

# INDUSTRIAL TECHNOLOGIES 2012

integrating nano, materials and production



Congress - Exhibition - Matchmaking

Concert Hall Aarhus, DK

19 - 21 June 2012

eu2012.dk

DANISH PRESIDENCY OF THE COUNCIL OF THE EUROPEAN UNION 2012



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# About the Event



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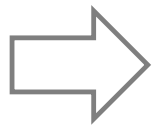
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# Europe's leading Industrial Technologies event from 19 – 21 June 2012 in Aarhus, DK

The event is supported by the European Commission DG for Research & Innovation, and aims to bring together over 1000 representatives of the NMP field:

- cutting-edge nanotechnology (N)
- advanced materials (M)
- innovative production technologies (P)

## Growth and Competitiveness by 2020



**Commercializing technology possibilities that match industrial needs**  
**Smart solutions for improving the European innovation environment**

**Meet** High profile speakers from industry, government & research

**Discuss** Visions for European industry and research in 2020

**Benefit** Know how to implement solutions and succeed in the face of global competition

# 160+ confirmed speakers include many influential figures from industry and policy

- Morten Østergaard, **Minister of Science, Innovation and Higher Ed.**
- Ric Parker, Head of Research and Technology, **Rolls-Royce**
- Pierre Joris, Chief Scientific & Innovation Officer, **Solvay**
- Dr. Jean J Botti, Chief Technical Officer, **EADS**
- Wilfried Vancraen, CEO, **Materialise**
- Dr. Chunli Bai, President, **Chinese Academy of Sciences (CAS)**
- Dr. Massimo Mattucci, COO, **COMAU**
- Prof. Dr. Heinrich Flegel, Director Advanced Materials and Manufacturing Engineering, **Daimler**
- Peter Nagler, Head of Innovation Management Chemicals & Creavis, **Evonik Degussa GmbH.**
- Prof. Dr. Wolfgang Steiger, Director of Future Technologies, **Volkswagen**
- Léopold Demiddeleer, New Business Development Director, **Solvay**
- Dr. Marc Van Sande, EVP Energy Materials, **Umicore**
- Rudolf Strohmeier, Dep Dir General, **DG Research & Innovation**
- Giuseppe Bilardello, SVP R&D, **Kone**
- Jukka Kilpeläinen, SVP R&D, **Stora Enso**
- Per Falholt, EVP R&D, **Novozymes**
- Prof. Ulrich Buller, SVP Research Planning, **Fraunhofer**



## Over 85 exhibitors will showcase innovations and the future of Industrial Technologies



# From fascinating content to networking opportunities, there are many reasons to attend

## Congress

- 5 Plenaries
- 18 Sessions
- 15 Workshops

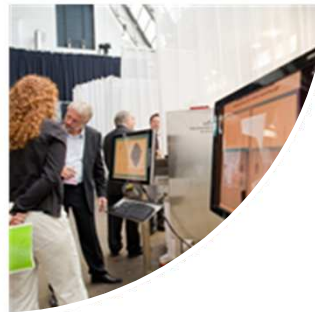


## Matchmaking Day

- Profiles can now be submitted
- Organised with Enterprise Europe Network

## Exhibition

- 80+ companies, RTOs, EU-Projects and EU Institutions



## Award Gala

- 10 projects compete to find the highest impact European initiative



# Hot Topics



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# **The conference addresses the renewal and growth of European industry through innovation**

## **Industrial innovation for competitiveness, growth and sustainability**

- Adaptive manufacturing in Europe towards 2020
- Resource efficiency as a business opportunity
- Innovation in construction, building energy efficiency
- Competing in renewable energy
- Ensuring access to critical raw materials
- Printing goes 3D
- Nature inspiring new materials
- Industrial Symbiosis: recycling and exchange

## **Public investment stimulating growth**

- How will Horizon 2020 support industrial innovation?
- Giants come together to showcase research and technology policy
- High-impact European projects



# Adaptive manufacturing in Europe towards 2020

- European industry has a long history of producing high quality and complex products. However competition from rapidly developing economies such as China and India present European industry with a great challenge.
- To meet the challenges facing manufacturing in Europe, industry established the European Factories of the Future Research Association ([EFFRA](#)), representing a manufacturing community that employs over 30 million people in Europe.
- The 'Factories of the Future' PPP was launched in 2009 with a budget of €1.2 billion and with the aim of developing technologies, systems and processes to not only address the challenges facing manufacturing in Europe but also gradually change our conception of manufacturing and even the factory itself, a revolution in our industry, from highly networked manufacturing to localized production to re-manufacturing services.



