La rentrée universitaire s'accompagne généralement de nouveaux projets et c'est pour cette raison que le Service pour la Science et la Technologie à Houston a choisi ce moment pour vous annoncer avec grand plaisir le lancement de sa lettre d'information. Cette lettre, qui paraîtra tous les deux mois, est dédiée aux avancées scientifiques et technologiques dans le domaine des nanotechnologies en France et aux Etats-Unis.

L'importance des nanotechnologies dans notre société ne fait plus de doute. En 2013, le « Nanotechnology Consumer Products Inventory » répertoriait sur le marché des produits de consommation 1628 nouveaux produits basés sur les nanotechnologies par rapport à 2010, soit un accroissement de 24% dans cette catégorie. Ces produits touchent pratiquement tous les secteurs : électronique, énergie et environnement, médecine et santé, matériaux, instrumentation, etc.

Dans le domaine de la recherche sur les nanosciences et nanotechnologies, la France et les Etats-Unis font partis du Top 10 avec de grandes institutions de recherche telles que le MIT du côté américain et l'université Joseph Fourier du côté Français.

Cette première édition est marquée, en particulier, par d'importants investissements financiers aux Etats-Unis: IBM investit 3 milliards de dollars dans la recherche sur les semi-conducteurs à base de graphène et le MIT investit de son côté 350 millions de dollars pour développer un nouveau centre de recherche sur les nanotechnologies. En France et en Europe, un intérêt croissant pour les effets sur la santé des nanomatériaux est observé: le CNRS et le CEA s'attaquent à la compréhension de la toxicité des nanotubes de carbone et la Commission Européenne lance une consultation publique sur la détermination des effets sur la santé des nanomatériaux dans les dispositifs médicaux.

Bonne lecture!

The fall semester is always the right moment of the year to initiate new actions and programs. Hence it is not surprising that the Office for Science and Technology in Houston has chosen this period to publish the first edition of its newsletter. This newsletter, to be published every two months, is dedicated to research and technology in the field of nanotechnology in France and in the United States.

Indeed, the importance of nanotechnology in our society is growing. In 2013, the Nanotechnology Consumer Products Inventory listed 1628 new products based on nanotechnology on the market as compared to 2010, an increase of 24% in that category. These products are found in most of the industrial domains: electronics, energy and environment, medicine and health, materials, instruments, etc.

Regarding the research in nanoscience and nanotechnology, France and the United States are among the Top10 with famous research institutions such as MIT in the US and the University Joseph Fourier in France.

The highlights of this first edition are the investments in nanotechnology in the United States: IBM invests $3Bn in graphene semiconductor research and the MIT invests $350M in nanotechnology research center. In France and Europe, concerns rise on the interaction of nano-size particle and living beings: CEA and CNRS researchers study the toxicity of carbon nanotubes and the European Commission launched a public consultation on the determination of health effects of nanomaterials in medical devices.

Enjoy your reading!

Maud Bernollin, Deputy Scientific Attaché in Houston
Christian Turquat, Scientific Attaché in Houston

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Nanotechnology News in the USA

A smashing new look at nanoribbons – June 30, 2014
Scientists at Rice University have invented a chemical-free process, using mechanical force, to “unzip” carbon nanotubes into graphene nanoribbons that can be used in composite materials as strengthening agent and in other applications that take advantage of their electrical properties. [Read more]

■ IBM invests $3Bn in graphene semiconductor research – July 10, 2014
Two years after having produced experimental transistors of 9 nm using carbon nanotubes, IBM new objective is now to produce transistors of 7 nm by 2020 using graphene. To reach that goal, IBM announced a large investment of $3bn over the next five years. [Read more]

★ Understanding Graphene’s Electrical Properties on an Atomic Level – July 15, 2014
Researchers from the University of Pennsylvania have used a cutting-edge microscope to study the relationship between the atomic geometry of a ribbon of graphene and its electrical properties. A deeper understanding of this relationship will be necessary for the design of graphene-based integrated circuits, computer chips and other electronic devices. [Read more]

UCF Nanotech Spinout Developing Revolutionary Battery Technology – July 23, 2014
HyCarb, a University of Central Florida spinout company, recently signed an exclusive license agreement with UCF for a patented multiwalled carbon nanotube aerogel for energy storage. They intend to reduce the battery weight and improve battery charge times and cycles. [Read more]

★ With $350M Research Center, MIT Bets Big on Nanotechnology – August 5, 2014
The Massachusetts Institute of Technology unveiled plans for a new $350 million research center called MIT.nano. This center, which will be in operation in 2018, will provide state-of-the-art facilities for thousands of scientists studying nanotechnology. [Read more]

Running on waste heat – August 11, 2014
GMZ Energy, a company co-funded by researchers from MIT and the University of Houston, developed a thermoelectric generator or TEG device to convert waste heat emitted by vehicles into electricity to lend those vehicles added power. The TEG are not new but this new method slows the heat leakages of the device leading to a 30 to 60 percent increase in performance across many thermoelectric materials. [Read more]

★ Researchers unveil new solar cell made from carbon nanotubes that converts more sunlight into power – August 18, 2014
A team of U.S. researchers has unveiled a new type of solar cell based on single walled carbon nanotubes (SWCNTs) which overcome the limitations with such technology. As a result, they obtained a solar cell twice as good at converting sunlight into power as others SWCNT technologies. [Read more]

Silver nano particles breakthrough – August 19, 2014
Goldsol Inc. and researchers at Clarkson University have released a revolutionary new nano silver formulation
with a high concentration of sub-20 nm colloidal solution that can be specifically formulated for conductive ink or thin film applications. [Read more]

