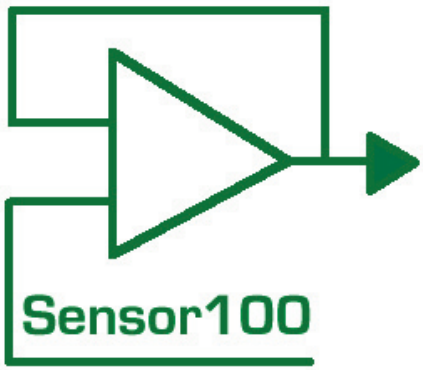
Sensor100

January 2016

The International Bio-sensor and Chemo-sensor Network

Linking academic, clinical and commercial worlds



News and views from the Sensor100 community

Edited by:
Michael Brand PhD SM FRSC

Sensor100's eNewsletter is published by:
Captum Capital Limited
Cumberland House
35 Park Row
Nottingham NG1 6EE
United Kingdom

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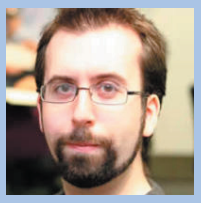
From the Editor

A Happy New Year, if it is not too late to wish you that.

This will be a busy and exciting year for **Sensor100**. Following on from the success of our first Sensors in Food and Agriculture conference, (and yes, it was a success!) we are planning to repeat the event in November 2016. We expect this year to bring together more of our European and US network to focus on this important sensors application area, which dare we say is slightly neglected among UK academic researchers.

Congratulations to Chris on gaining his PhD



Chis is now working as a lecturer at Birkbeck College, London, but will continue as a Senior Associate at Captum, and hopefully will be part of some of our events in the future.

Chris Brand PhD MA MSc MBPsS
cmb@captum.com

In addition to SIFAA16, we are at various stages in planning three other conferences: Sensors in Cancer Diagnosis; Innovation in Environmental Monitoring (which will incorporate Sensors in the Environment 16), and Sensor in Medicine 2016. So a busy conference year, as well as a number of improvements we would like to make to this Newsletter, our network management, not forgetting the seemingly unending need to update the **Sensor100** website. I get at least one email a week from people in Asia telling me how much they could improve the site, and I'm beginning to think it may be true.

You will, I hope, have noticed that we have kicked off 2016 with a redesign of this newsletter Since we started in 2011, we have changed format several times, from a one-page email to the 20 or more pages in a Flipping Book. We'll keep that format, as most people seem to like it, but freshen up the design and layout. Let us know if it works for you, or doesn't.

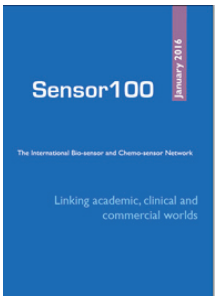
Lastly, to return to the weather, a frequent topic here, I hope our US East Coast readers survived the storm and have "dug out" by the time of reading this.

Kind regards

Michael
michael@sensor100.com

Sensor100 in Social Media

Sensor100 has a presence on a number of social media sites, and has several different networks. The start of a new year seems a good time to clarify this complexity, perhaps with a view to finding a way to simplifying later this year.



The Newsletter

Published monthly, the Newsletter is sent to several thousand people by email in over 70 countries worldwide. This is by far our biggest network, and continues to grow month on month. News items from readers are encouraged and sensor conference organizers promote their events. The disadvantage is that readers can't interact with each other directly. You can join the Newsletter mailing list **here**.

LinkedIn

Sensor100 has a Group and a Company Page on LinkedIn. We post Newsletter and Conference announcements to the Group as well as news items of interest from elsewhere on LinkedIn. The Company Page is updated less frequently with major announcements. Members of the Sensor100 LinkedIn Group can post articles and comment on them. To join, open a free **LinkedIn** account, search for Sensor100, and then follow the on screen instructions to join the Group and the Company page. Note that joining our LinkedIn Group does not automatically add you to the Newsletter mailing list.

Twitter

If you are a **Twitter** user, you can follow us on two accounts:
1. Sensor100's parent organization Captum Capital (@captum_capital) where we post general information about Sensor100 and Captum's other activities.
2. Sensor100AgTech (@Sensor100AgTech), which we launched in 2015 to build our Food & Ag network.