Dr. [Massimo Mattucci](#),  
Chairman of EFFRA on the  
success of the 'Factories of  
the Future' PPP:  
*"As of 2012, 61 projects have  
been launched – involving  
over 200 organisations from  
across Europe with research  
on areas such as agile  
manufacturing, virtual  
factories, mass customisation  
and advanced intelligent  
control systems"*

At Industrial Technologies 2012, two sessions will focus on the 'Factories of the Future' topics "[Manufacturing the Products of the Future](#)" and "[Agile Manufacturing Industries – From Mechatronics to Collaborative Supply Chains](#)".

Speakers include [Prof. Heinrich Flegel](#) (Daimler), [Dr. Uwe Kubach](#) (SAP Research), [Dr. Martin Hägele](#) (Fraunhofer IPA), [Dr. Svend Erik Sørensen](#) (Danish Crown), [Dr. Egbert-Jan Sol](#) (TNO High-tech Systems & Materials), [Luigi Galdabini](#) (Cesare Galdabini), [Hubert Lakner](#) (Fraunhofer IPMS).

# Resource efficiency as a business opportunity

- Process industries such as chemical, pulp and paper, glass, or non-ferrous metals and steel create materials with new properties and functionalities by formulating and transforming chemically and physically raw materials along the value chain.
- This is a very cost-intensive process, as energy consumption and water demand during the production process are sky-rocking and therefore put limitations to the competitiveness of the European industry. In order to overcome this challenge, the Public-Private-Partnership SPIRE, Sustainable Process Industry through Resource and Energy Efficiency, has been funded. The goal is to improve resource and energy-efficiencies as well as reducing the environmental impact of industrial activities.
- The founding organizations of SPIRE include members from more than 450 000 enterprises that employ over 6.8 mio people. By generating over 1.600 billion EUR turnover and making up 20% of all funding for Europe's economy, these members will make a major contribution to the political and societal objectives of drastic efficiency improvement in CO<sub>2</sub>-equivalent footprints of up to 40% by 2030.



[Dr. Peter Nagler](#) (Chief Innovation Officer, Evonik Industries AG and board member of SusChem) and [Jean-Pierre Birat](#) (Expert at ArcelorMittal ) will discuss these opportunities arising from energy and water efficiency during “[Resource-Efficient Process Industries](#)” at Industrial Technologies 2012 and discuss associated concepts such as cradle-to-cradle, recycling, end-of-life and waste treatment.

# Innovation in construction, building energy efficiency

- Energy inefficient buildings consume 40% of the world's energy and are responsible for nearly the same amount of emitted carbon. Coupled with additional 3 billion people on the Earth and 70% of the world's population living in cities by 2050 we are heading towards an energy and environmental disaster. Urgent actions need to be taken now. As Europe's buildings and districts are built or renewed, reducing energy consumption does not only reduce your heating bill but becomes the critical goal for planning the cities of tomorrow.
- The notion of a zero energy home has until recently been beyond the imagination of most people. However, today homes that are not only efficient but can produce all of the energy needed through the use of renewable energy can be built. In order to achieve energy neutral buildings and districts by 2050 the European Construction Technology Platform has set up the Energy Efficient Building European Initiative (E2B EI), steered by the Energy Efficient Buildings Association (E2BA) founded in November 2008.



At Industrial Technologies 2012, [Gaëtan Desruelles](#) of Bouygues Construction, [Hervé Charrue](#) of CSTB, [Stefano Carosio](#) of D'Appolonia, and [Javier Grávalos](#) of Acciona will elaborate on how E2BA will achieve the goal of energy neutral districts in Europe for the next generation in the [Industry of Energy Positive Buildings and Districts](#) session.

# Competing in renewable energy

- Technologies for renewable energy generation and storage – solar, wind, fuel cells and batteries – are both a response to the societal challenge of climate change and a business opportunity for innovative firms
- The challenge of developing these solutions is partly technological. Improvements in the conversion efficiency of solar cells, or the mechanical efficiency of wind turbines are needed to ensure that the cost of renewable generation reaches grid parity
- For Europe, the challenge is how to compete in global clean technology markets, where in many areas Asian manufacturers have a lead. This session will set out a path forward, based on strong technology and public and private investment



[Henrik Stiesdahl](#) (CTO, Siemens Wind) will describe how new materials and coatings can improve the efficiency and lifetime of wind turbines.

[Bertrand Filon](#) (CEA) will review the current research landscape in advanced photovoltaics, and identify specific areas of European strength.

[Leopold Demiddeleer](#) (Director of Business Development, Solvay) will look at the technical challenges and business opportunities within fuel cells.





# Ensuring access to critical raw materials

- Raw materials are a critical input for the European economy, but the region is often dependent on imports or vulnerable to declining supplies.
- To prevent this becoming a bottleneck for economic growth, Europe needs a fourfold strategy. Alternative sources for materials should be found – many of which may already exist in Europe, and provide opportunities for renewed and environmental sensitive extraction agency. Alternatives to rare earth metals need to be found, and material usage in general should become more efficient. Recycling is also of critical importance, as well as a significant business opportunity.
- At Industrial Technologies 2012, Professor [Pär Weihed](#) of (Luleå University) will argue in the session "[Ensuring the Availability of Raw Materials](#)" that Europe does not lack reserves of critical materials, but that political will is required to support their extraction.
- [Dr Thomas Scheiter](#) (Siemens) will reveal in "[Innovative Materials Based on Less-Common Elements, Environment and Processes](#)", how his company is responding to material



scarcity, by developing alternative components, which use much lower quantities of rare materials like dysprosium.

Moreover, [Prof. Armin Reller](#) from Augsburg University argues that resource management, resource efficiency and resource strategy are crucial concepts for the design and implementation of new functional materials.

# Printing goes 3D

- King Tut's mummy, a fashion show and a perfect finish for Audi. Seemingly there is nothing in common in these three. However, [Wilfried Vancraen](#)'s company Materialise can manufacture the replica of the remains of the long-dead pharaoh, dresses of the new fashion, and paint the Audi A1 model with secondary colors automatically. Additive manufacturing – also known as 3D printing – is one of the hottest topics in manufacturing since the invention of mass production.
- 3D printing is a process of making three dimensional solid objects from a digital file. It is achieved using additive processes, where an object is created by laying down successive layers of material. These layers can be from a few microns to a couple of hundred microns.

[Oliver Jay](#), Danish Technological Institute, explains: “Producing directly from the digital model to the prototype or to the final product within hours, the technology permits to continue the development of the product, and customize products to the needs of the users”.



[Wilfried Vancraen](#) highlights the importance of European R&D-funding in the successful growth of Materialise – a 3D printing company which now employs more than 600 people. The workshop [Beyond Gutenberg - Printing Industrial Products in the 21st Century](#) will give further insights to how nanotechnology can change the traditional world of printing.



# Nature inspiring new materials

- Through billions of years of evolution, nature has created amazing solutions to complex problems. Now, facilitated by the advances in nano- and biotechnology, industrial solutions and processes can be implemented based on Nature's own principles designing new and novel solutions. The concept of observing functions properties and characteristics in nature and adapting them to man-made solutions is called biomimicry or biomimetics.



Professor [André Studart](#), an assistant professor at ETH Zürich, has been inspired by seashells in his materials research: “We invented a simple, general method to deliberately control the orientational and spatial distribution of reinforcing platelets and rods within composites.” The method, which is based on seashell structure, can be applicable for the fabrication of e.g. strong adhesives, biomedical implants, and dental restorations.

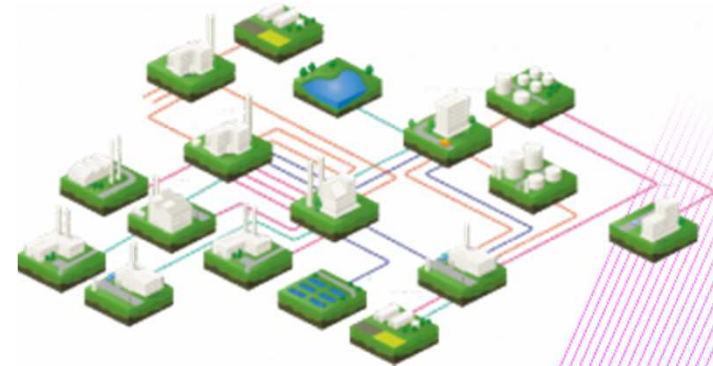
applied in the wound care industry: “The blue mussel attaches to substrates ranging from Teflon over wood to steel, and it does so underwater – features that are of great use in a wide range of technological applications”.

