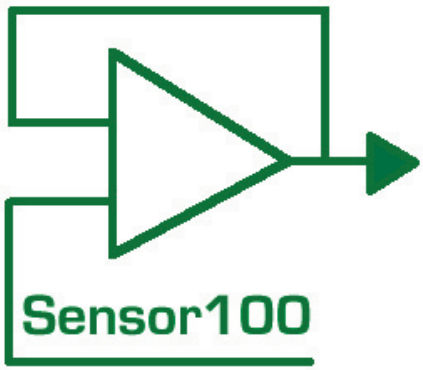
June 2016

Sensor100

The International Bio-sensor and Chemo-sensor Network

Linking academic, clinical and commercial worlds



News and views from the Sensor100 community

Edited by:
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From the Editor

The overwhelming story this month has to be the extraordinary decision by the UK to leave the European Union. "What happened?" American friends have asked, "we thought you were going to Remain." So did we!

To say the least this has caused turmoil, in the financial markets, and politically; both major parties are facing leadership challenges. The EU itself has advised that if the UK is going to retain access to the single European market, it will have to accept free movement of people across borders. The reverse position was a cornerstone of the Leave campaign. An unpleasant consequence has been the emergence of a racist element in the UK population, with European visitors being shouted at to "Go home."

Politicians of the major parties have accepted that a 52:48 vote based on a demonstrably misleading campaign is a mandate to Leave. This seems to suggest that both sides actually wanted to leave, although neither has very much idea of what to do next. There are voices being raised for a second referendum, not just by the Scottish Nationalists who have seized on this result to further their case for leaving the UK. If the referendum were held again today, it is possible that it would produce a very different result.

It seems that the outcome of the referendum was largely swayed by the over 60's voting sector, with nostalgia for a pre-EU time. Assuming we go through with this questionable mandate, the net outcome in a couple of years will be not much change, although the UK will be diminished on the world stage, and the country will be less wealthy.

So, we wait and see, and to use the WWII slogan, "Carry on".

We wish our American readers an enjoyable Independence Day weekend.

Kind regards

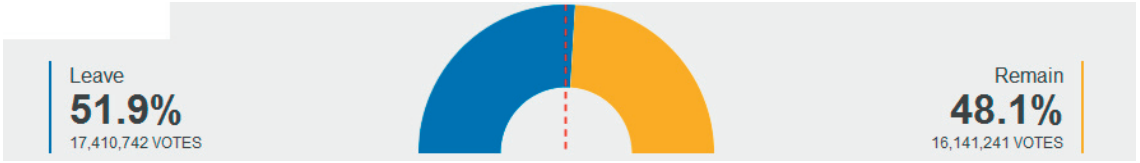
Michael

michael@sensor100.com

Britain Breaks with Europe

FT Weekend 25/26 June 2016

In what has been called the most significant event since World War II, on the 23 June, the UK voted to leave the European Union.



The analysis of why this happened and the possible implications will no doubt go on for months or years by those much better qualified to do so than **Sensor100.** Writing a few days after the referendum, there are many immediate outcomes of this unexpected result. The £ has weakened against the $ (down 10%) and the € (down 7%), with the effect of making vacations more expensive - vacations in the UK are sacrosanct, with even those living on social security benefits managing to get two weeks in the Mediterranean a couple of times a year. There is a general air of gloom and uncertainty in the country - certainly no joyous celebration by the majority who backed the Brexit campaign.

What are the uncertainties affecting **Sensor100** readers? Big business was largely a Remain supporter to protect its European markets. Smaller companies will be harder hit, by expected slower growth, access to EU markets, and possibly EU funding sources; there is no guarantee that the UK government will be able to fill that gap.

Academic institutions too face a problematic future with uncertainties about funding, collaboration with EU partners, and the free flow of researchers and students across the UK border. Not exactly great timing with the opening of the Crick Institute, and major investments by Imperial College and UCL in new campus sites being set to position London among the world's leading science and technology capitals.

No doubt over the next two or more years, the current issues will be resolved; until then, those of us in the UK will face an uncertain future.

Emerging Technologies Competition 2016

The Royal Society of Chemistry's annual Chemistry Means Business Conference in June 2016 included on the opening day the finals of the Emerging Technologies Competition. This Competition is the RSC's annual innovation initiative, turning promising ideas into commercial reality. Now in its fourth year, the competition brings cutting edge science to the real world for the benefit of society. Small companies, universities and research institutes can enter the competition by submitting entries in four categories:

- Health & wellbeing
- Energy & environment
- Food & water
- Materials

40 shortlisted entries presented their pitches, 10 in each of the four categories, to a panel of judges at the event. The winners, who received cash prizes, promotional opportunities and business support, were announced at a dinner that evening.

Among the 2016 shortlisted finalists were a number of sensor companies - demonstrating the rapid growth in this technology sector.