Facebook

Be Friends with Sensor100 on **Facebook**. Open your free account and search for Sensor100. We mostly use this site to promote our conferences. It would be good to build a vibrant sensor community here.

Trends in Sensor Technology 2016

"Prediction is very difficult, especially if it's about the future." ***Niels Bohr***

1 **Wireless technology -** it is safe to say that the development of sensors linked to mobile phone technology will continue, but there will be a rationalization in the plethora of apps sometime soon

2 **Microfluidics -** a technology which has not fulfilled its promise yet but is slowly beginning to move from the lab to the market; uncertainty surrounding Theranos may inhibit wider adoption

3 **Multiplex technology -** sensors and sensor platforms which can either adapt to different analytes, or can simultaneously measure a number of things will be a continuing trend; the days of the single analyte sensor maybe behind us

4 **Technology platforms -** electrochemical and optical technology continue to dominate market applications. Impedance sensors which gained a lot of academic interest in 2015 do not seem to have gained a market foothold, yet. SERS technology is now firmly established in commercially available instrumentation.

5 **Application areas -** healthcare dominates applications with remote patient monitoring, diabetes, and infectious diseases being at the forefront of new developments. PoC technology has gained the support of leading medical device companies, so despite concerns about its viability, is likely to survive

Michael Brand | Editor | **Sensor100**

6 **Materials science** - including biomaterials, hybrids of bio and polymer chemistry, new types of stimuli responsive materials that are under-pinning a move towards futuristic 'bioinspired' sensing platforms that will incorporate advanced biomimetic functions (self-diagnostics, self-repair, self-assembly, autonomous smart movement to pre-programmed locations, multi-functional…)

Dermot Diamond, Professor, Chemical Sciences, Dublin City University
Email: demot.diamond@dcu.ie

Trends in MEMS Technology 2016

1. **Energy/Power** – like other areas of electronics, sensors continue to drive power consumption down for mobile applications and to make energy harvesting more fruitful too. This is happening with smarter hardware and also with better algorithms and context aware computing for smarter overall systems.

2. **Higher Integration** – different types of discrete sensors being packaged to look like one as well as full monolithic solutions. This would also include sensor arrays. Advances in packaging and test are also helping this direction.

3. **New delivery vehicles** – fab based sensors being added to printed sensors on flexible substrates – a hybrid platform. Perhaps beyond 2016 but we will eventual see more solutions that utilize roll-to-roll printing techniques for ultra high volumes and lower cost solutions. We will also see large area electronics/sensors that are becoming the surface of or are embedded into buildings, walls, flooring, furniture, etc.

4. **A rise of new sensor types beyond inertial sensors** – optical, gas, chemical and biosensors to name a few. Many of these will feed the needs of the personal healthcare, environmental sensing, food-ag tech and clean energy segments. This rise will also put pressure on the need for new standards for these emerging sensor types.

5. **Smart data to benefit all** – the more sensors deployed, the more data is generated and potentially the greater revenue earning potential for the data analytics companies. I believe its time for the sensor companies to start participating in this revenue stream also. Some of the profits from the backend data monetization needs to be reinvested into the front end hardware sensing technologies. This drives greater thinking on end to end solutions such as sensors as a service.

Stephen Whalley
Chief Strategy Officer
Email: swhalley@memsindustrygroup.org
Cell: 480 282 1162

