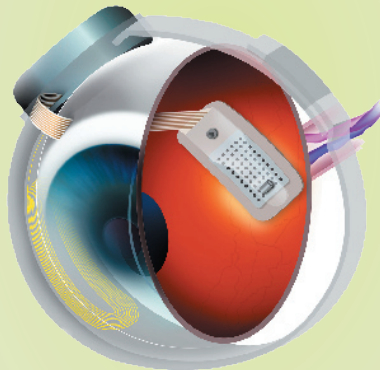


Sensor100

The International Bio-sensor
and Chemo-sensor Network



Bionic Eye
Image: Second Sight

July 2015

Contents

From the Editor	3
First AMD patient receives retinal implant	4
Organisation profiles	6
Sensors in Food & Agriculture conference	8
Sensors in the Environment conference	9
Cancer diagnostics	10
Coming events	12
Environment	16
Food & Agriculture	18
Healthcare	20
Technology News	26
The Last Word	29
About Sensor100	30

Cover image:

The Bionic Eye incorporating Argus® II retinal implant. Image: Second Sight Medical Products Inc.

www.sensor100.com

From the editor...

It has always seemed to me that among the many afflictions which plague mankind, becoming blind must be among the worst - living in a world of darkness, unable to move around freely, not being able to read, or indeed write editorials, would be near hell for me. People who are profoundly deaf tell me that is an even worse affliction, because it cuts the sufferer off from normal communication. We have featured this month the groundbreaking implant of a retinal prosthesis in a patient with AMD (age-related macular degeneration), a condition that affects 1 in 2000 of the world's non-diabetic population. This is not the first time this implant has been used - it has helped treat patients with retinitis pigmentosa, a condition that is common in diabetics. But it is the first time for AMD; the recipient has shown some ability to see shapes, and we can only wish him and the surgical team continued success.

We have debated here before exactly what is meant by a “biosensor”. The strictly rigorous academic definition seems to be fading away, as sensors are increasingly finding wider and newer applications in the biological sciences and healthcare. We will continue to interpret the word liberally, and pretty much include anything which appeals to your editor.

Enjoy the summer

Kind regards

Michael

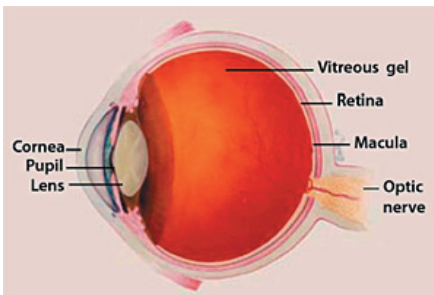
michael@sensor100.com



First AMD Patient Receives Retinal Implant

It has been said that the human body is designed to live for 45 to 50 years. Today, in developed countries, male life expectancy is around 80, and female up to 85. It is not therefore surprising that signs of wear and tear begin to appear; osteoarthritis, cardiac disease, and neurological diseases like Alzheimer's and Parkinson's become increasingly common in old age. Many cancers too show increasing incidence in the ageing population. Most of these diseases require long term management, rather than being amenable to a quick and irreversible cure; biopharmaceuticals which target specific diseases are the golden grail for research, but are not yet available for clinical use.

About 1 in 2000 non-diabetic people worldwide begin to experience sight problems from age 65 onwards, as the macula, a central spot in the retina, deteriorates, leading to loss of central vision, while peripheral vision remains. Age-related Macular Degeneration (AMD) is the commonest reason for blindness in non-diabetic patients over 65. There are two types of AMD - "Dry" AMD is commonest and leads to a loss of central vision over a number of years, but not total blindness; "Wet" AMD occurs in 10-15% of patients, can develop very quickly and lead to total blindness but is treatable.



Position of the macula
Image: National Eye Institute



View of Tower Bridge as seen by
patient with AMD
Image: Macular Society

A study is now underway to evaluate the surgical implantation of retinal prostheses in patients with dry AMD. **Second Sight Medical Products Inc**, CA USA, have developed a retinal implant Argus® II which has gained widespread approval and has previously been used to treat patients with a common visual problem for diabetics: retinitis pigmentosa.



Argus® II Retinal Implant
Image: Second Sight

In a groundbreaking first, on 22 July, a dry AMD patient was implanted with Argus® II at the Manchester Royal Eye Hospital in the United Kingdom by Dr. Paulo Stanga MD, Consultant Ophthalmologist & Vitreoretinal Surgeon, Professor of Ophthalmology and Retinal Degeneration at The University of Manchester. The device was activated approximately two weeks after implantation, and initial reports confirm that the subject is receiving some useful vision from the Argus® II system.

The Argus® II works by converting images captured by a miniature video camera mounted on the patient's glasses into a series of small electrical pulses, which are transmitted wirelessly to an array of electrodes implanted on the surface of the retina. These pulses are intended to stimulate the retina's remaining cells, resulting in the perception of patterns of light in the brain. The patient then learns to interpret these visual patterns, thereby regaining some visual function. The system is controlled by software and is upgradeable, which may provide improved performance as new algorithms are developed and tested.

Press release: Second Sight, July 22, 2015

Imutest Limited

Imutest has developed and markets a range of point-of-care/self-test kits for allergy which cover the most common environmental and food allergens. These offer simple-to-do tests using a small finger prick sample of blood with results in 30 mins ... results with Imutest correlate very well with results using the 'gold-standard' laboratory IgE method (Phadia's ImmunoCAP).



When you know what is causing your allergy symptoms, you can then take the necessary steps (medication and/or avoidance measures) to reduce your exposure to the offending allergen.

Imutest allergy test kits have CE Mark approval for self-testing, so they can either be purchased by the patient for testing themselves in the privacy of their own home, or can be used by a healthcare professional (e.g. private doctor, retail pharmacist, nutritionist, homeopath, etc) as part of a service to the patient in a non-laboratory setting. Imutest kits offer the following features:

- easy to perform
- require just 50ul blood sample from finger prick
- reliable results available within 30 mins
- based on a patented technology

More information at: <http://www.imutest.com>

Strathclyde Institute of Medical Devices

Strathclyde Institute of Medical Devices (SIMD), is a business/clinical engagement and commercialisation vehicle for medical technologies, including sensors, emerging from the University of Strathclyde - not least its long established EPSRC Centre for Doctoral Training in Medical Devices and Health Technologies.

SIMD's role is in supporting the translation of medical technology research into clinical and commercial outcomes.

Our medical technology sensor interests encompass point of care diagnostics (POC), particularly non or minimally invasive electronic sensor systems. We have commercialised POC systems on wound hydration monitoring and developed a system for monitoring wound pH and tested it in Qatar.

We have developed, and in some cases conducted clinical studies on, transdermal POC systems. A range of small molecules (glucose, lactate, vitamins) and ions can be continuously monitored. A recent electrolyte/hydration monitor based on this technology formed the basis of a wearable device for athletes.

Finally, we have also developed a label and reagent free POC technology for bacterial infection monitoring. At the moment this has been used in the context of Cystic Fibrosis - accurately detecting the presence of *Pseudomonas aeruginosa* with high specificity - though it is expected that a similar rationale can be applied to other bacterial agents.

More information at: <http://www.strath.ac.uk/simd/>



 **Sensors in Food and Agriculture**

1 - 2 December 2015
The Møller Centre, Cambridge

Exploring current applications and future opportunities for sensor technology in food and agriculture

Keynote speaker: **Professor Richard Durst**
Cornell University and Chair of the Food Advisory Committee of the U.S. FDA

Call for papers now open
For program updates [click here](#)

Conference organizer



Supported by



Commercial sponsor





Sensors in the Environment 2016

2nd Sensors in the Environment Conference

21 - 22 September 2016

York, UK

Topics include:

- Air monitoring
- Sea, surface and potable water monitoring
- Soil contaminants
- New sensor technology
- Monitoring networks; impact of the Internet of Things
- Economic and social impact

[Register SiE16 Interest](#)

Invited and contributed papers
Exhibition | Posters

Organised by:



Sensor100

Cancer Diagnostics

UK Wakes Up to Need for Earlier Cancer Diagnosis

The UK, which has long been at the lower end of European cancer survival rates, seems to have suddenly recognised the need for earlier diagnosis:

Millions more to be tested for cancer

The Times, June 23, 2015

GPs blamed for poor cancer survival rate

The Times, May 28, 2015

NHS plan to slash cancer deaths

The Sunday Times, July 19, 2015

Oxford spin-out raises record £200m to boost cancer fight

The Times, July 17, 2015

£1.20 iPhone test could diagnose cancer from home in two minutes

The Times, April 14, 2015

New test hope for detecting ovarian cancer

The Times, May 5, 2015

Toothbrush to check your DNA for cancer

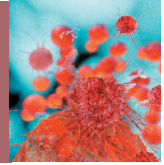
The Times, April 15, 2015

At 15, Jack Andraka invented a simple “dipstick” cancer test that could save many lives...

The Sunday Times, 31 May, 2015

Sensors for Cancer Diagnosis

2 - 3 June 2016 Boston MA USA



One in two of us will be diagnosed with cancer: all of us know someone whose life has been touched by cancer

Early diagnosis is the most important factor in increasing cancer survival rates

We need better diagnostic tools for the early diagnosis of cancer

Sensor technology shows the most promise to meet that diagnostic need

SENSORS FOR CANCER DIAGNOSIS WILL BE A DIFFERENT CONFERENCE

We will be inviting the sensor and medical oncology community to submit ideas on technology for the early diagnosis of cancer

Then, the community will rank those technologies in order of clinical importance

The leading technology ideas will be invited to present at the Conference in Boston in June 2016

No “expert panel”; no “scientific committee”; the cloud based network will decide what is important

Interested in being part of the cloud network? Let us know

[REGISTER](#)

Coming Events

7th Annual Next Generation Dx Summit

August 18 -20, Washington DC

Diagnostics 5.0 - Partnering for Tomorrows Medical Care

September 17 - 18, Berlin DE

BBMEC: 11th Workshop on
Biosensors & Bioanalytical Microtechniques
in Environmental, Food & Clinical Analysis



11

INTERNATIONAL BIOSENSOR CONFERENCE
26. – 30. Sept. 2015 | Regensburg, Germany

11th Annual COMSOL European Conference

October 14 - 16, Grenoble FR

Medica

16 - 19 November, Dusseldorf

2016

16th International Conference on Electroanalysis

June 12 -16, 2016, Assembly Rooms, Bath UK

Biosensors 2016

May 25 - 27, 2016, Gothenburg Sweden

[Deadline for Abstracts 13 November 2015]

List your event on **Sensor100's** Events Calendar
Send details to info@sensor100.com

B I O D O T



Hands-On Workshop

The Microfluidics Flow: Going from R&D to Quantitative IVDs

23 - 25 September 2015

San Diego CA

A 2½ day workshop including lecture and hands on practical sessions. Tracks include:
lateral flow development; commercialization; microfluidics - blood glucose tests, arrays, biosensors for IVD and other life science applications

Full Program and Registration

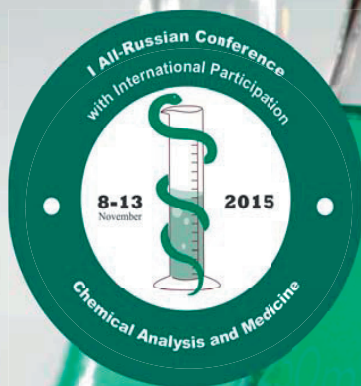
Or contact:

Barbara McIntosh | BioDot

Vice President of Global Sales

t: +1.714.394.5336

barbara.mcintosh@biodot.com



I All-Russian Conference with International Participation “Chemical Analysis and Medicine”

November 8-13, 2015, Moscow
www.acm2015.org

The Conference organisers



НАУЧНЫЙ СОВЕТ РАН
по аналитической химии



Official service agent

International Agency
of Congress Management

www.makongress.ru
tel.: +7 (495) 134-25-65
acm2015@makongress.ru



THE KNOWLEDGE FOUNDATION'S

SENSORS GLOBAL SUMMIT 2015

November 10-11, 2015 | San Diego Marriott La Jolla | La Jolla, CA



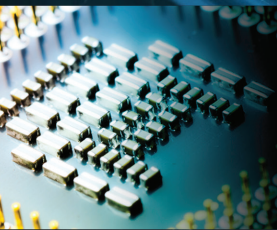
BIOSENSORS

Technological Advances and
Commercial Applications



SENSOR POWER

Energy Harvesting and
Advanced Battery Technologies



SENSOR R&D

Advanced Materials, Design,
Modeling and Fusion

Register Now

SensorsGlobalSummit.com

Propeller Health to Build First Ever National Asthma Risk Map for U.S.

Propeller Health, Madison WI USA, has announced it will build the first-ever national Asthma Risk Map for the United States, where citizens can track how climate change affects the frequency and severity of asthma attacks and chronic obstructive pulmonary disease (COPD). To accomplish this, Propeller plans to expand its current municipal public health asthma initiatives to five cities around the US in the next two years as part of President Obama’s Climate Data Initiative.

Propeller provides a small sensor/transmitter device which can be attached to the inhalers used by asthma and COPD patients; each use of the inhaler can be monitored on a smart phone. The patient and/or their physician is able to monitor the frequency of inhaler use, a critical factor in managing the disease. The sensor monitors the time and location of the inhaler use.



Propeller Sensor



Incidence of inhaler use in Louisville Kentucky

Creating the Asthma Risk map is the first piece of the puzzle in helping provide in-depth models on the impact

climate change will have on public health.

Propeller Health Press Release April 7, 2015

Wendy Schmidt Ocean Health X-Prize Winners Announced

The Prize was awarded for development of a precise and sustainable system for ocean pH measurement. The winners were:

First Prize for Affordability and Accuracy: **Sunburst Sensors**, Missoula MT USA, for a highly accurate colorimetric reagent method

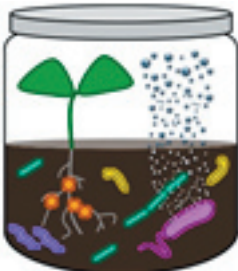
Second Prize for Affordability: **ANB Sensors**, a partnership between Schlumberger, Cambridge Microfab and Hull University, UK, for pHe-nom, a voltammetric electrochemical sensor

Second Prize for Accuracy: **Team Durafet**, a partnership between Monterey Bay Aquarium Research Institute, Scripps Institution of Oceanography, Sea-Bird Scientific/Satlantic and Honeywell, for a Ion Sensitive Field Effect Transistor (ISFET)-based pH sensor

Sunburst Sensors received two \$750,000 prizes for Affordability and Accuracy; the two second prize winners each received \$250,000.

[X-Prize News](#) July 20, 2015

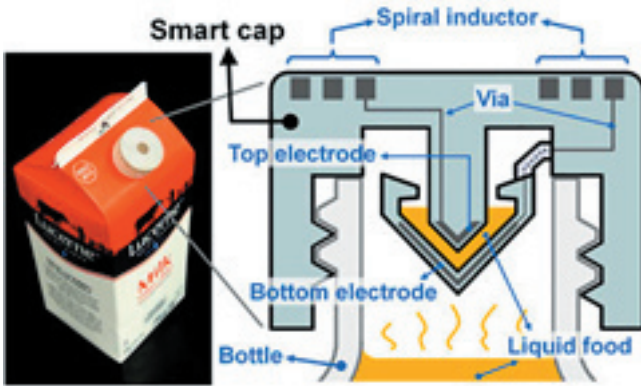
Rice University awarded \$1M grant from Keck Foundation to engineer microbial biosensors for soil



The researchers are designing microbes to spy on the behavior of other microbes in soil, and ‘blog’ about what they find by releasing a detectable gas.

