

## Editorial

The EMMI network has seen a successful period, with the addition of 4 new members: The Universities of Luxembourg and Cantabria (Santander), and two research organisations: CEA in France and LIST from Luxembourg. In the next year, focus will be on attracting additional members from industry.

Furthermore, three projects initiated by EMMI, have been accepted by their respective funding agencies: EJD-FunMat is a Marie-Curie network. IDS-FunMat-INNO and FAME-INNO are projects on doctoral and master education respectively in the framework of the KIC 'EIT Raw Materials'.

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The three projects are described in this letter.

For regular news updates please visit our website [www.emmi-materials.eu](http://www.emmi-materials.eu).

## Four new EMMI members

Université de Luxembourg, LIST (Luxembourg Institute of Science and Technology), University of Cantabria and CEA (Commissariat à l'énergie atomique et aux énergies alternatives) all have joined EMMI as full members during the last 15 months.

The two members from Luxembourg participate in the ITN project EJD-FunMat while CEA is a very active partner of the KIC Raw Materials. (both projects are presented in separate articles below). University of Cantabria has long-standing collaborations with EMMI partners in the field of computer modelling.

**Université de Luxembourg** is a relatively young university, formed in 2003 and with currently 6000 students. Naturally, it is characterised by a very international mixture among its students and staff members from over 100 countries.

It has identified a number of priority fields for its research, among them Physics and Materials Science, Biomedical Systems, and Sustainable Development.

<http://www.uni.lu/>

**The Luxembourg Institute of Science and Technology (LIST)** was formed in a recent merger of the Public Research Centres Gabriel Lippmann and Henri Tudor.

Among the three departments is "Materials Research and Technology" (MRT), which focusses on Nanotechnology (mainly for ICT and medical applications) and Composite Materials.

LIST is characterised by a focus on collaborative and contract research. Its technology platforms are offered for services such as materials characterisation.

<http://www.list.lu/>

**CEA, the French Alternative Energies and Atomic Energy Commission**, is a public research organisation, based in 10 research centres in France plus 5 regional branch offices, each specializing in specific fields.

The CEA is active in four main areas: low-carbon energy, defence and security, information technologies and health technologies. It has 16000 employees and an annual budget of 4.4 billion Euros.

### Four new EMMI members (continued)

Among the strengths of the CEA are the strong linkage between fundamental and applied research, extensive activity in valorisation (more than 700 patents filed per year), and its expertise in obtaining and managing EU-funded collaborative projects (760 projects under the FP7 programme 2007-2013).

<http://www.cea.fr/english-portal>

**University of Cantabria (UC)** is located at Santander in northern Spain. It has been ranked among the top ten of Spanish universities in both research and education. UC offers 36 university degrees in all fields of science and engineering. In Materials Research, several groups are active in computer modelling, magnetism and high-pressure synthesis.

<http://web.unican.es/en/>

## COST project HINT – Hybrid Interfaces

The COST Action ‘Rational Design of Hybrid Materials Interfaces’ (no. MP1202) has entered its fourth and final year.

Meanwhile, researchers from 25 European countries have joined the project, which is coordinated by Marie-Hélène Delville from ICMCB Bordeaux. The activities so far include 7 scientific workshops, 2 training schools and 33 Short Term Scientific Missions (cross-country visits to other laboratories, shown in the graphics on the right).

The scientific scope covers 5 focus fields, defined in cooperation with the Industry Advisory Board:

- Optics and Photonics
- Health and Life Sciences
- Catalysis and Sensing
- Energy
- Transport and Aeronautics.

At the time of writing, the project has resulted in 26 publications with international co-authorship.



Fig: graphical representation of visits between member laboratories financed by COST Action HINT. Each green line represents a visit/collaboration.

The list of publications, and much other info can be found on the project website:

<http://www.cost-hint.cnrs.fr>

## EMRS Spring Meeting 2016 - Symposium A Hybrid Materials

Members of the COST project HINT (see above) are organizing a symposium on Hybrid Materials at the EMRS Spring meeting in Lille on May 2-6, 2016

The symposium will cover all aspects from materials synthesis, materials characterization, structure-property relations, applications, devices, etc.

The symposium will be highlighted in a special issue in Beilstein J. Nanotechnol. that is open to all participants of the symposium.

For further information see:

<http://www.european-mrs.com/meetings/2016-spring/2016-spring-symposia-program>

## KIC EIT Raw Materials / Schools IDS-FunMat-INNO & FAME-INNO

### Knowledge and Innovation Community on Critical Raw Materials

The European Institute of Innovation and Technology (EIT, <http://eit.europa.eu/>) has created **Knowledge and Innovation Communities (KICs)** in the fields of ICT, Climate, Health, Energy and Raw Materials. In 2016, calls for KICs in Food and Manufacturing will be launched

The Objective of the KICs is to stimulate Innovation and Technology Transfer in their specific areas, notably by linking up actors from industry and academia.