MEMS & Sensors Industry Group®

Sensors for Cancer Diagnosis

June 2016
Boston MA USA

Open for:
Call for Papers (Deadline 29 April)
Expression of Interest

www.sensor100.com/SFCD16

Innovation in Environmental Monitoring

21 - 22 September 2016
University of York, York UK

Open for:
Call for Papers (Deadline 15 June)
Registration

www.sensor100.com/IEM

capacitie

Combining

Sensors in Medicine 2016

12 - 13 October 2016
Double Tree Docklands, London UK

Open for:
Call for Papers (Deadline 26 August)
Expression of Interest

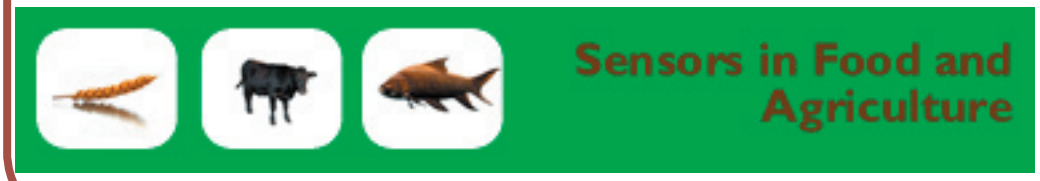
www.sensor100.com/SIM16

Sensors in Food and Agriculture 2016

29 - 30 November 2016
Møller Centre, Cambridge UK

Open for:
Call for Papers (Deadline 16 September)
Expression of Interest

www.sensor100.com/SIFAA16



Coming Events

Environmental Sensing for Sustainable Development
18 February, London UK

Sensors in Agriculture
23 February, Birmingham UK

KTN
the Knowledge Transfer Network

5th International Symposium on Sensor Science

I3S 2016

5th International Symposium on Sensor Science

17 – 22 July 2016, University of New Hampshire, USA

The Emerging Technologies Competition 2016

The Royal Society of Chemistry's annual innovation competition is open for entries until 14 March 2016. This is a chance for small companies and academic entrepreneurs to win bespoke support in commercialising their technologies.

The winners of the Emerging Technologies Competition will receive on-going support from the competition's partners: leading multinational companies, drawn from wide range of specialisms. Their support, tailored to the needs of the winner, has previously ranged from backing funding proposals and providing funding for chemicals, to assisting with strategy reviews and helping clarify market opportunities. With this help, the seven 2013-1014 winners have already gone on to raise over £16 million in investment, obtained commercial contracts and are continuing to increase their number of employees.

Winners of the competition are also given multiple PR opportunities and up to £20,000 to develop their idea. All shortlisted entrants now receive a day of specialised business training and an exhibition stand at the Royal Society of Chemistry's flagship industry event – Chemistry Means Business.

The competition welcomes disruptive technologies in the fields of: health & wellbeing, energy & environment, food & drink, and materials. Find out more and apply **here**

The Competition Partners
AkzoNobel, Aramco, AstraZeneca, Croda, GE Healthcare, GlaxoSmithKline, Procter & Gamble, Schlumberger, Pfizer and Unilever.

2105 Competition Winners
Image: @ Royal Society of Chemistry / MMP Image Creation

Sensors in Agriculture

Tuesday, 23 February 2016
Birmingham

This free to attend one-day workshop will focus on sensing challenges in agriculture - aiming to identify new applications for current sensor technologies and stimulating development of innovative new technologies.

The programme will address:

- Major challenges in agricultural science and technology
- How innovative sensors could address these challenges
- Closing the sensing “gaps” in agriculture
- Funding for sensor-related projects
- Case studies
- Pitches by delegates of sensor challenges & technologies

Find out more at **http://tinyurl.com/SensorsAgri**

KTN
the Knowledge Transfer Network

Conference on Optical Chemical Sensors and Biosensors

AUSTRIA, March 20-23, 2016 www.europtrode2016.eu

EUROPT(R)ODE XIII 2016 in Graz, Austria covers all aspects related to the research, development and application of optical chemical sensors and biosensors.

MAIN TOPICS:

- **Sensor Materials**
- **Novel Sensing Principles**
- **Applications of Optical Sensors**
- **Devices and Instrumentation**
- **Smart Sensor Production Technologies**