Health & Wellbeing

Advanced infrared breath diagnostic device
Ulm University, Germany
Presented by: **Boris Mizaikoff**

2nd Prize

Chemical sensing technology for diagnostics in healthcare
University of Cambridge
Presented by: **Setu Kasera**

Energy & Environment

Chemical sensor technology for volatile organic compounds
SensorHut Ltd.
Presented by: **Tanya Hutter**

3rd Prize

Food & Water

Source water and oceanographic pH sensor
ABNSensors Ltd
Presented by: **Nathan Lawrence**

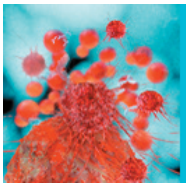
Continuous sugar monitoring technology
Ziylo Ltd
Presented by: **Tom Smart**

CyanoGuard portable cyanide detection kit for food safety control
University of Zurich, CH
Presented by: **Felix Zelder**

2nd Prize

Materials

Smart DNA-based technology for fluid or material tracing and sensing
Haelixa, Switzerland
Presented by: **Michela Puddu**



BioSensors for Cancer Diagnosis

Thursday 21 July 2016
London

Royal College of Obstetricians and Gynaecologists
27 Sussex Place, Regent's Park, London, NW1 4RG

This one-day Workshop will explore the current state and future opportunities for the application of biosensors in the early stage diagnosis and monitoring of cancer. This is among the more challenging application of biosensors with potentially the greatest social impact; if all cancers were diagnosed at Stage 1, the impact on survival rates would be huge.

Invited Speakers

Dr. Jodie Moffat, *Cancer Research UK*
Dr. Marc van der Schee, *Owlstone Ltd*
Dr. Pedro Estrela, *University of Bath*
tba, *QuantumDx Ltd*
Dr. Wendy Alderton, *Abcodia Ltd.*
Prof. Sam Tothill, *Cranfield University*
Prof. Francesco Michelotti, *University of Rome*
Dr. Michael Brand, *Sensor100*

Registration

The Registration fee of £400 + VAT (Academic/clinical £350+VAT) includes Workshop material, lunch, refreshments and an evening reception.

Full Program and Registration at:
www.sensor100.com/BfCD2016/Conference.html

At **Cancer Research UK**, the world's largest independent cancer charity, we fund more than £350m of research each year. We know the key to real progress begins with thinking about our challenges from new perspectives so we're increasingly looking to new fields and disciplines to bring novel ideas, new technologies, and different approaches to help us find new ways to tackle cancer.

The **Pioneer Award** was launched last year to fund truly innovative ideas, from individuals, teams or companies, that could improve cancer prevention, diagnosis or treatment. The scheme has already funded some outstanding projects ranging from an **AI program to guide surgical decision making,** to the development of **palladium-based drug delivery platforms** to be used post-surgery.

The projects span a range of disciplines and exemplify the 'all welcome' nature of the award. We want to hear from anyone with an idea that they think could be applied to cancer. You don't need vast amounts of data to back up your idea, we're interested in its potential.

The application process is also unique, you just need to submit a short two page proposal, which is anonymously judged by a committee of innovators and if you're idea is shortlisted you will be invited to present your idea in a Dragon's Den style pitch. The quick process means you can receive funding within four months of submitting your idea. The next deadline for applying is **5 September 2016**, further information is available on our **website.**

You can learn about the process of how to apply and hear what our funding committee are looking for by watching our **video**.

CANCER RESEARCH UK

21 - 22 September 2016

Ron Cooke Hub, University of York

Program

Plenary Session: How and Why of Environmental Monitoring

Technical Sessions: Pollution Assessment in the Urban Environment
Sensors for Water Monitoring
Air Monitoring for Health

Invited and Submitted Papers | Poster Competition
Exhibits | Book of Abstracts | Networking Reception

Call for Papers and early **Registration** now open

Abstract Deadline: 29 July

Full Program and Registration details at:

www.sensor100.com/IEM2016

Program	Call for Papers	Registration	Venue

Confirmed Speakers

Prof. Dermot Diamond

Dr. Werner Brack

Dr. Francesco Pilla

Prof. John Atkinson

Prof. Gerald Thouand

capacitie

Organised by

Sensor100

Sensors in Medicine 2016

Linking academic clinical and commercial worlds

9 -10 November 2016
Double Tree Docklands London

The 4th Annual Sensors in Medicine Conference will comprise:

- Invited and contributed papers
- Poster competition with cash awards
- Exhibits of sensor technology
- Panel discussions
- Networking reception

Papers and Posters are invited on the Conference topics:

Implantable and wearable sensors
Sensors and PoC for infectious disease diagnosis
Sensors for diabetes management
Advanced sensor technology for healthcare

Abstract submission deadline: 9 September
Abstract Submission instructions & Registration of Interest
www.sensor100.com/SIM16

London Docklands
view from
DoubleTree Hotel

Sensors in Medicine 2016

Linking academic clinical and commercial worlds

Introducing the First Sensors in Medicine

HackaThon

When:	11th November 2016 - 9:00 am to 5:00 pm
Where:	DoubleTree Docklands Hotel, London
What's a HackaThon:	Teams of post-graduate students will spend the day developing innovative ideas for the application of sensor technology in medicine and healthcare. There will be a short introduction to the task, and some advice on problem solving. Teams will have access to one or more mentors. At the end of the day, each team will present to a judging panel
Who are the judges:	A distinguished group of academic and industry representatives
Is there a prize:	Like MasterMind, the prestige of winning the SiM16 HackaThon. We hope there will be modest seed money to allow the winning team to take the idea further
What does it cost:	Students registered for SiM16 come free. For others, there is a £60+VAT entry fee
How do I enter:	You can enter as a team, or individually, and we will assign you to a team

Sounds interesting? Email michael@sensor100.com to let us know you would like to take part.