Rice University [New Release](#) 6 July 2015

3D-printed 'smart cap' uses electronics to sense spoiled food



UC Berkeley engineers created a 'smart cap' using 3D-printed plastic with embedded electronics to wirelessly monitor the freshness of milk. (Photo and schematic by Sung-Yueh Wu)

UC Berkeley engineers, in collaboration with colleagues at Taiwan's National Chiao Tung University, are expanding the already impressive portfolio of 3D printing technology to include electrical components, such as resistors, inductors, capacitors and integrated wireless electrical sensing systems. They have put

the new technology to the test by printing a wireless "smart cap" for a milk carton that detected signs of spoilage using embedded sensors. [Berkeley News](#) July 20, 2015

What if your fridge knew when the milk was off?

Professor Krishna Persaud of the University of Manchester is one of the scientists currently looking for ways to teach machines to smell. He has found a way to replicate proteins which respond to smell, and in collaboration with a group at the University of Bari, IT, has coupled them to the gate of a transistor.

[Read more...](#)

Combating the Rise of Food Fraud: Food Authenticity and Spectral Sensing

Food fraud is big business. By some estimates, 10% of the world's food supply is adulterated or counterfeited in some fashion. The consequences are significant: higher costs passed on to food producers and consumers; brand damage to food and beverage suppliers; and inadvertent illnesses and death from substandard ingredients and harmful contaminants.

Spectroscopy is taking a bite out of food fraud. Using UV-Vis, NIR and Raman spectroscopy techniques, authenticators are stemming the flow of deficient, mislabeled and contaminated food and beverages. For example, spectral analysis of foods like olive oil and honey identifies characteristics that help to discriminate authentic samples from fakes. Raman analysis has detected trace levels of fungicides and other contaminants in processed food. Absorbance signatures of spirits can be measured to screen for dilutions and substitutes.

Ocean Optics modular spectrometers and Raman analyzers provide the necessary tools to authenticate the origin, identity and purity of food and drink



Source: [OceanOptics eNewswire](#) July 2015

Too Much Information? Health tests today

“As information technology evolves and as medical devices get faster, cheaper and smaller, there will be even more available. What can we expect to be able to find out in our homes? What could that mean for how you live your life? And how much health information are you comfortable with having?”

Visit **The Science Museum**

London display in the **Who am I? gallery** to find out. See advanced prototype health tests that might soon be in all our homes, and the portable technology that could take

lab-grade diagnosis to remote places all over the world.

The display is open until 25 September 2015 - see [more...](#)



The display features work from the Biosensors and Bioelectronics Centre at Linköping University in collaboration with Acreo Swedish ICT AB

Glysure Launches World's First Continuous Intravascular Glucose Monitoring System

GlySure Limited, Oxford UK, announced that it has secured the CE Mark for the world's first and only Continuous Intravascular Glucose Monitoring System (CIGMS). The initial use of the GlySure™ CIGMS is to enhance blood glucose management among adult cardiac surgery patients in the Intensive Care Unit (ICU). The GlySure CIGMS comprises three main parts: a monitor, a disposable fibre optic sensor and a disposable 5 lumen central venous catheter (CVC), similar to that typically used in the ICU. The GlySure sensor includes a highly selective proprietary chemistry that provides the first commercially available glucose testing system that can accurately measure intravascular glucose levels every fifteen seconds.