ONLINE REGISTRATION DEADLINE

March 6, 2016

www.europtrode2016.eu/registration

Organizers: TU Graz Graz University of Technology; JOANNEUM RESEARCH; UNI GRAZ

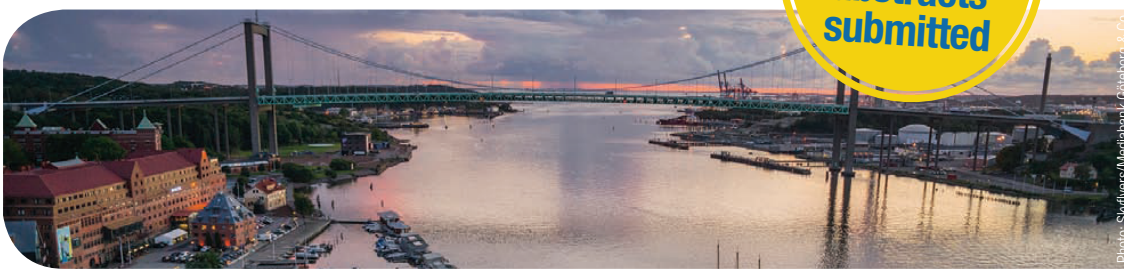
BIOSENSORS 2016

25–27 MAY 2016 | GOTHENBURG, SWEDEN

Come to the 26th Anniversary World Congress on Biosensors

Register now for the largest biosensors event in the world

More than 1500 abstracts submitted



This **premier event for the biosensors community** – the largest in the field – celebrates its **26th anniversary** with another excellent line-up of plenary speakers:

- **Anja Boisen**, *Technical University of Denmark, Denmark*
  Integrated nanomechanical sensor systems
- **Francis Ho**, *Samsung, USA*
  Personal monitoring: Simband and beyond
- **Fredrik Höök**, *Chalmers University of Technology, Sweden*
  Lab on a chip meets biosensors.
- **Lanqun Mao**, *Chinese Academy of Sciences, China*
  Biosensors and biogenerators for in vivo analysis.
- **Shelley D. Minteer**, *University of Utah, USA*
  Nano structured fuel-cells and electrochemical biodevices
- **Aydogan Ozcan**, *UCLA, USA*
  Holograms and sensing

Biosensors 2016 Congress Chair
Anthony P F Turner, *Linköping University, Sweden*

SATELLITE EVENTS

Biosensors 2016 Summer School on Mobile Diagnostics
Tuesday 24 May 2016

Post-Congress Symposium in Cancer Diagnostics
Saturday 28 May 2016

Main sponsor

ERCON
Innovative Technologies In Sensor Materials

#biosensors2016

Register now at:
www.biosensors-congress.elsevier.com

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ESEAC MMXVI

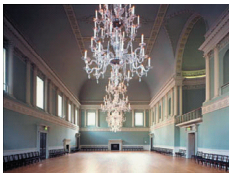
16TH INTERNATIONAL CONFERENCE ON ELECTROANALYSIS
12TH -16TH JUNE 2016
THE ASSEMBLY ROOMS, BATH, UK

Invitation

The University of the West of England cordially invites you to the historic Roman city of Bath for the 16th meeting of ESEAC. As well as promoting excellent science, ESEAC 2016 will continue a tradition of hosting the very best social and cultural activities.

Location and venue

Bath is a city of unparalleled historical significance. It is situated in a beautiful region of South West England which boasts many other sites of historical and cultural interest. It is readily accessible by road, rail and air from London and Bristol. ESEAC will be held at the magnificent Assembly Rooms.



Plenary speakers

Prof. Richard Van Duyne
Northwestern University, USA
RSC Theophilus Redwood Award recipient 2015

Prof. Robert Forster
Dublin City University, Ireland

Prof. Gordon Wallace
University of Wollongong, Australia

Prof. Galina Tsirlina
Moscow State University, Russia

Keynote speakers

Dr. Ritu Kataky Durham University, UK

Prof. Elena Ferapontova Aarhus University, Denmark

Prof. Martin Pumera, Nanyang University, Singapore

Prof. Sue Lunte, Kansas University, USA

Prof. Christine Kranz, University of Ulm, Germany

Prof. Ioannis Ieropoulos, UWE, UK

Important dates

31st January 2016	Deadline for abstract submission
31st January 2016	Deadline for ESEAC Award lecture
1st February 2016	Deadline for DropSens award
1st April 2016	Notification of abstract acceptance
3rd April 2016	Deadline for early registration
1st August 2016	Deadline for Electroanalysis SI

Registration

- Conference registration is open.
- Early registration will close on 3rd April 2016
- Payment of registration for inclusion in the book of abstracts will close on 30th April 2016
- Registration will close on 15th May 2016

Please go to **www.eseac2016.com** to register.