Sensors in Food and Agriculture

29 - 30 November 2016
Møller Centre, Cambridge UK

Keynote Speakers

Stephen Whalley
MEMS & Sensors Industry Group

Prof. Antje Baeumner
University of Regensburg

Program Topics

Remote sensing | The Internet of Things | Data Analysis
Sensors in Food Production
Detection of Contaminants and Pathogens
Food Quality from Farm to Table
Animal, Bird and Fish Welfare
Sensors in Plant Crop Production | Hydroponics
New Sensor Technology for Agriculture

Call for Papers Now Open

Deadline: 7 October

Register Interest and Abstract Guidelines

www.sensors100.com/SIFAA16

RSC Faraday Discussion

Single Entity Electrochemistry

31 August - 2 September 2016, York UK

Topics include: nanoparticles. nanaotubes and nanowires; nanopores; complex surfaces and reactions at the nanoscale; molecular electro-analysis from single molecules to single cells.

Amsterdam

13 - 14 December 2016

SensUs 2016

Eindhoven, The Netherlands

Learn more: sensus.org

Register: sensus.org/register

What is SensUs?

SensUs is the first international student competition on Molecular Biosensors for Healthcare Applications. On the 10th of September, there will be a contest day where **teams from five countries** will present their creatinine biosensor that they have developed in the last eight months. Moreover there will be interesting **talks from experts** in the biosensing field and **stands from our partners**.

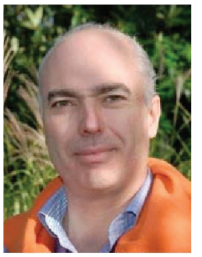
September

10

Participating Teams

Dr. Barry Fitzgerald
Master of Ceremonies
Eindhoven University of Technology

Prof. Geert-Jan Dinant
"Biosensors Change Healthcare"
Maastricht University



Prof. Koen Kas
"Past, Present and Future of Biosensing"
Gent University

Sponsored by:

PHILIPS Handheld Diagnostics

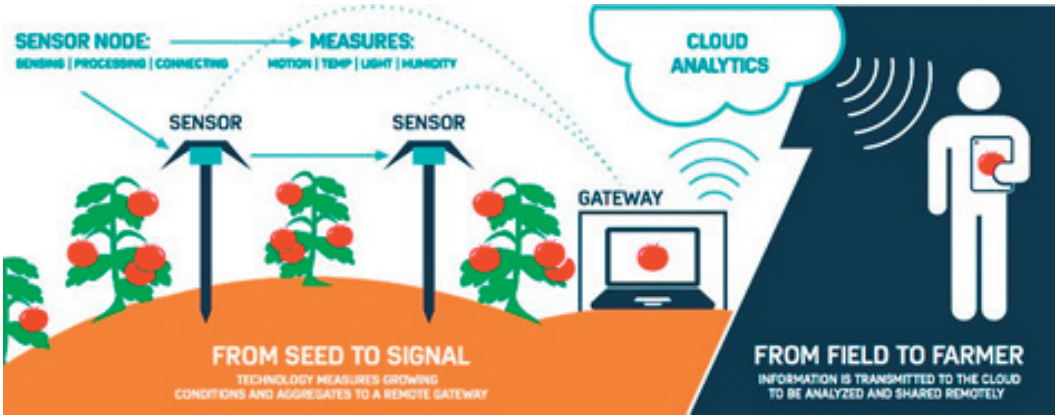
Medtronic Further, Together

ASML

TU/e Technische Universiteit Eindhoven University of Technology
Where innovation starts

info@sensus.org www.sensus.org /SensUs2016 @SensUs2016 *Let's compete for quality of life*

Smart sensors: the key to precision agricultural production



At the heart of the Internet of Tomatoes Project is a sensor-based system to measure the quality of the popular red produce. Source: ADI.

A team of IBM Research-Brazil scientists, are researching how "precision agriculture" techniques and technologies can maximize food production, minimize environmental impact, and reduce cost. With precision agriculture, control centers collect and process data in real time to help farmers make the best decisions with regard to planting, fertilizing, and harvesting crops. They place sensors throughout the fields to measure the temperature and humidity of the soil and the surrounding air. In addition, these control centers take pictures of fields using satellite imagery and robotic drones.

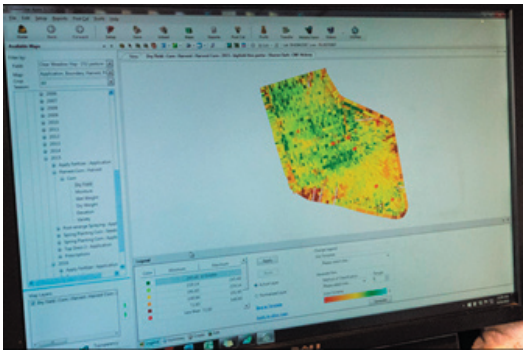
Until now, larger companies were better suited to precision agriculture technologies because these technologies require a robust IT infrastructure and resources to do the monitoring. However, cloud-enabled technologies will lower the entry barrier to allow smaller farms and co-ops to use mobile devices and crowdsourcing to optimize their own agriculture.

The MEMS & Sensors Industry Group (MSIG) is keenly interested in the connection between sensors and their use in helping to address major world problems, such as hunger, environmental issues, and healthcare access. In fact, MSIG anticipates that by the year 2020, more than a trillion sensors (TSensors) will populate these wide-ranging applications. But using sensors to help feed billions of humans will require water and soil management, precision agriculture, and improvements in crop yields and quality.

By STEPHEN WHALLEY, Chief Strategy Officer, MEMS & Sensors Industry Group
*[Stephen Whalley will be a Keynote speaker at **Sensors in Food and Agriculture 2016**]*

Reported in **Electronic Products** June 16

Modern Farms Use Self-driving Tractors and Data Science

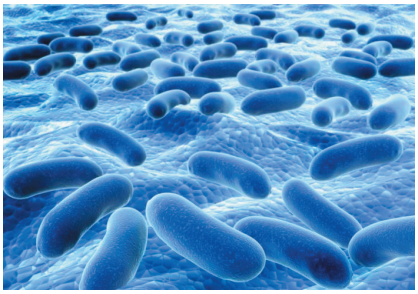


Field map showing different zones of productivity

Despite misconceptions to the contrary, farming in the 21st century is a high-tech endeavor. We're not just talking about genetically modified crops or biotech-derived pesticides though; farm vehicles like tractors and combines are now networked to the cloud and in many cases are even capable of driving themselves. Complex field maps are informed by a multitude of sensors from different farm machines, all gathering data to feed it to the farmer via the cloud. The setup allows for extremely precise seed and nutrient prescriptions that can vary multiple times across the same field.

Reported by **Ars Technica** June 18

Food pathogen detection via handheld 'nanoflower' biosensor



The nanoflower biosensor detects tiny chemical signals emitted by bacteria and amplifies them so they can be picked up easily with a simple handheld pH meter.

Even tiny amounts of harmful bacteria and other microbes can give rise to serious health risks, but the available sensor technology is unable to detect them easily and quickly in small quantities. Yuehe Lin, a professor in WSU's School of Mechanical and Materials Engineering, and colleagues describe how they developed a "nanoflower" biosensor that is able to detect and amplify signals from Escherichia coli O157:H7, a food pathogen that causes severe diarrhea and kidney damage in people. The biosensor uses a flower-like nanoparticle made from organic and inorganic components. Its key feature is the ability to maintain a large amount of enzyme activity for detecting antigens in a sample.

Reported in **MedicalNewsToday** 19 June
Washington State University News 13 June "Researchers improve biosensors to detect E. coli"

Sensor technology is at centre of an innovation race

" In the area of chemical sensors for food applications, fewer than 500 patent applications were published in 2000, compared to over 1,500 in 2015. The striking thing about this data is the wide breadth of companies patenting in this field, including printer, pharma, chemical, and traditional packaging companies as well as universities and research institutes.

In terms of the volume of applications, UK companies and research bodies are relatively low down the list."
Paul Foot
Paul Foot is partner and patent attorney at European intellectual property firm, Withers & Rogers.
Reported by: **Packaging News** 20 June

Biosensor Developed to Identify Allergens Faster

A microfluidic biosensor using graphene oxide and aptamer-functionalized quantum dots for peanut allergen detection
Reported by **Food Quality News.com** 17 June

The Future of Agriculture

Economist Technology Quarterly 9 June

A truly automated, factory-like farm, however, would have to cut people out of the loop altogether. That means introducing robots on the ground as well as in the air, and there are plenty of hopeful agricultural-robot makers trying to do so.

Turn Your Smartphone into Any Kind of Sensor

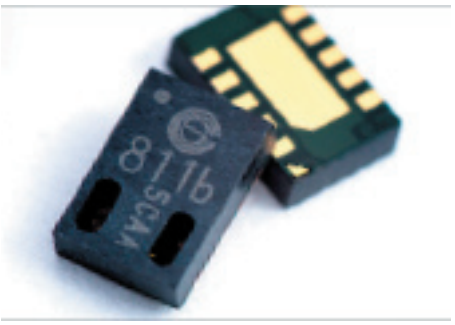
Variable Inc., Chattanooga TN, has developed a sensors platform NODE+, a cylinder not much bigger than a thumb that can transmit data from sensors to a smartphone or other smart device or store it to be uploaded to any computer. What is extraordinary about NODE+ is its versatility; modules at both end of the sensor are interchangeable. Variable converted off-the-shelf sensors, such as infrared thermometers, color references, motion sensors and barcode readers, into interchangeable modules that can be snapped onto either end, so two modules can be used simultaneously. There is a module for carbon dioxide detection and another that senses carbon monoxide, nitric oxide and other gases. Another module measures ambient light, room temperature, humidity and barometric pressure.

