

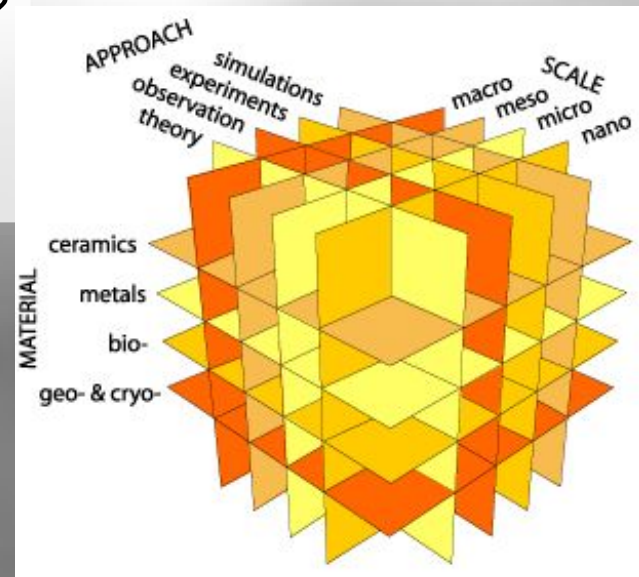


MARIE CURIE ACTIONS

# Marie Curie Summer School: Knowledge Based Materials

Welcome:

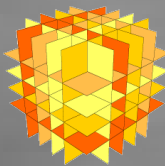
- Who are we?
- What are we going to do?
- What the Marie Curie Program hopes we achieve?
- The European Research Area
- Logistics



Mark Jessell

Université Paul Sabatier, Toulouse

Marie Curie Summer School  
Knowledge Based Materials  
Estremoz, Portugal  
August 19-29<sup>th</sup> 2007



# Who are the presenters?

Mark Jessell, Toulouse

Rui Dias, Evora

Günter Gottstein, Aachen

Sandra Piazzolo, Stockholm

Paul Bons, Tübingen

Karel Schulmann, Strasbourg

Asha Ram Suwal, Tübingen

Albert Griera, Toulouse

Jens Becker, Tübingen

Emilia Rosa, Lisboa

Ernie Rutter, Manchester

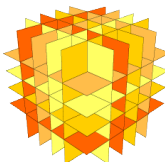
Etienne Vernaz, Varilhô

Lindsay Greer, Cambridge

Michel Suery, Grenoble

Holger Schumacher, Aachen

Frank Wendler, Karlsruhe



# What are you interested in?

**Nanophotonic** materials

Through-Process **Modelling**

Location of Lead reservoirs in the **mantle**

**Biomedical** Materials Science

Oxide and nitride ceramic based **composites**

**petrography** and geochemistry

Dynamical, rheological and structural properties of **polymers**

**Nanocrystallization**

**Melt transport** in the crust

Spider **Silk**

Development of **advanced materials**

Development of **Al-Cu, Al-Ni** Matrix materials

Influence of deformation by torsion of **Fe-Cr-Co**

Mechanical and thermodynamical properties of **amorphous** systems out of equilibrium

Low friction thermal barrier **coatings**

Molecular relaxations and **crystallization** phenomena

Structures of **molecular crystals**

**Granite** magma generation

**Deformation induced crystallization**

**Glacio-tectonics** and geochemistry

High performance **Ceramics**

Flow-induced crystallisation of **polymers**

Igneous and metamorphic **petrology**

**Energy Storage** in Buildings

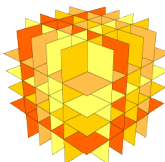
Silicon Oxycarbide **Glasses**

Mathematical **Simulation** of Materials

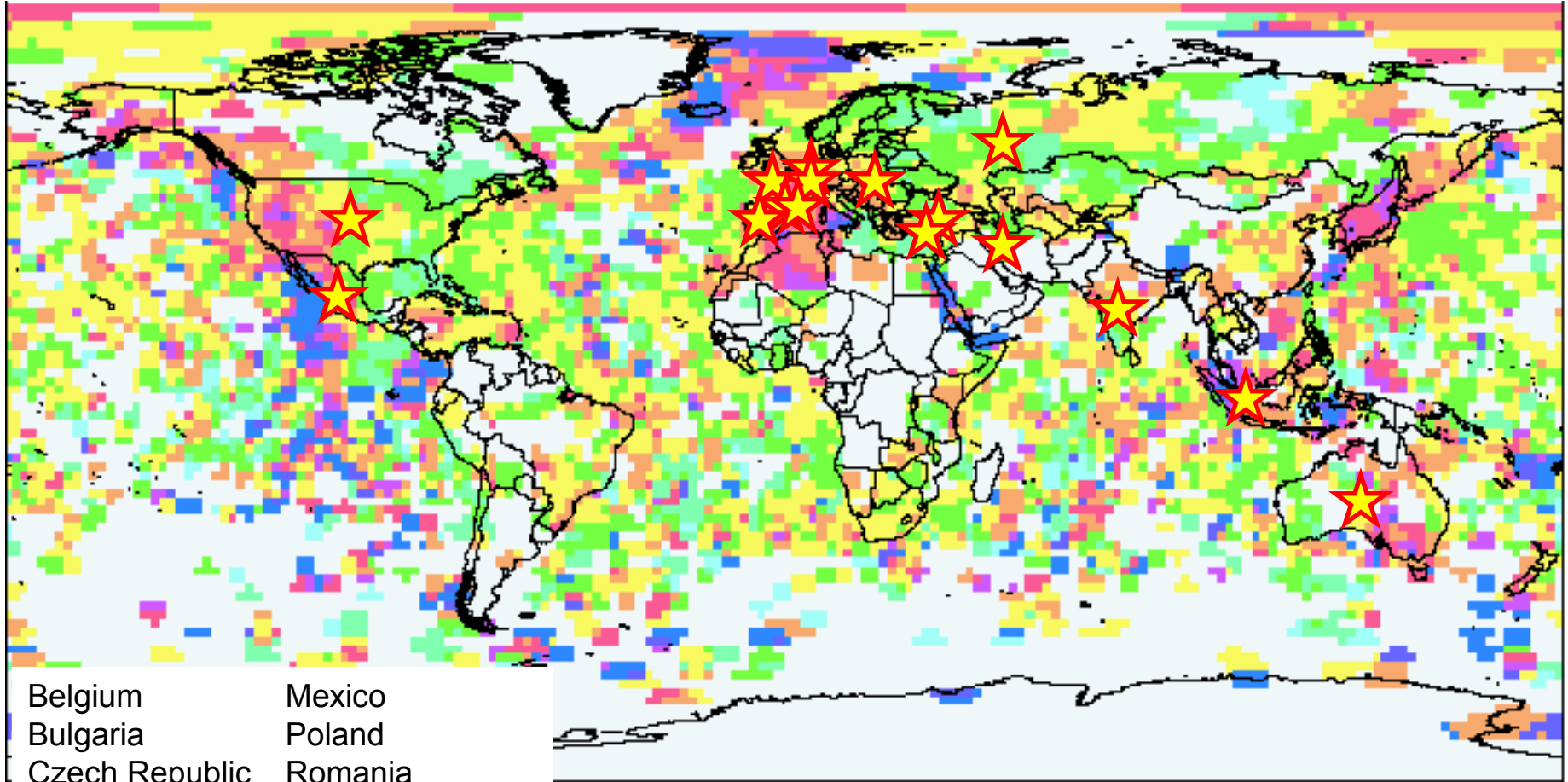
**Analogue experiments** on partially molten rocks

**Thermal spraying**

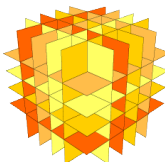
**Magnetic interaction** between nanoparticles



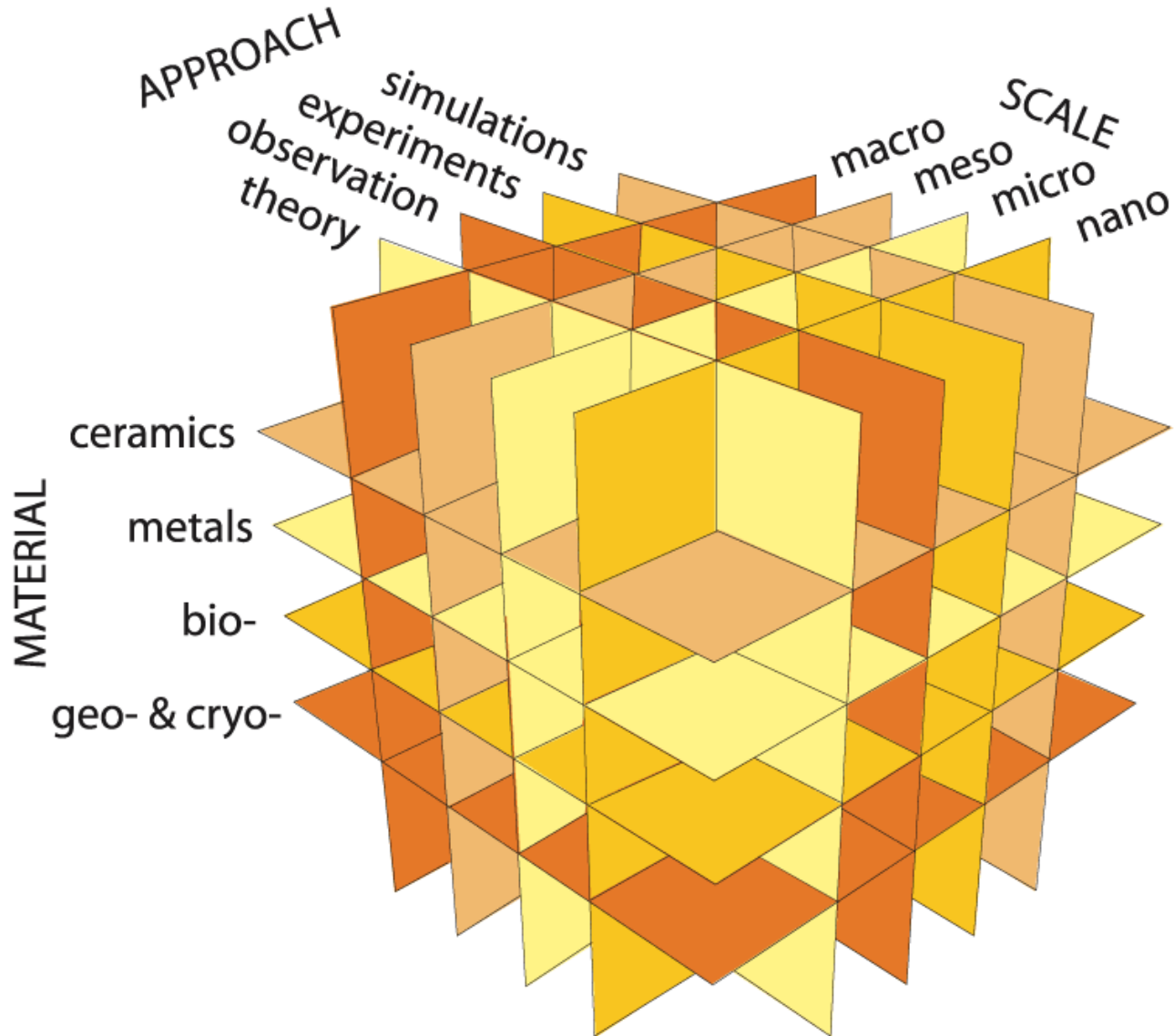
# Where are we from (Nationality or current location)