Early Registration	Until 3rd April 2016
Reduced fee	£450
Reduced student fee*	£300
Reduced Accompanying Person fee	£250
Registration	**After 3rd April 2016**
Full fee	£550
Student fee*	£350
Accompanying Person fee	£300

Sensors in Food and Agriculture

The **Sensors in Food and Agriculture** conference held at the Møller Centre in Cambridge UK on the 1- 2 December 2015 was very successful according to delegates. As at all Sensor100 organized conferences, the objective was to bring together leading academic researchers with commercial organizations. The Program of speakers set an exceptionally high standard, and included two discussion sessions in which a panel of speakers debated with the delegates. The conference included an exhibition, and exhibitors were invited to make an "elevator pitch" during the conference. A poster competition, judged by the conference delegates, was sponsored with two cash prizes by The Technology Partnership.

Technical sessions at the Conference were focused on: Connected and Remote Sensing; Sensors Applications in Agri-Tech; Biosensors in Food and Agriculture.

"I had the pleasure of presenting our research at the Sensors in Food and Agriculture conference. Combining agriculture and food in one conference is highly appropriate and valuable from our perspective as we are interested in topical food safety issues such as Campylobacter in poultry meat that sit at the interface between agricultural practices and food manufacture. The mix of technological advances and applications being presented by both UK and international speakers was particularly useful. The conference was also very effective at promoting interaction between key stakeholders through exhibitor elevator pitches and panel discussions. All in all, a very worthwhile conference to attend and I look forward to the next one!"

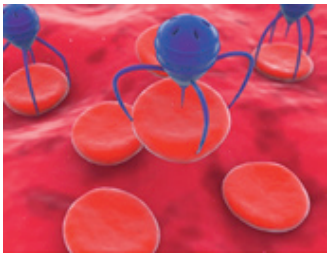
Dr Lynn McIntyre, Senior Lecturer in Food Safety
Department of Food Science and Agri-Food Supply Chain Management, Harper Adams University

SIFAA 2015: Some Images

Prof. Richard Durst
Cornell University

Jessica Norris
NESTA

Prof. Sam Nugen
University of
Massachusetts



Prof. Nugen's engineered
bacteriophages

Sensors for chicken farms
Dr. Foysol Chowdhury, CCMOSS

The Reception in full swing

Dr. Andrew Baker-Campbell, TTP, presents awards
to poster competition winners

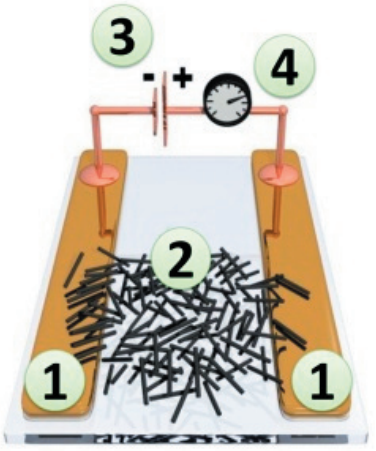
Ocean Optics Video: Focus on Food Integrity

How often do we consider where our food comes from and whether it's authentic or even safe? In this video, we discover how the Flame-NIR spectrometer measures reflectance to identify the variety and sweetness of apples.

Click HERE to view the video

Sensors for Food and Agriculture: Selectivity for Key Markers and the Development of Scalable Manufacture

Gases emitted by plants indicate the ripeness of produce. An inexpensive low power gas sensor would improve economics by optimizing the harvest, storage, transportation and distribution of food. This project at the **MIT Deshpande Centre for Technological Innovation** has developed a low cost ethylene sensor allowing for less food spoilage and more efficient distribution. The technology from this project was spun out into a startup company, **C2Sense**.



Working principle of the sensor chip: Carbon nanotubes and a selector (2) are deposited between two electrodes (1). A voltage is applied (3) and the current (4) is measured. When the analyte is present, the current changes.

For more information: **MIT Deshpande Centre**

A virtual centre bringing together a vast amount of expertise on aquaculture related research was launched on 2nd December 2015 at the University of Aberdeen.

The **International Centre for Aquaculture Research and Development** (ICARD) has been established to bring together a group of 25 University of Aberdeen experts in environment and food security to conduct and promote aquaculture research, primarily in the areas of algal culture, shell fish and fish farming and nutrition.

