



MINATUSE Newsletter

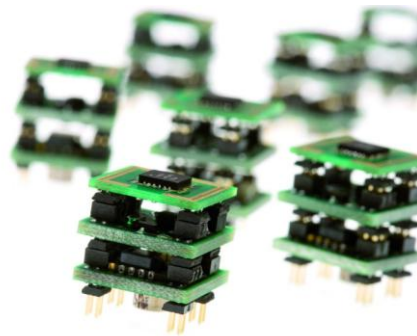
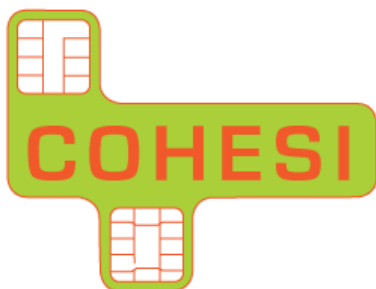
July 2010

Summary

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COHESI platform

The new COHESI innovation platform supports System Miniaturisation in the regional industry in and around Flanders



December 2009 saw the launch of COHESI, an innovation platform that aims to support local industry in realizing innovative miniaturised products. Specifically, the platform targets to offer support in the transition from mature research results to prototypes and products.

System miniaturisation opens a world of possibilities and applications, from hearing implants to tire pressure sensors. In manufacturing terms "smaller" also means more reliable, more energy efficient and cheaper to produce. However, miniaturisation also requires a broad spectrum of technologies and expertise, both at the level of active components and at the level of advanced integration and packaging methodologies.

In order to support innovation within local companies in this important field, COHESI, the Flemish innovation platform for Component Development and Complex Heterogeneous System Integration was founded. COHESI is a

collaboration between Minatuse partner Imec and research groups at three local universities (Universities of Ghent, Leuven and Brussels). Together they offer a broad spectrum of expertise, product services and research and production infrastructure.

In order to stimulate the interaction between the industry and the academic R&D partners of COHESI, the 'COHESI community' is formed. Your organisation or company is welcome to become an active member of this community. Regular workshops will allow COHESI community members to stay informed of the expertise and services within the COHESI platform and to learn firsthand how other companies have approached microsystem development routes. Training courses (with a technical focus) will supplement these workshops and can be tailored to the needs of the Community members.

If you have an idea for an innovative product and are looking for development support, the COHESI membership also offers you access to the 'COHESI Technology Compass', a service which will help guide you towards the right partners and technical support.

Finally, the COHESI community is supported by an on-line platform and a public website to be found at www.cohesi.be.
For more information about COHESI, please contact Frederik.Leys@imec.be.

Optomec's Aerosol Jet process

New equipment of interest for Belgian companies in the micro fabrication field.



The machine described here below has been purchased by SIRRIS with the aim of developing micro systems in the electronic sector.

Optomec's Aerosol Jet process, formerly known as Maskless Mesoscale Materials Deposition (M³D[®]), is an additive process, which deposits a wide variety of

materials onto a wide variety of substrates without conventional masks or thin-film equipment. The Aerosol Jet Print System was initially invented through a DARPA-funded program focused on developing Direct Write methods for depositing electronics materials. The Aerosol Jet print system is also capable of depositing a variety of polymers, adhesives and bio-related materials.

The Aerosol Jet process works as follows:

- Liquid material is placed into an atomizer which creates a dense aerosol of tiny droplets between 1-5 microns in size.
- The aerosol is carried by a gas flow to the deposition head.
- Within the deposition head, the aerosol is focused by a second gas flow and the resulting, high velocity converging particle stream is deposited onto the substrate creating features as small as 10 microns in size.
- A shutter and motion control system allow for the creation of complex patterns on the substrate.
- For low-temperature substrates, deposited material can be laser sintered to achieve properties near to those of the bulk material without damage to the surrounding substrate.

A key, added benefit of the Aerosol Jet process is that it eliminates most of the material waste common to traditional electronics manufacturing and does not require post processing with corrosive chemicals or cleaning with water. From this perspective, Aerosol Jet can be considered as an environmentally friendly process.

Upcoming calls in FP7-NMP

Future calls in Nanosciences, Nanotechnologies, Materials and new Production Technologies

In this article we give a comprehensive summary of the calls related to Nanosciences, Nanotechnologies, Materials and new Production technologies (NMP) that will be launched by European Commission in July 2010

Those calls are not yet officially published, so there may be some modifications before the final publication. If you need more information of one of those calls, do not hesitate to contact us.

The deadlines for the submission of those projects are:

- 4th of November 2010 for the LARGE-SMALL-SME projects (2-stages submission)
- 2nd of December 2010 for the PPP calls (Energy Efficient Buildings – Factories of the Future – Green Cars)

FP7-NMP-2011-LARGE-5

Launching July 30th 2010. First Stage closing Nov 4th 2010.