The pharmaceutical industry was quick to take advantage. With drugs needing to stay unjostled and at set temperatures, a sensor embedded in a package can send readings on temperatures and vibrations so the shipper knows exactly what occurred during transit.
Reported in **IConnect007** 23 June

ams acquires CCMOSS to become world leader in gas and infrared sensing

ams, Premstaetten near Graz, Austria, a leading worldwide manufacturer of high performance sensor and analog solutions, has signed an agreement to acquire 100% of the shares in Cambridge CMOS Sensors Ltd (CCMOSS), the technology leader in micro hotplate structures for gas sensing and infrared applications, in an all-cash transaction.

CCMOSS' micro hotplates are MEMS structures that are used in gas sensors for volume applications in the automotive, industrial, medical, and consumer markets. The company's deep expertise in this area is highly synergetic with ams' technology leadership in MOX gas sensing materials to detect gases like CO, NOx, and VOCs.



Cambridge CMOS Gas Sensor

Founded in 2008 as a spin-off from Cambridge University, with the start of technology development dating back to 1994 in collaboration with the University of Warwick, CCMOSS has built an outstanding expertise in micro hotplate design and manufacturing for gas and infrared sensing over more than 20 years.

ams Press Release 16 June

How Dirty Is Your Air?

The Speck 2.0, a $200 device, made by Carnegie Mellon University spin-out Airviz Inc. has a tiny air sensor, a nearly silent fan, and a touch-sensitive screen that displays the current PM2.5 level. There is a color graph indicating if the room is in the danger level, and a historical display. The device also has a Wi-Fi connection, allowing you to archive your air readings over time on the Internet and display other information, like the current outside air quality.

Reported by MIT **Technology Review** June 1

Owlstone Medical closes $7M (£4.9M) investment to commercialize disease breathalyzer

Billy Boyle
CEO and
CO-founder

Owlstone Medical Ltd, a diagnostics company, has been spun out of parent company, Owlstone Inc, to develop and commercialize a breathalyzer for use in clinical diagnostics and precision medicine with applications in cancer, inflammatory and infectious disease. Based in Cambridge, UK, the Company announced today that it has successfully raised $7 million (£4.9 million) financing. The investment round was led by Medtekwiz Advisory Ltd and will be used to fund ongoing clinical trials of the breathalyzer in lung and colon cancer screening.

Owlstone Press Release 28 June

Ochsner can bring two-thirds of hypertension patients within range

At a time when the value of mHealth is often questioned, Ochsner Health Systems, New Orleans, has reported that it was able to bring two thirds of hypertensive patients within range in 90 days by having those patients measure their blood pressure once a week with a connected device. The data goes to a dedicated group of non-physician hospital employees, who can provide health coaching and medication management assistance to the patients. They can also trigger text message and email reminders about taking readings and medications, and send encouraging messages when patients are doing well. "Patient activation and patient satisfaction were very high", Dr. Richard Milani at Ochsner said. Despite only requiring patients to take a reading once a week, Ochsner received 4.2 readings a week on average.

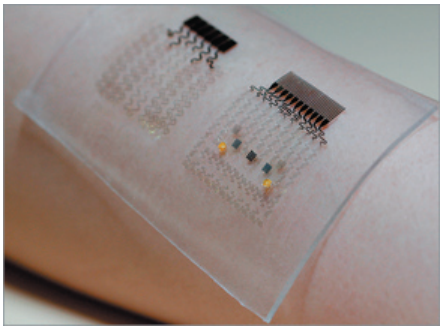
Reported by **MobilehealthNews** 22 June

Could wearable biosensors become part of drug rehab programs?

There is merit in looking at the use of wearable biosensors to detect whether opioid users stay focused on their rehabilitation programs. This follows a preliminary study in Springer's Journal of Medical Toxicology led by Stephanie Carreiro of the University of Massachusetts Medical School in the US. Her team tested the use of wristband sensors worn by a group of patients in an emergency room who were receiving opioids for severe pain relief. It was possible to detect when an opioid was administered, based on the readings of the biosensor. It picked up that patients moved less after they received the drug, and that their skin temperature also rose. These are among the ways in which the body is known to react to an opioid.
Reported by **EurkaAlert!** 23 June

Wearable Biosensors Studied for Clinical Monitoring and Treatment

Dae-Hyeong Kim, PhD, an associate professor in the School of Chemical and Biological Engineering at Seoul National University in Korea and his colleagues have been working to develop a noninvasive way to monitor blood glucose using a tiny wearable electronic biosensor that detects glucose levels in sweat. In fact, preliminary research demonstrated that their Band-Aid–sized device not only monitors sweat glucose, but also might be coupled with microneedles to deliver medication.



Glucose levels in sweat are much lower than in the blood stream, so accurately measuring these levels is more difficult, Kim said. In addition, pH level, body temperature, and the amount of sweat can skew glucose measurements in sweat and must be adjusted for. To overcome these challenges, Kim and his colleagues layered miniaturized electronic sensing systems for each of these variables onto their flexible adhesive patch. To test it, they adhered the patch to 2 healthy male volunteers and monitored their glucose levels using a mobile device application that wirelessly communicates with the glucose-sensing patch. The sweat glucose levels measured by the device matched measurements from a commercial glucose meter used on the men.
While the results are promising, Kim noted that there are still potential obstacles, including variations in the skin condition of individuals that could affect sweat collection.
Reported by **JAMA** 23 June

Roche Diagnostics launches Bluetooth-connected self-testing device for blood coagulation

Roche Diagnostics has launched a Bluetooth-connected device for testing blood coagulation in Europe. The CoaguChek INRange system has received a CE Mark, and an older version of the device without the Bluetooth connectivity is already available in the US and in Europe. The Bluetooth connectivity allows patients undergoing Vitamin K antagonist therapy to self-monitor their blood coagulation with a finger-prick, and then send those results wirelessly to their care provider. According to Roche, patients who self monitor every three days have a 92 percent likelihood to stay in their ideal PT/INR range.