The aim of the centre is to build upon this expertise and to provide various stakeholder groups, including fish farmers, pharmaceutical companies, fish processors and retailers, with an information resource led by experts in the field.

Aquaculture is the farming of aquatic organisms such as fish, crustaceans, shellfish and algae. Aquaculture has been increasing globally by 8-9% per annum over the last few decades to supply food for the table. In Scotland, production is dominated by farming Atlantic salmon, which is now the largest food export in the UK.

To increase aquaculture production and its consumption in an environmentally sustainable way, ICARD's research efforts will focus on studying the key limiting factors and threats to the aquaculture sector, which include disease, sustainable feed production, and creating marketing tools for the industry to enhance fish consumption by the general public.

Reported by **_Connect** 8 December 2015

VIDEO – Environmental Monitoring Techniques

In this video, **Ocean Optics** simulated an oil spill to demonstrate how oil exhibits LED-induced fluorescence characteristics that are easily measured using modular spectroscopy. Robust systems can be configured to monitor the land, air and sea continuously and remotely.

New System for Early Warning of Hydrocarbon Leaks though Existing Monitoring Wells

The system consists in a grid of wireless sensors installed in existing monitoring wells. These sensors float in the air-water interface and they broadcast, once per day or the desired period, the signal to be visualised from any computer or mobile device.

The sensors work using a Physical-Chemical reaction to avoid false alerts. The sensor also allows to know the type of contaminant as well as it retains a physical evidence of the contamination.
Reported by **Environmental Technology Online** 18 January

Intelligent sensors that map out the presence of chemical pollutants in the sea

Researchers at the Universitat Politècnica de València (Polytechnic University of Valencia, UPV) have designed an intelligent sensor system which enables the immediate detection and delimitation of toxic waste, diesel, and hydrocarbons in general in any body of water. Tested under laboratory conditions, it is able to detect even very small concentrations of chemical pollutants and maps out their precise location and spread. The sensors developed by UPV researchers are embedded in small floating devices. Based on sophisticated algorithms, the system is made up of several such wireless nodes that move independently through the spill in search of its outer limits.
Reported by **Phys.Org** 11 January

Theranos Founder Youngest Self Made Billionaire

Elizabeth Homes (31) who dropped out of Stanford University to found Theranos ("Therapy"+"Diagnosis") in 2003, is reported to be the youngest self-made billionaire with a fortune worth $4.5 billion, valuing Theranos at $9 billion. Theranos claims to be able to perform many diagnostic tests using a fingerprick of blood and advanced microfluidics technology. In 2015, the company came under intense media scrutiny for overstating its technology claims, and was also challenged by the FDA. At **Fortunes Global Forum** in November 2015, Homes defended her claims, and denied that the company was hiding. This will be an ongoing story in 2016 with the expectation that the valuation of what effectively is a start-up can only move in one direction.

Meanwhile the **Financial Times** reported on 28 January that Theranos has been warned by US Regulators that one of its laboratories poses a serious risk to patient's health because of the way it is performing blood tests. The California laboratory was issued a warning letter by the Centres for Medicare and Medicaid Services requiring corrective action to be taken within ten days, or risk losing its certification. Theranos has said that a full plan of corrective actions will be submitted to CMS.

Xip Unveils GO Platform for Drop of Blood Testing

Xip unveiled the GO platform at the 9th annual OneMedForum in SF. The device takes a drop of blood from a finger-stick and wirelessly uploads lab-quality high-sensitivity troponin measurements in minutes. This platform - built around a digital microchip that counts one or more target molecules - can be used for comprehensive blood testing at the Point-of-Need. Troponin is a marker which differentiates cardiac infarctions.

For more information see the company website: **www.xip.life.**

Top Biophotonics Stories of 2015

Biophotonics Magazine reports the top photonics stories of 2015 including the following healthcare sensor related:

1 **Smartphone Device Analyzes Blood (posted Jan. 6, 2015).** U Cal Berkeley engineers developed an automated method for detecting and quantifying the presence of infections caused by parasitic worms through the use of a mobile phone microscope.