Vault nanoparticles engineered at UCLA show promise for cancer treatment and possible HIV cure – August 21
A multidisciplinary team of scientists from UCLA and Stanford University has engineered vault-like nanoparticles to create a novel drug delivery system that could lead to advances in the treatment of cancer – more effective with smaller doses - and other therapies. These nanoparticles could potentially eradicate the HIV virus. [Read more]

How to identify nanomaterials in food – August 22, 2014
Overview of the work of the NanoRelease Food Additive project, an international multi-stakeholder effort that aims to address the needs of method development for nanoscale materials currently used in food and agriculture. [Read more]

Nanotechnology News in France

Biodistribution of carbon nanotubes in the body – July 1, 2014
CEA and CNRS researchers have developed an isotope labeling method to study the distribution over time (up to one year) of carbon nanotubes in mice, following contamination by inhalation. These nanoparticles are capable of crossing the pulmonary epithelial barrier and propagate within the body. [Read more]

When nuclear fuel gets recycled, the process releases radioactive krypton and xenon gases. Xenon, Krypton and radon are noble gases, which are chemically inert, that makes it difficult to find materials that can trap them. This new nanoporous material could permit a more effective and less expensive way to capture Xenon and Krypton gases as compared to the convention way. [Read more]

Public Consultation on the Determination of Potential Health Effects of Nanomaterials Used in Medical Devices – July 29, 2014
The European Commission and the Scientific Committee on Emerging Newly Identified Health Risks have launched a public consultation on the Preliminary opinion ‘Guidance on the Determination of Potential health Effects of Nanomaterials Used in Medical devices’. The deadline of comments submission is October 3, 2014. [Read more]

Optimum inertial self-propulsion design for snowman-like nanorobot - July 29, 2014
Researchers at the CEA investigated the effects of small but finite inertia on the propulsion of micro and nanoscale swimming machine. This study could help to optimize the design of self-propelled micro and nanoscale artificial swimming machines to improve their mobility in medical applications. [Read more]

Namdiatream project - Advanced nanotechnologies for diagnosing cancer – August 8, 2014
The just finished NAMDIATREAM (“Nanotechnological Toolkits for Multi-Modal Disease Diagnostics and Treatment Monitoring”) project aimed to contribute by using nanotechnology-based techniques to help in early detection by the creation of a toolkit. This toolkit soon will be a reality and involves the detection and imaging of biomarkers linked to the most common types of cancer and their spread to other parts of the human body. [Read more]

Correlated defect nanoregions in a metal-organic framework – August 8, 2014
An international team including Chimie ParisTech/CNRS published a paper in which their results show how the diffraction behavior of some metal-organic frameworks or MOFs might be reinterpreted, and establish a strategy of exploiting correlated nanoscale disorder as a targetable and desirable motif in MOF design. [Read more]

Researchers prove stability of wonder material silicene – August 12, 2014
An international team of researchers based in Italy and France deposited a stack of 43 multilayers of silicene
onto a substrate. This stack of monolayers remained preserved for at least 24 hours in open air. This study shows that multi-layered silicene is more conductive than single-layered silicene, and therefore opens up the possibility of using it throughout the silicon microelectronics industry. [Read more]

Our programs

MIT-France Seed Fund 2014-2015 Call for Applications
The MIT-France Seed Fund supports budding research collaborations between faculty and research scientists at MIT and their counterparts in France. The deadline for the 2014-2015 grant cycle is September 22, 2014. More information

Upcoming events

International Workshop on Nanomaterials, Nancy (France), September 8-11, 2014

Nano Risk Analysis, Washington DC (USA), September 15-16

3rd International Conference and Exhibition on Material Sciences & Engineering, San Antonio (USA), October 6-8, 2014

2nd International Conference on Bioinspired and Biobased Chemistry & Materials, Nice (France), October 15-17, 2014
More information: http://sites.unice.fr/nice2014-conference/

4th International Conference NANOSAFE 2014, Grenoble (France), November 18-20, 2014

Graphene and 2D Materials LIVE, Santa Clara (USA), November 19-20, 2014

Openings and funding opportunities

General newsletter for French & European fundings and research news: Le Fil de Marianne
Le Fil de Marianne provides information on French research institutions (CNRS, INSERM, INRIA, INRA, Ifremer...), the European Commission and other organizations including their calls for proposals, programs of study, postdoctoral programs and scientific conferences as well as general information on research in France. More information

Useful links

Bulletin Electroniques Etats-Unis (in French)
Bulletin d'information hebdomadaire gratuit sur les avancées scientifiques et technologiques aux Etats-Unis rédigé par le Service pour la Science et la Technologie (SST) de l'ambassade de France aux Etats-Unis et diffusé par l'Agence pour la Diffusion de l'Information Technologique (ADIT). Plus d'information

eTech France
eTech France brings you news in science and technology from France on a bimonthly basis. Each newsletter includes: special reports, short technology news, experts’ interviews and press releases from French research institutions. More information

The Office for Science and Technology of the Embassy of France in the USA
The Office for Science and Technology (OST) is a service of the Embassy of France in the USA located in Washington D.C. and within 6 Consulates scattered around the USA. The OST is dedicated to bilateral French-American collaborations in Science and Technology. More information

About this newsletter
This newsletter dedicated to nanotechnologies in the USA and in France is provided by the Office for Science & Technology at the Consulate General of France in Houston. The expertise of this branch is Physics and Nanotechnologies.
You can follow us on twitter @Fr_US_Nanotechs.

We value your feedback. Please send us your comments and suggestions at nanotechs-newsletter@ambascience-usa.org.