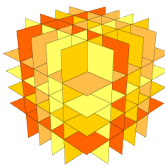
- |                |                |
|----------------|----------------|
| Belgium        | Mexico         |
| Bulgaria       | Poland         |
| Czech Republic | Romania        |
| France         | Russia         |
| Germany        | Singapore      |
| Hungary        | Spain          |
| India          | Turkey         |
| Iran           | Ukraine        |
| Israel         | United Kingdom |
| Italy          | United States  |
|                | Portugal       |



# The Basic Concept



⇒ **Need common materials language**



# Language

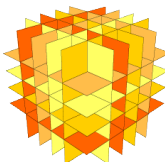
Orlando 2005:

*Microstructures are oscillations in the gradient of infimizing sequences.*

Jessell et al. 1994:

*Laminated bedding-parallel veins hosted in turbiditic sandstone-shale sequences consist of sub-parallel sheets of quartz separated by micaceous layers, wall rock slivers and pressure solution seams.*

⇒ **Ask Questions!**



# What are we going to do?

Day 1 Monday 20<sup>th</sup> : Materials Science and Knowledge Based Materials: An overview

Day 2 Tuesday 21<sup>st</sup> : Partial Melts and Amorphous Materials I

Day 3 Wednesday 22<sup>nd</sup> : Field Trip, material science in nature

Day 4 Thursday 23<sup>rd</sup> : Materials characterisation

Day 5 Friday 24<sup>th</sup> : Participant Poster Presentation

Day 6 Saturday 25<sup>th</sup> : Physical experiments and manufacture of partial melts and amorphous materials

Day 7 Sunday 26<sup>th</sup> : A Career in Science: Science & Society, Science Management, Scientific Communication

Day 8 Monday 27<sup>th</sup> : Modelling of Microstructure

Day 9 Tuesday 28<sup>th</sup> : Applications and Properties of Partial Melts and Amorphous Materials

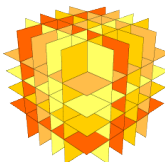
Day 10 Wednesday 29<sup>th</sup> : Open Discussion: The Future of Materials Science and Future Materials

*2005 Single Phase Materials Hurgewald, Germany*

*2006 Composites & Multi-phase Materials, Älvdalen, Sweden, 13 -23rd of August*

*2008 Hydrous & Porous Materials, Prague, Czech Republic*

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# Web Site- the 5<sup>th</sup> event

All materials presented at this and subsequent Summer Schools

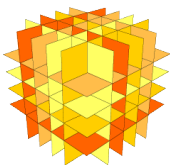
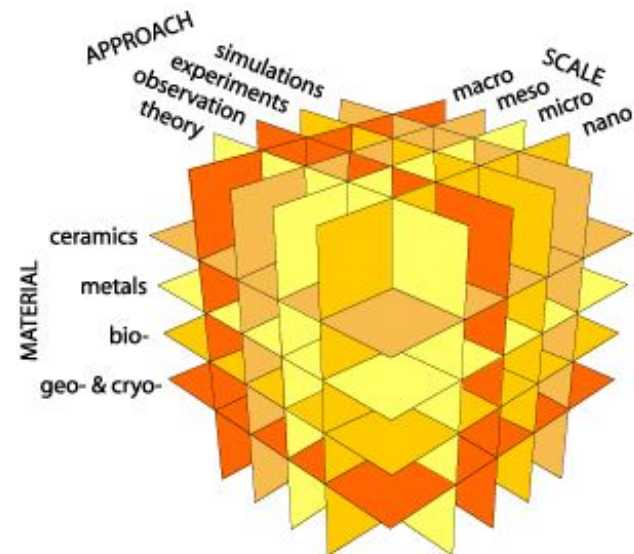
Materials presented at related events (e.g. Geomat2005)

Posters presented by participants

Multidisciplinary glossary

Personal CVs for all participants

...





### Navigation

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### Aachen 2005 ( Public )



This year's Summer School, run by Prof. Günter Gottstein of the [Institute of Physical Metallurgy and Metal Physics RWTH-Aachen](#) will focus on multidisciplinary aspects of materials science associated with *single phase materials*.

The Summer School, will be held the 8 - 17 August 2005, at the [Hotel Zum alten Forsthaus](#), Hurtgenwald, Germany in the heart of the Eifel.

The presenters at this summer school are all internationally renowned academic and industry based researchers drawn from a wide range of Materials Science domains, including:

- ceramics
- glaciology
- metallurgy
- geology and
- polymers

The participants will have the opportunity to present their own current research, and will participate in discussions, field excursions and theoretical and applied presentations.

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Hi, mjessell

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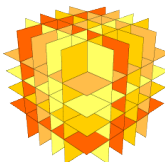
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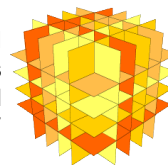
We have 87 guests  
online

▶ [mjessell](#)



# What these Summer Schools offer to the EU as part of their Marie Curie Mobility & Human Resources Program

HRM evaluation criterion	Specific questions to be posed to evaluators	Weighting
Scientific Quality of the Project	Quality and originality of topic Importance and relevance of scientific content Coherence between events in series	<b>25</b>
Quality Research Training	Quality of training Contact building arrangements Importance and relevance of supplementary skills	<b>15</b>
Quality of the Host	Quality and capabilities of the organisers Quality of locations / infrastructures	<b>10</b>
Quality of the Researchers	<b>N/A</b>	<b>N/A</b>
Management and Feasibility	Management of the (series of) events: feasibility and credibility of proposed plans, availability of necessary resources Publicity and dissemination incl. web-site/internet forum	<b>20</b>
Relevance to the objectives of the Scheme / Activity	Relevance of theme(s) in relation to European achievements and interests Composition of audience Benefit to the organisers in terms of increased capacity to train or host conferences	<b>15</b>
Added Value to the Community	Contribution to the objectives of the European Research Area and other Community policies Effects on public understanding, attraction and achievements of science Effect on improving the gender balance in the scientific/training area	<b>15</b>

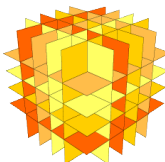


# What the Marie Curie Program hopes we achieve

*“These actions are aimed at supporting research networks, research organisations and enterprises (including in particular SMEs), in the provision of structured global schemes for the transnational training and mobility of researchers, and the development and transfer of competencies in research including those relating to research management and research ethics. The actions concerned are intended to have a strong structuring effect on the European research system, in particular by encouraging junior researchers to pursue a research career.”*

*“These Conferences and Training Courses will enable junior researchers to benefit from the experience of leading researchers. Support will be given to specific training activities (including virtual ones) that highlight particular European achievements and interests.”*

- Development of skills that will lead to fundamental research breakthroughs in materials science
- Networking of young researchers
- Broadening of perspectives
- Promotion of gender balance in research



# The European Research Area



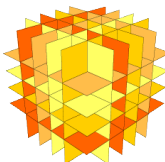
The idea of a European Research Area grew out of the realisation that research in Europe suffers from three weaknesses:

- insufficient funding,
- lack of an environment to stimulate research and exploit results, and
- the fragmented nature of activities and the dispersal of resources.

The objective of the European Research Area initiative combines three related and complementary concepts:

- the creation of an "internal market" in research, an area of free movement of knowledge, researchers and technology, with the aim of increasing cooperation, stimulating competition and achieving a better allocation of resources;
- a restructuring of the European research fabric, in particular by improved coordination of national research activities and policies, which account for most of the research carried out and financed in Europe;
- the development of a European research policy which not only addresses the funding of research activities, but also takes account of all relevant aspects of other EU and national policies.

Once ERA has been achieved, the concept of European research will be as familiar as those of the single market or the single currency are today.



# Logistics

- Facilities
  - Internet
- Free time
- Reimbursements for travel (not bar tab!)
- Day 3: Field Trip
- Day 5: Posters
- Day 7: A Career in Science
- Questionnaire, must be completed before leaving
- Finish: Wed August 29<sup>th</sup>