Reported by **MobileHealthNews** June 1

Glucose-sensing contact lens developer Medella Health gets $1.4M

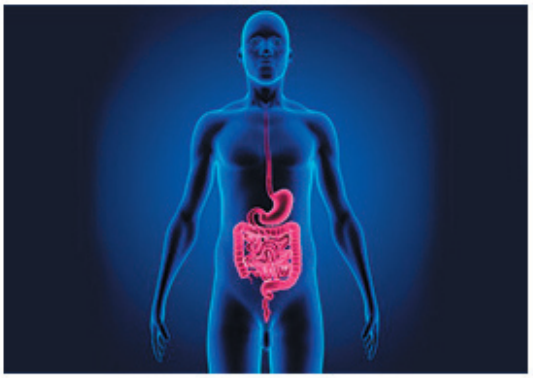
Medella Health is racing Google and Novartis to develop a glucose-sensing contact lens, has raised $1.4 million in funding. Backers include 1517 Fund, Fifty Years Fund, Garage Capital, BDC Capital and others.

Not too much is known yet about Medella's lens. The company says it will integrate a small sensor, a chip, and a micro-antenna and it will transmit glucose readings to a mobile device, enabling the user to track their glucose in near-realtime. Their biggest claimed innovation is a sensor that will last up to a month, which cofounder and CEO Harry Gandhi says gives them an edge over Verily (formerly Google Life Sciences), which is developing a similar technology for Novartis.

Reported by **MobileHealthNews** June 1

imaging, sensing and digital in gi medicine - enteric htc hackday 2016

Date	Friday 14 October 2016 Day
Venue	Royal Society of Medicine 1 Wimpole Street LONDON W1G 0AE
Organised by	RSM Professionals, Enteric Healthcare Technology Co-operative
Accreditation	CPD - Applied for



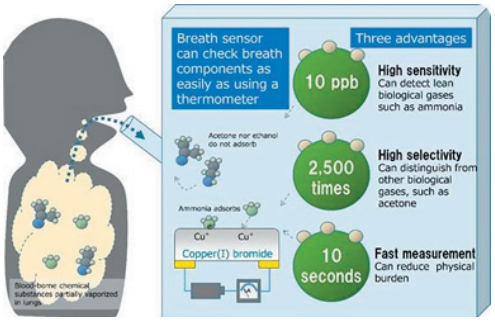
The program includes a Workshop on sensing, with papers on:

- Community need for faecal sensing
- Sensing faeces in the peritoneal cavity
- Sensing and stoma appliances
- Video-pills and harpsichords

Full program details at: **www.rsm.ac.uk/GIHackday2016**

Fujitsu Develops Portable Breath Sensor to Detect Lifestyle Diseases

Fujitsu Laboratories' Devices & Materials Laboratory had developed a copper(I) bromide sensor for the selective measurement of ammonia in breath. The technology quantitatively measures ammonia in the breath in a range from 10 parts per billion to several parts per million. Meanwhile, its sensitivity to other gases is extremely low, responding hardly at all.



Reported by: **Medical News** 31 May

Cancer researchers step up drive for earlier detection

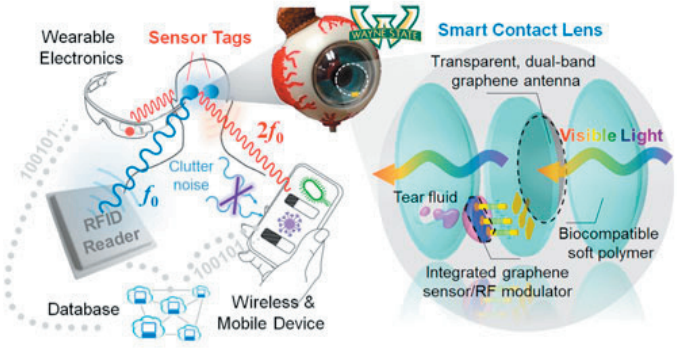
Special report: Combating Cancer

Read full report: **Financial Times** June 1
[*Note: Sensor100 cannot abstract this report under FT copyright rules*]

Graphene-based smart contact lens works as self-powered biosensor

A new graphene-based wireless sensor could make 24-hour healthcare easier to achieve by enabling wireless monitoring of various biomedical events in order to gain a more comprehensive assessment of the wearer's healthcare status.
This novel device, which detects chemical/molecular agents and lengths of exposure, can be used as lightweight and transparent wearable or bio-implantable electronic sensor. It may provide an inexpensive way to detect in real-time the biomedical of interest.

"In our recent work we have demonstrated that graphene field-effect transistors (GFETs) can offer simultaneous radio-frequency modulation, chemical sensing and memory effects in a single component," Pai-Yen Chen, Assistant Professor in the Department of Electrical and Computer Engineering at Wayne State University, tells Nanowerk.