Press Release July 1, 2015

Theranos: Catalyzing Healthcare Consumerization

Theranos, Palo Alto, CA, defines its company name as “Detecting the onset of disease in time for therapy to be effective”. The secretive company has come under a great deal of scrutiny from among others, the FDA, who have demanded more information on the tests offered, and business analysts - why is the company valued at \$9bn? Is this simply the most successful microfluidics company which has evolved a strategy to bypass regulatory hurdles by offering tests directly to the public?

Eric Lakin, Analyst at DeciBio Consulting, LLC has suggested that Theranos is emulating Apple in trying to sell lab tests directly to consumers (B2C) in a market which is driven by physicians ordering tests and the insurers who pay for them (B2B). It is likely that as Theranos grows past its teenage years (a company valued at \$9b is hardly a start-up) it will continue to encounter significant hurdles in its business model. Nevertheless, Lakin concludes that Theranos has the potential to become a major disruptive influence in the diagnostics market.

[DeciBio Consulting LLC](#), October 2014

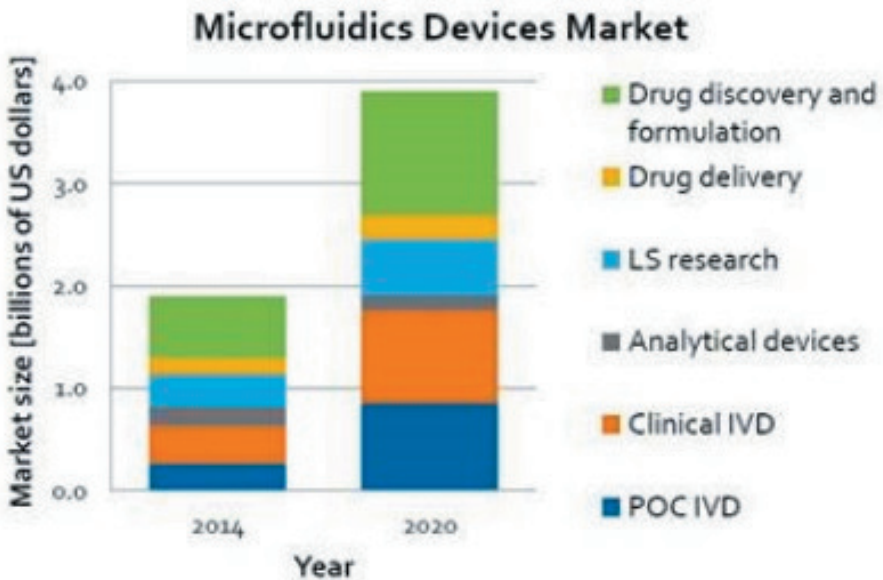
Sensing Drugged Driving: SBIR award for roadside drug test

University of Maryland spin-out **Diagnostic anSERS** announced that the National Science Foundation (NSF) has awarded the company a Small Business Innovation Research (SBIR) Phase I grant to identify drugged drivers. With the \$150,000 funding, Diagnostic anSERS will develop a paper-based test strip to enable rapid roadside screening for driver drug impairment, a particularly pressing need.

Source: [PRWEB](#) July 20, 2015

Health Care Microfluidics Market To Grow To Nearly \$4B In 2020

Lux Research BioElectronics Intelligence service report “Health Care Microfluidics Value Chain: A Story of Growing Pains” forecasts strong growth in the medical device microfluidics market by 2020. POC diagnostics will grow at 20% CAGR, driven by low-cost, portable diagnostics solutions for applications in infectious diseases and lifestyle-related conditions.



Source: [Med Dev Online](#) July 21, 2015

Remote Monitoring Technology Boosts Patient Engagement

Dr. Raj Khandwalla of Cedars Sinai Medical Center spoke with [mHealthIntelligence.com](#) to offer his opinion:

“It all comes down to data streams including which ones are predictive and what data streams are not predictive,” Khandwalla began. “If you look broadly at the term data stream, you can get data streams from biosensors that are implanted, biosensors that are wearable, and labs that are checked on a regular basis. Biomarkers that would come from those labs could potentially have even more predictive power.”



“The way I see it evolving is data streams coming from implantable or wearable devices as well as regular testing of biomarkers, which will come in the form of lab tests,” he continued. “As lab tests become easier to obtain, that will be another very powerful data stream. Once we find biomarkers being tested on a regular basis, it will lead to new biosensors to test blood tests noninvasively. The labs will lead to new sensors being formed and all of it will lead to more data streams. Over time, those data streams will become more predictive of people’s health.”

Source: [mHealthintelligence](#) July 22, 2015

Gentag, Mayo Clinic, NovioSense and Fraunhofer Join Forces to Lower the Cost of Diabetes Care Globally

Building on the long-standing collaboration between Gentag and Mayo Clinic, and the long-standing collaboration between NovioSense and Fraunhofer Institute for Microelectronic Circuits and Systems (IMS), Gentag and NovioSense today announced that they have formed a joint venture to combat the epidemic of type 2 diabetes that is overwhelming people and health care systems worldwide. The venture projects:

- Exciting, new, patented technology platform poised to disrupt diabetes care delivery globally
- Extremely low-cost, pain-free system could be a game changer
- No more lancets, glucometers
- Real-time cloud-based readings deliverable to caregivers and providers anywhere instantly via NFC cell phones
- Opportunity to improve diabetes outcomes worldwide

Using their patented combined assets that include advanced chemistry knowledge, proprietary sensor designs, and software and chip (ASIC) design capabilities, the four parties will combine forces to develop a mobile-phone based platform to bring very low-cost, on-demand pain free diabetes monitoring to people worldwide. The joint venture is covered by 75 issued patents worldwide and is significantly lower cost than current type 2 diabetes solutions. Development will be carried out simultaneously on both sides of the Atlantic.

Reported by: [Business Wire](#), July 14, 2015

Non-invasive device could end daily finger pricking for people with diabetes

A new laser sensor that monitors blood glucose levels without penetrating the skin could transform the lives of millions of people living with diabetes. The new technology, developed by Professor Gin Jose and a team in the Faculty of Engineering at the University of Leeds, uses a small device with low-powered lasers to measure blood glucose levels without penetrating the skin. It could give people a simpler, pain-free alternative to finger pricking.



Professor Jose said: “As well as being a replacement for finger-prick testing, this technology opens up the potential for people with diabetes to receive continuous readings, meaning they are instantly alerted when intervention is needed. This will allow people to self-regulate and minimise emergency hospital treatment. This wearable device would then be just one step from a product which sends alerts to smart phones or readings directly to doctors, allowing them to profile how a person is managing their diabetes over time.”

The technology is licensed to Glucosense Diagnostics, a spin-out company jointly formed and funded by the University of Leeds and NetScientific plc. More clinical trials and product optimization are required for regulatory approvals and before the technology can be put on the market.

Source: [University of Leeds](#) July 14 2015

ACS To Launch New Journal On Sensor Science

The American Chemical Society plans to begin publishing a new online-only journal, ACS Sensors, with the first issue due for release in January 2016. J. Justin Gooding, professor and deputy head of the University of New South Wales's School of Chemistry and founding codirector of the Australian Centre for NanoMedicine, will serve as the inaugural editor-in-chief.

The peer-reviewed, monthly journal will focus on interdisciplinary research from across the rapidly burgeoning field of sensor science. The journal will publish on seminal advances in areas including chemical, gas, intracellular, and single-molecule sensors; biosensors; cell chips; arrays; and microfluidic devices.

Chemical & Engineering News July 22



Prof. Justin Gooding

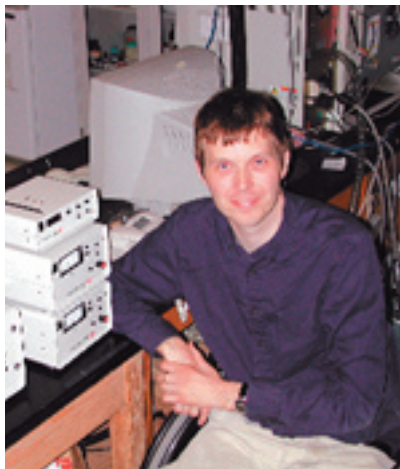
How noisy are graphene biotransistors?