- NMP.2011.1.1-1: Smart and Multifunctional Packaging concepts utilizing nanotechnology
- NMP.2011.1.2-2: New Targeted therapy using nanotechnology for transport of Macro-molecules across the biological blood-brain barrier.
- NMP.2011.1.4-1: Large-scale green and economical synthesis of nanoparticles and nanostructures.
- NMP.2011.1.4-2: Development of nano-scale detection and control techniques for large area substrates.
- NMP.2011.2.2-1: Novel superconducting materials, architectures and processes for electrotechnical applications.
- NMP.2011.3.4-1: Eco-efficient management of industrial water
- NMP.2011.4.0-1: New technologies based on physical processing of materials for mechanical or electro-technical applications.

FP7-NMP-2011-SMALL-5

Launching July 30th 2010. First Stage closing Nov 4th 2010.

- NMP.2011.1.2-3: Active nanomembranes/-filters/-adsorbents for efficient water treatment with stable or regenerable low-fouling surfaces
- NMP.2011.1.3-2: Worker protection and exposure risk management strategies for nanomaterial production, use and disposal
- NMP.2011.1.4-4: Nanotechnology based implantable and interfaceable devices
- NMP.2011.2.1-2: Modeling of ultrafast dynamics in materials
- NMP.2011.2.2-2: Biomaterials for tissue engineering for age-related cancer and sensory organ diseases.
- NMP.2011.2.2-3: Materials for solid state lighting
- NMP.2011.2.2-4: Novel materials for replacement of strategic or scarce raw materials (platinum group metals and rare earths.)
- NMP.2011.2.3-1: Advanced packaging materials from renewable biogenic resources (SICA).
- NMP.2011.3.1-1: Eco-design for new products
- NMP.2011.3.2-1: Modeling and control of intensified process systems

FP7-NMP-2011-SME-5

Launching July 30th 2010. First Stage closing Nov 4th 2010.

- NMP.2011.1.3-1: New methods for measuring, detection and identification of nanoparticles in products and/or in the environment
- NMP.2011.1.4-3: Tools and methodologies for imaging structures and composition at the nanometer scale.
- NMP.2011.2.1-1: Research and innovation for advanced multifunctional ceramic materials
- NMP.2011.4.0-3: Advanced textiles for the energy and environmental protection markets

FP7-NMP-2011-CSA-5

Launching July 30th 2010. Single stage closing Mar 17th 2011.

- NMP.2011.1.3-3: Intelligent testing strategies for nanomaterials impact and exposure - towards regulation and clustering of materials - supporting actions
- NMP.2011.1.3-4: European platform on Nano Outreach and Dialogue (NODE) - supporting actions
- NMP.2011.2.3-3: Networking of materials laboratories and innovation actors in various industrial sectors for product or process innovation -coordinating actions
- NMP.2011.4.0-5: Support to Networks of Excellence with durable integrated structures - supporting actions

NMP-Environment call

Launching July 30th 2010. Single stage closing Nov.18th 2010.

- NMP.2011.2.2-5: Development of advanced compatible materials and techniques and their application for the protection, conservation and restoration of cultural heritage assets.

NMP-ENERGY call

Launching July 30th 2010. Single stage closing Nov.25th 2010.

- NMP-ENERGY-2011.1.2-1: Development and up-scaling of innovative photovoltaic cell processes and architectures to pilot-line scale for industrial application

Coordinated call EU-Russia 2011

Launching July 30th 2010. Single stage closing Mar.31st 2011.

- NMP.2011.1.4-5: Multiscale modeling as a tool for virtual Nanotechnology experimentation
- a. Theoretical analysis, design and functional virtual testing of hetero or hybrid nanostructured elements for use in smart systems, integrated systems, OLEDs, photo-voltaics or energy saving applications.
- b. Theoretical analysis, design and functional virtual testing of organic matrix nanocomposites for industrial applications (including optical electrical and mechanical properties). c. Theoretical analysis, design and functional virtual testing of behavioural features (e.g. biocompatibility and mechanical properties) of biocompatible, metallic nanomaterials.

Coordinated call EU-Japan 2011

Launching July 30th 2010. Single stage closing Dec. 7th 2010.

NMP.2011.2.2-6: Fundamental properties of novel superconducting materials

“Factories of the Future” – 2011

Launching July 30th 2010. Single stage closing Dec. 2nd 2010.

- FoF.NMP.2011-1: The eco-factory: cleaner and more resource-efficient production in manufacturing
- FoF.NMP.2011-2: Cooperative machines and open architecture control system

- FoF.NMP.2011-3: Robots for automation of post-production and other auxiliary processes
- FoF.NMP.2011-4: High-tech solutions in the production processes for customised healthy, green and safe consumer products
- FoF.NMP.2011-5: Towards zero-defect manufacturing
- FoF.NMP.2011-6: Manufacturing chains for nano-phased component and coatings

“Energy-efficient buildings” – 2011

Launching July 30th 2010. Single stage closing Dec. 2nd 2010.

- EeB.NMP.2011-1: Materials for new energy efficient building components with reduced embodied energy
- EeB.NMP.2011-2: New efficient solutions for energy generation, storage and use related to space heating and domestic water in existing buildings
- EeB.NMP.2011-3: Energy saving technologies for buildings envelope retrofitting
- EeB.NMP.2011-4: Geo-cluster approach to support European energy-efficiency goals

“Green Car”-2011

Launching July 30th 2010. Single stage closing Dec. 2nd 2010.

- GC.NMP.2011-1: Advanced eco-design and manufacturing processes for batteries and electrical components

EC-project NASLA

A European funded project: research for the benefit of SMEs

Project title: Nanostructured antiseptical coatings (NASLA)

NASLA is a two-year project (starting project date: October 2010) involving four SMEs from three different EU countries (Italy, Spain and Greece) and three R&D partners from two EU countries (Italy and Sweden).

NASLA aims to provide anti-septic functionality for several products manufactured by SMEs participants operating in the field of biomedical implants, agro/food industry equipments and personnel protective systems.

A new and reliable antiseptic coating will be designed, prepared and tested leading to the delivery of a new generation of goods with enhanced functionalities, currently not available on the market.

In particular a new silver nanoclusters–silica composites coating having anti-septical properties superior to those existing on the market will be provided. The coating is made of silver nanoclusters embedded in a silica matrix. The technique used to deposit the coating (RF sputtering) is suitable to almost every kind of substrate (polymers, metals, glasses, etc.).

The results achieved during the project will have a clear and immediate exploitation potential not only to improve or develop new products currently commercialized by the four SMEs, but also other applications such as : hospitals, schools, canteens, restaurants (and other areas where food is handled,

processed or served), kitchen equipment production (cutlery and instrumentation for both private and professional use), beverages, fishing industry, meat industries, milk and dairy industries.

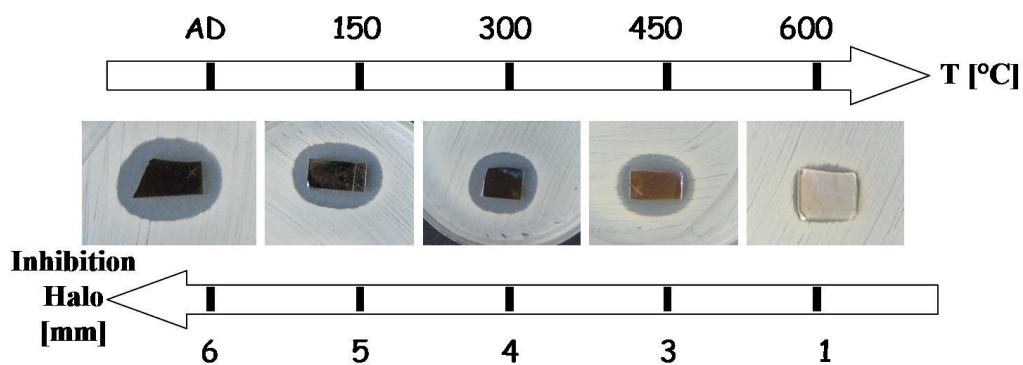


Figure 1) Inhibition halo of as deposited silver nanocluster-silica composite coatings : the antibacterial properties are observed for coatings after their deposition (as deposited, AD) as well as for coatings treated up to 600°C. (1,2)

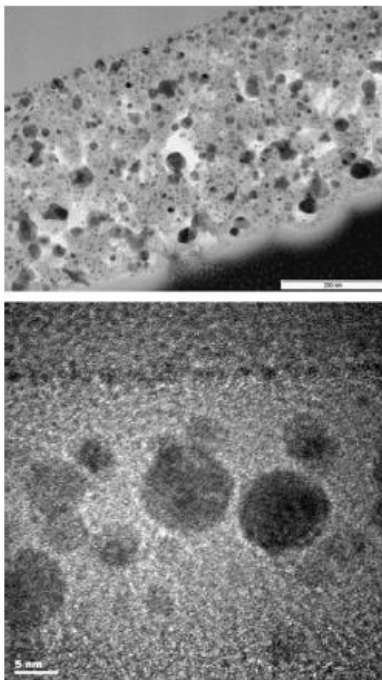


Figure 2) Bright Field TEM (above) and HREM (below) on as deposited and silver nanoclusters-silica composites cross-section. (1,2)

1. M. Ferraris et al., ADVANCED BIOMATERIALS, 2010, ISSN: 1868-4505
2. M. Ferraris et al., MATERIALS CHEMISTRY AND PHYSICS 120 (2010) 123-126

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Events

Industrial Technologies 2010, 7-9/09/2010, Brussels.

<http://www.industrial-technologies2010.eu/>

ICT 2010, September 27-29/09/2010, Brussels

http://ec.europa.eu/information_society/events/ict/2010/index_en.htm

MME2010 (Micromechanics and Microsystems Europe), 26-29/09/2010, Enschede

<http://ewi.utwente.nl/mme2010/>

Micronora 18th International Microtechnology Trade Fair, 28/09-01/10, Besançon

<http://www.micronora.com/>