The KIC Raw Materials started its activities in 2015. Counting over 100 full members, it aims to accelerate innovation in mining, recycling and substitution of critical raw materials. The KIC EIT Raw Materials has defined six Knowledge & Innovation Themes:

- 1.Exploration and raw materials resource assessment
- 2.Mining in challenging environments
- 3.Increased resource efficiency in mineral and metallurgical processes
- 4.Recycling and material chain optimisation for End-of-Life products
- 5.Substitution of critical and toxic materials in products and for optimised performance
- 6.Design of products and services for the circular economy

EMMI and some of its members play a very active role in the KIC, notably the definition of its scope and activities.

<http://eitrawmaterials.eu/>

### FAME-INNO Master Programme

Another successful project proposal in the first calls for Education Activities of the KIC Raw Materials was the project FAME-INNO, led by Grenoble INP and with 10 project partners from Academia, Research and Industry.

FAME INNO proposes to reshape the ERASMUS MUNDUS FAME Master

### KIC Education project IDS-FunMat-INNO

The KIC Raw Materials has launched calls for Education Activities, including Doctoral Education.

One of the successful applicants was the project IDS-FunMat-INNO, initiated by EMMI and based on the ERASMUS MUNDUS network IDS-FunMat. It is coordinated by Prof. Thierry Toupance from University Bordeaux.

The core of project members are from the EMMI network, but some new members from academia (Universities Milano, Bicocca, Lorraine, Ghent and Aalto), research (Tecnalia) and industry (Mondragon, Heraeus, Arkema) were also added.

The project will start in February 2016 and has a duration of 3 years. It will organise a number of Joint Training Schools, and will also finance local training activities as well as mobility of PhD students between countries and towards industry.

Thus, IDS-FunMat-INNO will continue the work of the EMMI Doctoral School, but with emphasis on training in innovation-related skills, entrepreneurship, and research in substitution and recycling of materials.

The kickoff meeting will be held in Bordeaux during March or April 2016.



program ([www.fame-master.com](http://www.fame-master.com)) by emphasising skills in entrepreneurship and innovation. Another focus of the curriculum will be life cycle analysis and criticality of raw materials.

The programme will start with a pilot phase in autumn semester 2016, followed by full implementation in 2017.

## EJD-FunMat – Marie Curie ITN Network

June 1<sup>st</sup>, 2015, was the official start date of the project EJD-FunMat. The project had been submitted to the first call of the Marie Curie programme (now called Marie Skłodowska-Curie Actions or MSCA) in the European framework programme Horizon 2020.

EJD-FunMat finances 15 PhD projects in **international co-supervision**, grouped into 6 cluster topics:

- photocatalysis
- transparent conductors
- lead-free piezoelectrics
- composites for optical datacom
- cellulose-based polymers
- bone tissue engineering

The **cluster concept** was developed by the EMMI community, and is an attempt to develop a critical mass of researchers working on certain topics, which were proposed by EMMI members, notably the Industry Advisory Board.

The 15 PhD candidates have been hired and started work in autumn 2015. The kickoff meeting was held in Bordeaux, 24-25 Sept 2015.

EJD-FunMat is coordinated by Prof. Thierry Toupance from University Bordeaux, and has 9 academic consortium partners, and 20 associated partners, mostly from industry.

Each PhD project has an industry partner where the PhD candidate will spend some time.

Another key aspect of the project is training in transferable skills. Apart from

well-known topics such as communication, project management and entrepreneurship, the PhD candidates will be trained in gathering and analysing **Technology Intelligence**: collecting, processing, analysing and conveying data concerning a technology field, including scientific knowledge, technology know-how and ownership (IPR), legal and regulatory issues and financial frameworks.

EJD-FunMat is continuing the ERASMUS MUNDUS project IDS-FunMat, which has financed 85 PhD projects between 2010 and 2014.

The two projects will hold joint Annual meetings and Training Schools, the next one planned for March 2016 near Bordeaux.

The International Doctoral School in Functional Materials IDS-FunMat is one of EMMI's flagship project, and **making IDS-FunMat permanent and sustainable** is one of EMMI's strategic aims.

A Joint PhD diploma was recently agreed between universities in Darmstadt and Bordeaux. Other partners have also begun bilateral negotiations on joint diploma.

It is planned to complement the EU – funded projects with locally funded PhDs. Another possible resource for funding is the KIC Raw Materials, also described in this newsletter.

Descriptions of the PhD projects, lists of project members and other details can be found on the project website:

<http://www.idsfunmat.u-bordeaux1.fr/>

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