Chen and his collaborators are currently working with the Detroit Medical Center to demonstrate the first transparent, self-powered, and flexible wireless biosensors integrated on a biocompatible polymer, fitted to the geometry of the human eye, without the need for power sources (e.g. draws power directly from the radio signals) or wire connection

Reported by: **Nano Werk** 6 June

Gordon F. Kirkbright Bursary Award, 2017

The Gordon F. Kirkbright bursary award is a prestigious annual award that enables a promising student/non-tenured young scientist of any nation to attend a recognised scientific meeting or visit a place of learning.

The fund for this bursary was established in 1985 as a memorial to **Professor Gordon Kirkbright** in recognition of his contributions to analytical spectroscopy and to science in general. Although the fund is administered by the Association of British Spectroscopists (ABS) Trust, the award is not restricted to spectroscopists.

Applications are invited for the 2017 Gordon Kirkbright Bursary. For further information contact John Chalmers at:

vibspecconsult@aol.com

The closing date for entries is 31 December 2016.

HEC 2016 GMDS & DGEpi & IEA-EEF annual meeting, Medical Informatics Europe - MIE 2016 in cooperation with the IBE, LMU

Health – Exploring Complexity: An Interdisciplinary Systems Approach

Workshops

Aug 29, 14:00 - 15:30:

"Wearable and Ambient Sensor Technology in Geriatric Medicine and Rehabilitation: examples, challenges and lessons learned"

Aug 31, 17:00 - 18:30:

"Wearable sensors in large cohort studies: experiences and future directions"

http://www.hec2016.eu/

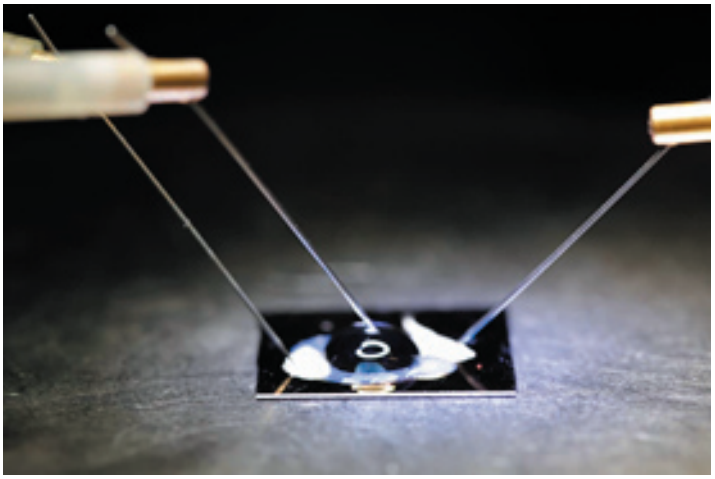
Wearable technology is booming, powered by photonics

Battery-free, optoelectronic 'tattoo', or skin-like, device for measuring blood oximetry. The system receives power wirelessly, to activate a microscale red LED and a photodetector. Measurements from backscattered light are transmitted using RF communication, using an interface that is compatible with common consumer electronic devices. Here, operation is shown while the skin is pinched, to illustrate the mechanical stretchability and robustness in the device construction. (Rogers Research Group, Univ. of Illinois Urbana-Champaign)

Reported by **SPIE.** 21 June

Low-cost graphene-based biosensor chip detects DNA mutations in real time

One of the most common indicators of many diseases and cancer in blood is the presence of a genetic mutation known as a single nucleotide polymorphism (SNP). Unfortunately, to date such tests for SNPs are slow, cumbersome and – above all – expensive. Now a team of researchers from the University of California, San Diego (UCSD) have developed a new graphene-based sensor that promises to deliver test results easily, in real time, and inexpensively. The researchers believe this could be a breakthrough in the early detection and screening for many life-threatening illnesses.



A new graphene-based DNA mutation sensor can quickly and easily indicate the presence of a range of cancers and other life-threatening illnesses in real-time and low-cost(Credit: UC San Diego)

Reported by **GizMag** June 15

VitalConnect Announces Closure of $25 Million of Financing

VitalConnect currently markets the VitalConnect Platform that includes two wearable biosensors combined with mobile and cloud-based software and analytics. HealthPatch®MD and VitalPatch™ biosensors are lightweight, wireless, adhesive patches that continuously monitor and record single lead ECG, heart rate, heart rate variability, respiratory rate, skin temperature, posture, step count and fall detection with clinical accuracy. Through the VitalConnect Platform, care teams receive accurate data and notifications to make health decisions and enable timely interventions.

Reported by **BusinessWire** June 13

Imperial College Rejects EU Referendum

"Imperial is, and will remain, a European university, whatever your view of the referendum outcome. We are very proud of the innovations, ideas and inspiration that come from the European members of Imperial's global community.
"We are determined that political changes will not hold Imperial back from delivering excellence in research and education for the benefit of global society. We will vigorously defend our international values if they are threatened and will continue to think and act internationally."