Graphene field-effect transistors (GFETs) could make good biosensors but before they can be employed in such applications, researchers need to quantify the thermal noise limit in these devices. A team at Oregon State University and Cornell University has now done just this by measuring the impedance between a graphene sheet and the liquid it is immersed in.

nanotechweb.org July 24 2015

Prof. Karl Booksh named 2015 ACS Fellow

Karl Booksh, professor of analytical chemistry in the Department of Chemistry and Biochemistry, which is housed in The University of Delaware's College of Arts and Sciences, specializes in developing in-situ chemical sensors to monitor environmental, biomedical and industrial processes. The ACS Fellows program recognizes members for outstanding achievements in and contributions to science, the profession and ACS. The 2015 Class of Fellows includes 78 scientists and engineers from academia, industry, government labs and small business. [Press Release](#), University of Delaware July 13, 2015



MyDx Announces the Release of Its First Chemical Analyzer for Consumers

MyDx, San Diego CA, uses interchangeable sensors to test solids, liquids and gases of interest to reveal their chemical composition. Started as a crowd funding campaign on Indiegogo, MyDx incorporates proprietary “electronic nose” technology formerly used by NASA. Samples “sniffed” by the sensor are sent via Bluetooth to the MyDx App, giving users a chemical profile of a sample and asking them, “How did this make **y**ou feel?” or “What did it help you relieve?”

[Read more...](#)

Performance enhancing sensor ready for commercialisation

A wearable device being developed by the University of Strathclyde will provide real-time data analysis of fluid loss during exercise to enhance the performance of fitness enthusiasts and elite athletes.

The innovative transdermal sensor is a small device that attaches to the body to analyse electrolytes in sweat, with bluetooth technology used to send the data back to a smartphone – allowing the user to rehydrate properly and maintain optimum performance.

With heart monitors, pace-calculators and GPS-enabled watches used widely to support a healthy lifestyle, and in elite sporting disciplines, academics at the University believe that hydration monitoring could be the latest addition to the market.

The sensors have been developed in the Medical Diagnostics Research Group at the University led by Professor Patricia Connolly: “This takes our work in medical sensors and transdermal sensing from the healthcare applications into the field of sport. The stringent application of medical device standards to our laboratory research means that these sensors will be qualified at the highest level for human use and translatable between sports science and medicine. This is growing our portfolio of devices for use in home patient monitoring which can be coupled with telehealth systems and smartphones to deliver improved monitoring of patients. This system and our other diagnostics sensors are being supported for commercialisation through a University spin out company, Ohmedics Ltd.”

University of Strathclyde, [News Release](#) 20 May 2015

Doppel: the new wristband that can regulate your mood

Doppel is a wristband that regulates your mood. It looks like a wristwatch. When you're feeling stressed, you stroke it in an arc-like movement and it will pulsate slowly to calm you down; if you're feeling tired, squeeze it and it'll pulsate quickly to improve your focus. The technology is rooted in theories about biorhythms. Your body thinks the pulse it feels is yours, and speeds up or slows down in order to remain in synch.

Doppel has been awarded the Deutsche Bank Award for Creative Enterprise and been selected for funding by Innovate UK and accelerator programme FI-C3. Its creators, Team Turquoise — which is mechanical engineer Jack Hooper and three other technicians who all met at Imperial College and are based in Bermondsey.



Source: [London Evening Standard](#), 16 July 2015

Want your own copy of Sensor100?

Join our Mailing List

www.sensor100.com

Sensor100 is a monthly newsletter published by:

Captum Capital Limited

Cumberland House
35 Park Row
Nottingham NG1 6EE
United Kingdom