor's statement on the summary financial statement' issued by the Auditing Practices Board. Our separate report on the University's full financial statements for the year ended 31 July 2012 describes the basis of our statutory audit opinion on those financial statements.

Opinion

In our opinion, the summarised financial statements set out on page 64 are consistent with the full financial statements for the year ended 31 July 2012.

Chris Wilson

For and on behalf of KPMG LLP, Statutory Auditor
Chartered Accountants
1 Forest Gate, Brighton Road
Crawley
RH11 9PT

27 November 2012

Note

The summarised financial statements for the year ended 31 July 2012, which comprise the summary consolidated income and expenditure account and the summary consolidated balance sheet, have been prepared by the Council of the University of Surrey for the purpose of inclusion in this Annual Review. The summarised financial statements are an extract of the full financial statements on which the auditor issued an unqualified opinion.

The full financial statements were approved by the University Council on 22 November 2012.

The full audited financial statements and independent external auditor's report can be obtained from the Chief Financial Officer, University of Surrey, Guildford, Surrey, GU2 7XH.

Professor Sir Christopher Snowden FRS FEng FIET FIEEE FCGI
President and Vice-Chancellor

Max Taylor
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Every effort has been made to ensure the accuracy of the information contained in this publication at the time of going to press. The University reserves the right, however, to introduce changes to the information given.

December 2012

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