Sea-life has had an impact on [Dr. Henrik Birkedal](#)'s research as well. Dr. Birkedal, who works at iNano, Aarhus University, discovered that techniques used by the blue mussel could be

# Industrial Symbiosis: Recycling and Exchange

- Sustainability, resource and energy efficiency are on everyone's lips. The Kalundborg municipality, Denmark, has taken the principles of sustainability to heart. They have created the world's first working industrial symbiosis.
- In Kalundborg Symbiosis, public and private enterprises buy and sell waste products from industrial production in a closed cycle. The residual products traded can include steam, dust, gases, heat, slurry or any other waste product that can be physically transported from one enterprise to another.
- A residual product originating from one enterprise becomes the raw material of another enterprise, benefiting both the economy and the environment.

[Martin Andersen](#), the EU Director of Kalundborg municipality will chair a session on [Industrial Symbiosis](#) in Industrial Technologies 2012.



[Peter Layborn](#) of International Synergies will broaden the perspective to global reach and elaborate on why this has not been achieved elsewhere.

[Claude Fussler](#) – a special advisor to the United Nation Global Compact - will look at the benefits of achieving symbiotic relationships will have on the climate.



# How will Horizon 2020 support industrial innovation?

- 2014 will see the start of the European Union's new funding programme for research and innovation, Horizon 2020. The development of the programme has gathered pace under the Danish Presidency of the European Council, and will continue during the Cypriot and Irish Presidencies.
- Industrial Technologies 2012 will consider how best to develop Horizon 2020 in order to ensure that it supports industrial innovation, encouraging companies to invest in research and development and commercialise new products in Europe. Morten Østergaard (Minister for Research, Denmark) and Rudolf Strohmeier (Deputy Director General, European Commission) will provide an update on the current development of Horizon 2020, and how they see the role of industry.

Several high profile Chief Technology Officers from Europe's largest industrial R&D investors, amongst them [Ric Parker](#) (Rolls Royce), [Pierre Joris](#) (Solvay) and [Jukka Kilpelainen](#) (StoraEnso)



will set out what they see being necessary to encourage critical research and development to continue to be performed in Europe.

# Giants come together to promote research and technology policy

- Striving in global competition involves many players from different continents. The basis for a global business is to understand other's strategies and find ways in which companies can benefit from each other. The [International Cooperation](#) session therefore gives the opportunity to see other global player's view on competition and their views how European industry and research may strive in global competition by co-operating.

[Professor Chunli Bai](#), the president of Chinese of Academy of Sciences, will be a honoured guest in the Industrial Technologies 2012 congress. Being responsible for over 1200 Chinese institutes, laboratories, research centers and field stations that employ over 50,000 people, he will present his views of Chinese research and technology strategy and possibilities for international cooperation.

[Dr. Sang-il Park](#), the CEO of Park Systems Corporation, claims that Korea's future lies in increased global cooperation.



He advocates that global cooperation in basic research, product development, and other applications is strive in global competition.

[Professor Sergey Kalyuzhnyi](#) from RUSNANO, will talk about how the state-funded multi-billion investment company RUSNANO enables commercialization of nanotechnologies in Russia.

# High Impact European Projects

After a long search, we've found the projects within nano, materials and production that have had the highest impact:

## AIMs

Advanced Interactive **M**aterials by design

## AVALON

Across high-added-**VAL**ue sect**OR**s for knowledge-based product service creation

## DEMAT

**D**ematerialised Manufacturing Systems

## IMPRESS

Intermetallic **M**aterials **P**rocessing in **R**elation to **E**arth and **S**pace  
Solidification

## IMPROVE

Implementing **m**anufacturing science solutions to increase equipment  
productivity and fab **p**erformance

## IMPULSE

Integrated **M**ultiscale **P**rocess **U**nits with **L**ocally **S**tructured **E**lements

## IP NANOKER

Structural Ceramic Composites for Top-End Functional Applications

## NANODEVICE

Novel Concepts, Methods, and Technologies for the Production of Portable,  
Easy-to-Use Devices for the Measurement and Analysis of Airborne  
Engineered Nanoparticles in Workplace Air.



## SMErobot

The European Robot Initiative for  
Strengthening the Competitiveness of  
SMEs in Manufacturing

## WOODY

Innovative Advanced **W**OODbased  
Composite Materials and Components

**At the Award Gala, these projects will present their work and achievements. The winner will be selected from a live-vote amongst the gala attendees. Are you excited? We are!**

# Press Activities



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# Our press programme includes...

- Tuesday June 19<sup>th</sup> 13.00:
  - Press conference with opening plenary speakers
- Wednesday June 20<sup>th</sup> 16.00:
  - Opportunities for interviews with Best Project finalists
- Thursday June 21<sup>st</sup> 13.30:
  - Press availability with closing plenary speakers to discuss Public Private Partnership agreement



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