2 **Graphene Confines Light for Nanomolecular Sensing (posted July 10, 2015)**
Researchers at the Swiss Federal Institute of Technology in Switzerland and the Institute of Photonic Sciences in Spain developed a graphene plasmonic sensor that analyzes nanoparticles that are too small for mid-infrared wavelengths.

3 **Optical Glucose Sensor on the Road to Commercialization (posted July 17, 2015)**
Glucosense Diagnostics, a University of Leeds spinoff company, developed — and put in clinical trials — an optical glucose sensor that can determine glucose levels in blood within 30 seconds without having to draw the blood of someone with diabetes through a finger-prick test.

4 **Raman Imager Speeds Cancer Detection (posted April 24, 2015)**
Purdue University's Jonathan Amy Facility for Chemical Instrumentation developed vibrational spectroscopic imaging technology that is 1,000 times faster than a state-of-the-art commercial Raman microscope. The electronic device, a 32-channel tuned amplifier array, or TAMP array, could have advanced early cancer detection capabilities in that it provides for the observation of changing metabolic processes inside cells, imaging of large areas of tissue and the scanning of entire organs

5 **Broadband Laser Aimed at Cancer Detection (posted Sept. 25, 2015)**
Researchers from Germany and Spain developed a laser system with a broad and powerful phase-coherent emission that can detect subtle signs of developing cancers, namely the molecules from cancer cells that end up in air expelled from the lungs

For further information, see **Biophotonics**

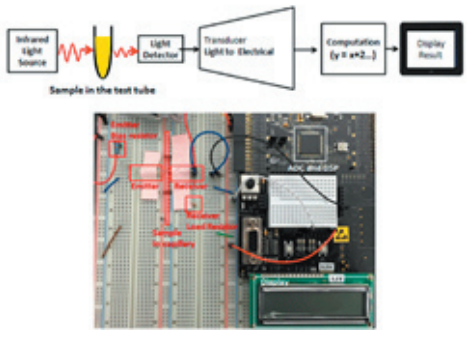
Glaxo Smith Kline and Qualcomm Reported in Talks to Set up Joint Venture

GlaxoSmithKline Plc and Qualcomm Inc. are in discussions to form a joint venture as Glaxo looks for ways to develop medical technology, according to people with knowledge of the matter. The talks are preliminary and nothing has been decided, said the people, who asked not to be named because the deliberations are private.
Bloomberg Business January 20

Scripps Wired for Health study results show no clinical or economic benefit from digital health monitoring

MobileHealthNews reported that the six-month randomized control trial found no short-term benefit in health costs or outcomes for patients monitoring their health with connected devices. Three groups of patients - diabetics, hypertensives and those with arrythmias - were given monitoring devices connected to smart phones and their physicians. "It was a bit disappointing, but remember, this was the first multisensor trial that's ever been reported, so in that respect it was a pioneering effort," study author and STSI Director Dr. Eric Topol told MobiHealthNews. "And you know, it was very difficult because we had these three different sensors, glucose, blood pressure, and heart rhythm, and a lot of patients had all three problems or two of them, and had to have a dashboard created. There are a lot of logistical challenges there."
MobileHealthNews 19 January

Noninvasive Uric acid Monitoring Device using Near-Infrared Spectroscopy



A project at the University of Central Florida College of Medicine has examined the feasibility of a near infra-red sensor to monitor uric acid, which is found in joints affected by gout; over 8 million Americans suffer from this painful disease. This approach offers a cost-effective and portable near-infrared (NIR) spectroscopy based device that can provide quick, noninvasive, and preventative way to monitor the patient's uric acid level.
Journal of Biosensors and Bioelectronics, November 20, 2015

Fully integrated wearable sensor arrays for multiplexed in situ perspiration analysis

A group of engineers at the University of California, Berkeley and collaborators have reported in Nature that they have developed a sweat band which incorporates sensors for sodium and potassium ions, glucose and lactate, as well as skin temperature. The sensor array is fully flexible and bridges the technological gap between signal transduction, conditioning (amplification and filtering), processing and wireless transmission in wearable biosensors by merging plastic-based sensors that interface with the skin with silicon integrated circuits consolidated on a flexible circuit board for complex signal processing.
Nature Letters 27 January - see also **Berkeley News** 27 January

The new sensor developed at UC Berkeley can be made into "smart" wristbands or headbands that provide continuous, real-time analysis of the chemicals in sweat. (UC Berkeley photo by Wei Gao)

Illumina Forms New Company to Enable Early Cancer Detection via Blood-Based Screening

San Diego based **Illumina, Inc.** has announced GRAIL, a new company formed to enable cancer screening from a simple blood test. Powered by Illumina sequencing technology, GRAIL will develop a pan-cancer screening test by directly measuring circulating nucleic acids in blood.

Detecting cancer at the earliest stages dramatically increases long-term survival, hence the successful development of a pan-cancer screening test for asymptomatic individuals would make the first major dent in global cancer mortality. Ultra-deep sequencing to detect circulating tumor DNA has the potential to be the holy grail for early cancer detection in asymptomatic individuals. Most tumors shed nucleic acids into the blood. Circulating tumor DNA is a direct measurement of cancer DNA, rather than an indirect measure of the effects of cancer.
www.grailbio.com

Company Profile

Alpha Szenszor Inc.

Burlington, MA USA

Alpha Szenszor (ASI) is the leader in the development and manufacture of carbon nanotube based sensing devices for health and wellness applications. Our sensors offer the highest cost/performance ratio as compared to all other nanometric based sensors, while providing the broadest range of sensitivity to chemical and biological compounds. Our Sensors offer ultra low power consumption and production cost, and are protected by the World's strongest Carbon Nanotube IP portfolio. ASI builds custom sensor arrays for specific applications ranging from highly complex medical diagnostics, to low cost wearables.

www.alphaszenszor.com

This Company Profile will now appear in Sensor100's **Organization Directory**. *You can add your own organization's profile by completing the* **Registration Form**, *and returning by email. There is a nominal one-time fee of £50+VAT for companies, waived for academic institutions.*

Microwave synthesis'zaps'graphene to perfection

Riken, Japan, has developed a simple procedure which turns bulk graphite crystals into atomically thin super materials and magnetically aligned gels. By employing microwave radiation and a special ionic liquid solvent, RIKEN researchers have developed a quick, efficient and potentially scalable way to produce large quantities of single-layer graphene.

Read more...

Fitbit's heart rate monitoring accuracy questioned in class action suit

Fitbit is facing yet another class action suit, this time over its heart rate monitoring, which plaintiffs claim is inaccurate to a dangerous degree.

MobileHealthNews January 07

New Automated SPR Levels the Playing Field in Protein Science

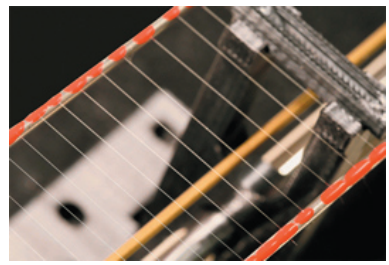
OpenSPR-XT will accelerate discoveries in protein science by offering affordable & fully automated binding kinetics for life sciences researchers from academia to industry. **Nicoya Lifesciences**, a leader in label-free molecular analysis, announced its newest product, OpenSPR-XT - a fully automated molecular analysis instrument based on the highly successful OpenSPR instrument. OpenSPR-XT is built off of Nicoya's powerful yet affordable nanotechnology biosensor platform. It has been seamlessly integrated with a sophisticated autosampler system to allow for fully automated, 24-7 operation.
Nicoya Press Release 20 January

Consumer Electronics Show Review

Didn't make CES in California this year? Medgadget has given a precis of what's new in sensors - mostly wearables.
MedGadget 21 January

Using spider silk to detect molecules

At EPFL, Lausanne CH, fiber optics specialists have discovered some unique qualities of spider silk when it comes to conducting light and reacting to certain substances. These strands are perfectly cylindrical, smooth, transparent and extremely solid – some of the same characteristics as glass-based fibers. But there is one major difference: while glass is inert, spider silk is made up of very long proteins rolled into a helix structure whose bonds are sensitive to a number of chemical substances. When the protein interacts with chemicals like acetic acid or ammonia, the helix unravels, resulting in changes in optical properties, the potential basis of a sensor.
EPFL News 20 January



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