Funding opportunities and instruments in Grenoble and Barcelona

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Director ICMAB - CSIC

Grenoble – Barcelona twin conference, Grenoble 23th – 25th October 2019
Materials are an enabling technology!

Many scientific and social grand challenges rely on achieving advanced materials and integrating them in competitive devices.
Functional Materials and devices

EU: 80% of new products in the market rely on new materials

KET (Key Emerging Technologies) – H2020
- Advanced Materials
- Nanotechnology
- Advanced manufacturing

New physics / materials
Processing of (nano)materials
Devices - components
Integrated systems

Discovery Assembly
Materials Engineering
System Engineering

TRL 1 2 3 4 5 6 7
Catalonia’s RTD system and policies

Catalonia is a cutting-edge cluster and strategic hub of Southern Europe, thanks to a highly competitive economy and a privileged geographic location that opens it up to the world.

Its business activity benefits from an excellent university and research system.

~ 24,000 publications / year  
226,000 students / 9,500 faculty
R&D&i VALUE CHAIN

Discovery Research
- Universities
- Basic Research Centers

Use-inspired Basic Research
- Mission oriented Research Centers
- Technical Universities

Applied Research
- Mission oriented Research Centers
- Hospitals

Technology Maturation & Deployment
- Industry
- Technological Centers
- Hospitals

CATALONIA
- 12 Universities
- ~ 60 Research Centers
- 3 Large Scale Facilities
- 3,7 % EU pub (1,2 % popul.)
- 2,2 % 7 PM / 3,3 % ERC
- 55 % ERC Spain
- 3,100 PhD/yr
- 3 pat/ Mhab (≥ 10-50 top)
- R&D private still low

15 Hospitals

The whole chain value needs is attended: interdisciplinary and multi-institucional cooperation is a must!
### Catalonia: Research Distribution

<table>
<thead>
<tr>
<th>Institutions</th>
<th>Number</th>
<th>Number of Researchers</th>
<th>% Catalonia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Universities</td>
<td>12</td>
<td>16,000</td>
<td>62</td>
</tr>
<tr>
<td>CERCA*</td>
<td>41</td>
<td>5,000</td>
<td>20</td>
</tr>
<tr>
<td>CSIC*</td>
<td>21</td>
<td>1,500</td>
<td>6</td>
</tr>
<tr>
<td>Hospitals</td>
<td>15</td>
<td>5,000</td>
<td>20</td>
</tr>
<tr>
<td>Large Infrastructures</td>
<td>3</td>
<td>~200 - 300</td>
<td>~1-2</td>
</tr>
<tr>
<td>ICREA</td>
<td></td>
<td>235</td>
<td>~1</td>
</tr>
<tr>
<td>Research groups</td>
<td>1297 (530 Sc&amp;Eng)</td>
<td>~18 inv / GR</td>
<td></td>
</tr>
<tr>
<td>Total researchers</td>
<td></td>
<td>~25,000</td>
<td>~100</td>
</tr>
</tbody>
</table>

* 5 centers are shared by CERCA and CSIC

Participation meeting: ICN2, IREC, ICFO, IFAE, IMB, ICMAB, UAB, UPC
## Research institutions (Physical Sciences and Engineering)

<table>
<thead>
<tr>
<th>CERCA</th>
<th>CSIC</th>
<th>UNIV</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Physics</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IFAE, ICFO, ICN2, IREC</td>
<td>ICE, ICN2, ICMAB, IMB-CNMB</td>
<td>UB, UAB</td>
</tr>
<tr>
<td><strong>Chemistry</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IREC, ICRA</td>
<td>IQAC, ICMAB, ICN2, IDAE</td>
<td>UB, UAB, URV, UG</td>
</tr>
<tr>
<td><strong>Engineering</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CIMNE, CVC, IBEC, IREC</td>
<td>IRI, IMB-CNMB, ICMAB, IIIA</td>
<td>UPC, UB, UAB</td>
</tr>
</tbody>
</table>

Strong institutional complementarity: many opportunities for international cooperation! (30-50 % PhDs/postdocs)

### PUBLICATIONS

Catalonia 2018: 24,000 publications / 3,300 with France (14 %) / 376 With Grenoble (1,6 %)

~55 art/yr (15 %) IN COND MATTER, MATERIALS, NANOSCIENCE, E&E ENG
Barcelona Nanotechnology Cluster - Bellaterra

IFAE
ICMAB
IMB-CNM
UAB
CRAG
ICN2

BNC-b ~ 700 researchers
~ 1000 people
The largest R+D N&N concentration in Spain
~40-50 % Catalonia scientific production Mat&N&N
Vision of the cooperation

- **Discovery Research**
- **Use-inspired Basic Research**
- **Applied Research**
- **Technology Maturation & Deployment**

At the core of the chain value:

- **Universities**
- **Large scale facilities**
- **Compl. research centers (Physics, Chemistry, Materials, Engineering)**

Grenoble, Barcelona

**SCIENCE**

Materials, Properties, Devices

**TECHNOLOGY KNOW-HOW**

- **Industry**
- **Spin-offs**
- **Technological Centers**
- **Polytechnic Universities**
- **Hospitals**
- **Society**
The widest range of tools for research at the nanoscale
Free transnational access to academia & industry

Enhancing European competitiveness in nanoscience research and innovation (2016-2019)
Instruments for international cooperation

- **EU H2020 and FP9 projects**
  - Many different topics and calls
  - Very significant budgets to cooperate
  - ERA – NET : 3 EU countries min, topics agreed yearly, 3 years max, budget max 60,000 €/yr (Spain)
    - Topic 1: Modeling for materials engineering and processing
    - Topic 2: Innovative surfaces, coatings and interfaces
    - Topic 3: High performance composites
    - Topic 4: Functional materials
    - Topic 5: New strategies for advanced material-based technologies in health applications
    - Topic 6: Materials for additive manufacturing

- **EU NFFA large scale nanoscience infrastructures**
  - Close to synchrotron radiation centers (ESRF, ALBA)
  - New opening opportunity for 2020-2023!

- **Projets Internationales Coopération Scientifique (PICS) (CNRS – CSIC)**
  - Consolidate partnerships to enhance international / European ambition in specific areas
  - Requisite: previous collaboration demonstrated
  - Funding: 5,000 – 7,000 €/yr (3 years). Travel, meetings.
Instruments for international cooperation

- **I-LINK (CSIC)**
  - Consolidate international cooperations with the objective to promote competitiveness in international project calls
  - Funding: < 24,000 € (< 20 months). Travel and exchanges of both teams

- **APPEL A PROJETS UNIVERSITAIRES ET SCIENTIFIQUES**
  - Ambassade de France à Madrid (2019)
  - Événements touchant à la France ou à ses organismes scientifiques ; ils doivent appuyer des aspects bilatéraux de recherche franco-espagnole, ou favoriser la diffusion de publications en langue française.
  - No information yet about budget
Instruments for international cooperation

- **Catalonia and Spain calls to exchange or recruit scientists**
  - Master and PhD fellowships
  - Beatriu de Pinós for postdocs (Generalitat de Catalonia)
  - ICREA researchers (Generalitat de Catalonia)
  - Juan de la Cierva for postdocs (Spain)
  - COFUND postdocs and PhDs
  - Ramón y Cajal for Tenure Tracks (Spain)
  - CSIC scientist positions (Spain) and

- **Severo Ochoa excellence label centers (SOMMA network)**
  (ICN2, ICFO, IFAE, ICMAB) (> 50 % Catalonia)
  - Calls for Master fellowships
  - Calls for PhD and postdoc positions
  - InPhinit – La Caixa PhD positions
  - BIST COFUND programs
• Strengths
  • Leading position of researchers
  • Multidisciplinarity and multinationality of research staff
  • High talent attractiveness at all levels
  • Internationalization is strong
  • Excellent scientific equipment platforms and skilled personnel
  • High success in attracting competitive research funds
  • Large society impact and very active in outreach and communication
SWOT BARCELONA - GRENOBLE

- **Opportunities**
  - International cooperation with outstanding international research institutions
  - Strong implication in University teaching and training activities
  - Competitive equipment platforms implemented in several research centers
  - Strong participation in EU programs linked to H2020 and FP9
  - Increase of cooperation with large facilities: synchrotron ALBA, supercomputer BSC
  - Strong cooperation opportunities within Catalan research centers
  - Integration in SOMMA (excellence) network helps to improve the national and international impact
THANK YOU FOR YOUR ATTENTION!