President and Provost, Imperial College, 24 June

Scientists Uncertain After Brexit Vote

UK scientists were largely against the so-called 'Brexit.' A poll conducted by Nature in March found that 83 percent of UK researchers said Britain should remain in the EU. While exactly what a Brexit will mean for UK science isn't yet fully clear, researchers are worried about a loss of funding, collaborations, and opportunities.

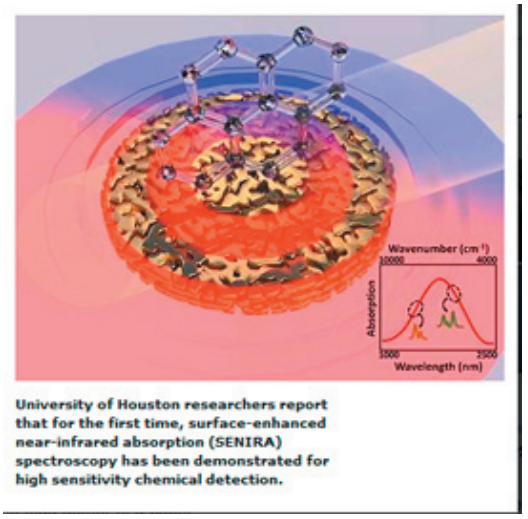
The EU has a €120 billion budget for 2014 to 2020 to go toward research projects and the UK generally gets more back in grants than it pays in — Britain paid €5.4 billion into the EU research budget between 2007 and 2013, but received €8.8 billion back in grants. James Wilsdon, a professor of research policy at the University of Sheffield, said "And if there's a shortfall in funding, will the UK government pick it up, as they promised?"

"But I think the bigger questions are over mobility, what this will do to the attractiveness of the UK as a destination for the best and brightest from across Europe, who will now — quite rightly — think twice about coming to pursue their careers in British universities," Wilsdon adds.

Reported by **GenomeWeb** 24 June

New Near-Infrared Chemical Sensing Technique

Researchers from the University of Houston have reported a new technique to determine the chemical composition of materials using near-infrared light. The work could have a number of potential applications, including improving downhole drilling analysis in the oil and gas industry and broadening the spectrum of solar light that can be harvested and converted to electricity, said Wei-Chuan Shih, associate professor of electrical and computer engineering at UH and lead author of a paper describing the discovery published June 22 in Nano Letters.



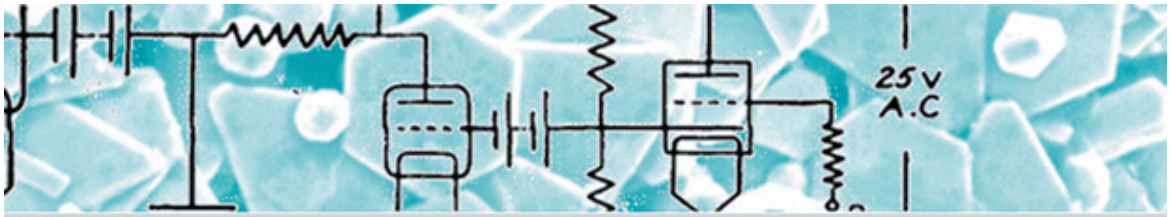
University of Houston researchers report that for the first time, surface-enhanced near-infrared absorption (SENIRA) spectroscopy has been demonstrated for high sensitivity chemical detection.

Reported in **eScience News** 24 June

Laser-functionalized aptamer-based photonic biosensors

Biosensors printed using laser-induced forward transfer can be optimized using a novel complementary-strand method to achieve high sensitivity for multiple-analyte detection. Researchers at the Biomedical Research Foundation of the Academy of Athens have developed a method that can be applied to any type of surface or functionalization layer to achieve direct immobilization of a specified thickness of probe material on the surface, irrespective of the application. This approach uses direct high-resolution maskless printing of the biorecognition element onto the surfaces of the biosensor. This is achieved using a novel technique called laser-induced forward transfer (LIFT), which can be used to deposit several aptamers onto the same substrate, thereby creating biosensors that are capable of multiple-analyte detection.

Reported by **SPIE.** 28 June



n 2016

Electrochem 2016

Important: Abstract submission is still open

Stamford Court, University of Leicester

17-19 August 2016

Electrochemical Sensing Symposium

- Biomedical Sensing
- Environmental Monitoring
- Novel Sensing Technologies and Platforms
- Industrial Measurements

To celebrate the 75th anniversary of the submission of Hickling's seminal publication outlining control of potential at a working electrode, regarded as the invention of the potentiostat, the 21st annual Electrochem meeting will be held at the location of its discovery, the University of Leicester, in August 2016.

STUDIES IN ELECTRODE POLARISATION.
PART IV.—THE AUTOMATIC CONTROL OF THE POTENTIAL OF A WORKING ELECTRODE.

By A. Hickling.

Received 16th September, 1941.

Although the electrode potential is considered to be the dominating factor governing many electrolytic processes, it is one of the variables least amenable to direct experimental control. In general it can only be indirectly changed or maintained during electrolysis by alteration of such factors as current density, temperature, electrode material and electrolyte composition. A device whereby the potential of a working electrode can be fixed at any desired arbitrary value would seem, therefore, to have many valuable applications in the exploration of electrolytic processes, and the present paper describes an electrical circuit by means of which this aim can be achieved.

Electrochem 2016

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