



Session 1: Basic Research Introduction

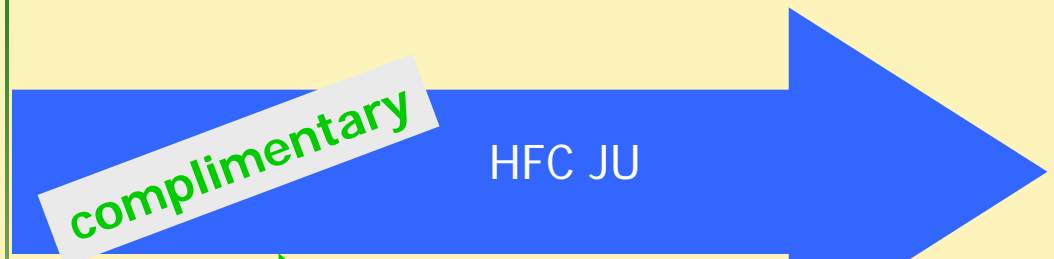
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Empa, Swiss Federal Laboratories for Materials Testing & Research

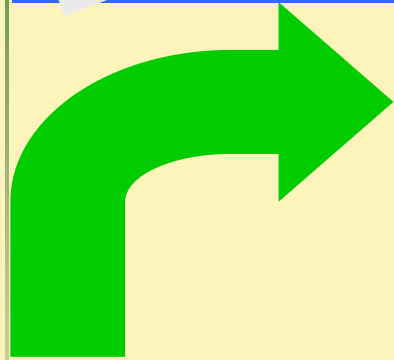
Dübendorf, Switzerland



Basic Research & HFC JU



Implementation
Commercialization
Market entry

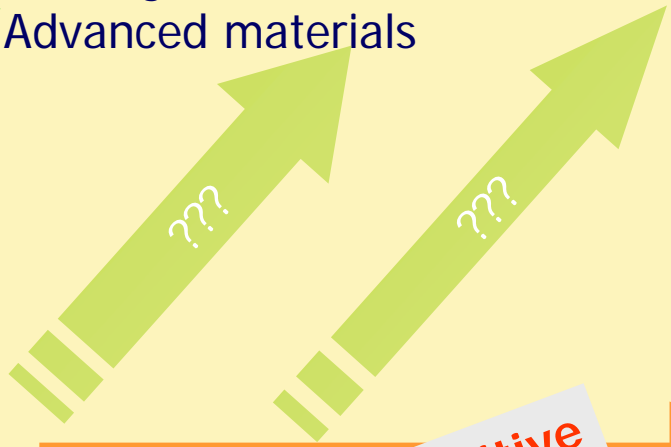


Degradation
Advanced materials

synergy
or
conflict ?

Generic R&D:

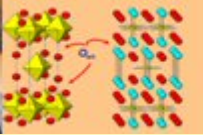
- Physical Chemistry
- Materials Science
- Processing Technology
- System Engineering



Innovation potential

- New concepts
- Operating windows
- Future applications
- ???

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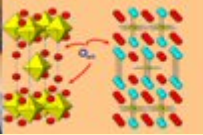


Aim & Scope of Session on „Basic Research“

- What **is** „Basic Research“, **can be** and/or **should be** in SOFC technology?
 - What is „generic“, „fundamental“, „basic“
 - Other Research Areas to be covered?

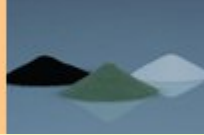
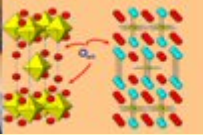
- Relation to Hydrogen & Fuel Cell Joint Undertaking
 - Analysing „synergies“ and „conflicts“
 - Recommendations to HFC JU?

- How to proceed on „Basic Research“ in a European Working Group on SOFC materials and systems ?



Topics in Session 1 „ Basic Research“

- Basic Research Topics (FZJ)
- Materials discovery and development (Imperial)
- In-Situ and Ex-Situ Diagnostic Methods (DLR)
- Electrical properties of zirconia-based solid electrolytes (AGH)
- Interaction between the materials in SOFC (Uni Gdansk)
- Concept of new materials, especially MEIC oxides (CNRS Bordeaux)
- Micro-mesoporous cathodes for medium-temperature SOFCs (Uni Tartu)
- Predictive basic research (cathodes and electrolytes) (Uni Leoben)
- Degradation of interfaces (TU Clausthal)
- C tolerant Ni based anodes (FORTH ICEHT)
- Critical Issues for the SOFC Technology (Risø-DTU)
- Development of SOFCs by Thermal Spraying (Inasmet)



Ideas

- Providing generic understanding
- For solving persisting problems JTI
- Understanding
 - Structured approaches -new materials- instead of try and error
 - Is high temperature Electrochemistry similar to liquid electrochemistry?
 - New technologies Nano? Thin films? Surface science?
 - New modelling approaches?
 - New characterisation techniques?
- Fundamental? Understanding contacts?
- Generic, pre-competitive?
-
- Fundamental is there a difference to basic?
- Basic research has a large variety of topics!
- Far from turbine developemnt
- Bild 2 Pfeile parallel: einmal Ziele JTI
- Dann aber auch neue, naechste Generationen.....
- Scope of the session: