

AMPEA: The Joint Programme on Advanced Materials and Processes for Energy Applications

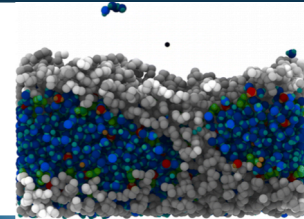
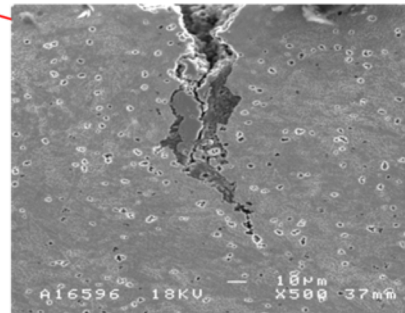
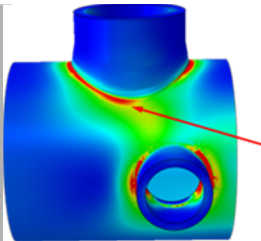
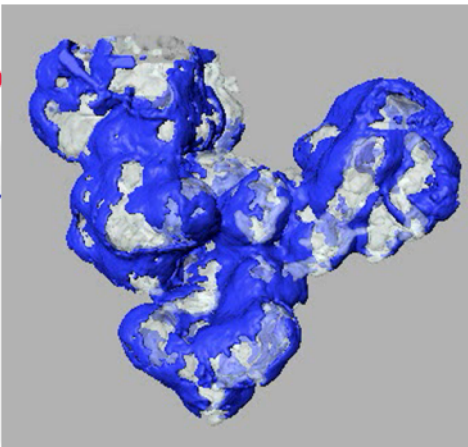
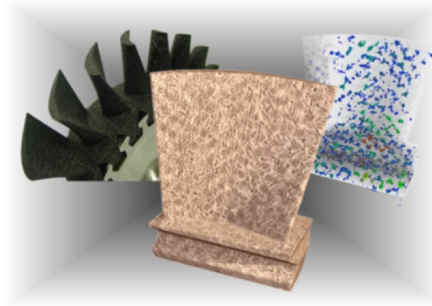
JP coordinator: Frédéric Chandezon (CEA)

JP deputy coordinator : Monica Fabrizio (CNR)

Présentation : Engin Molva (CEA) , membre de JPSC

ANCRE – EERA , le 30 novembre 2018, MESRI

www.eera-set.eu



EERA is an official part of the EU SET-Plan.

<http://setis.ec.europa.eu/>

AMPEA: Advanced Materials and Processes for Energy Applications



- Coordinate and promote multidisciplinary joint research in **basic science for energy** (**materials** and **processes**)
- TRL 1 → 4
- Future emerging energy technologies and established ones (other JPs) where materials issues are involved

AMPEA positioning in EERA

EERA: TRL level 2-7, with a strong focus on TRL 2-5

MATERIALS



AMPEA: TRL 1 → 4

AMPEA Advanced
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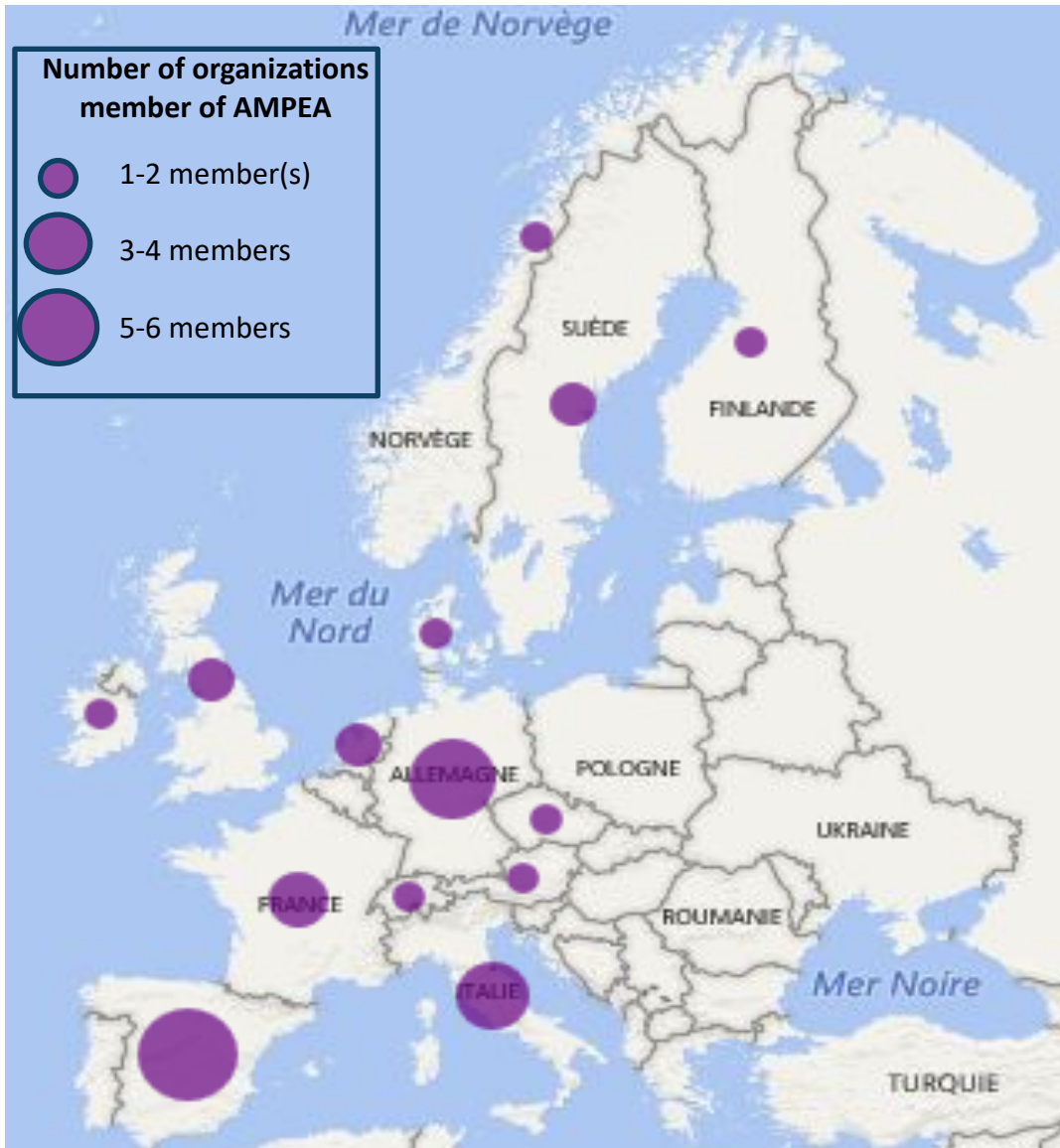


TECHNOLOGIES



SYSTEMS





Present status:

→ 14 countries

→ 32 organizations including 3 associate members

CEA (FR), CELLS-ALBA (ES), CIEMAT (ES)
 CNR (IT), CSIC (ES), DIFFER (NL), DLR (DE)
 DTU (DK), EMPA (CH), ENEA (IT), HZBerlin (DE)
 FZJülich (DE), Fraunhofer (DE), ICIQ (ES)
 IFPEN (FR), IREC (ES)
 J. Heyrovsky Institute of Physical Chemistry (CZ),
 JKU (AT), Max Planck Gesellschaft (DE),
 Politecnico di Torino (IT), PSI (CH)
 TECNALIA (ES), TU Delft (NL)
 Université de Lorraine (FR)
 University of Bologna (IT)
 University of Ferrara (IT)
 University of Glasgow (UK)
 University of Limerick (IE)
 Umea University (SE)
 Uppsala University (SE)
 SINTEF (NO), UKERC (UK), VTT (FI)

➤ **Matricial SP structure involving:**

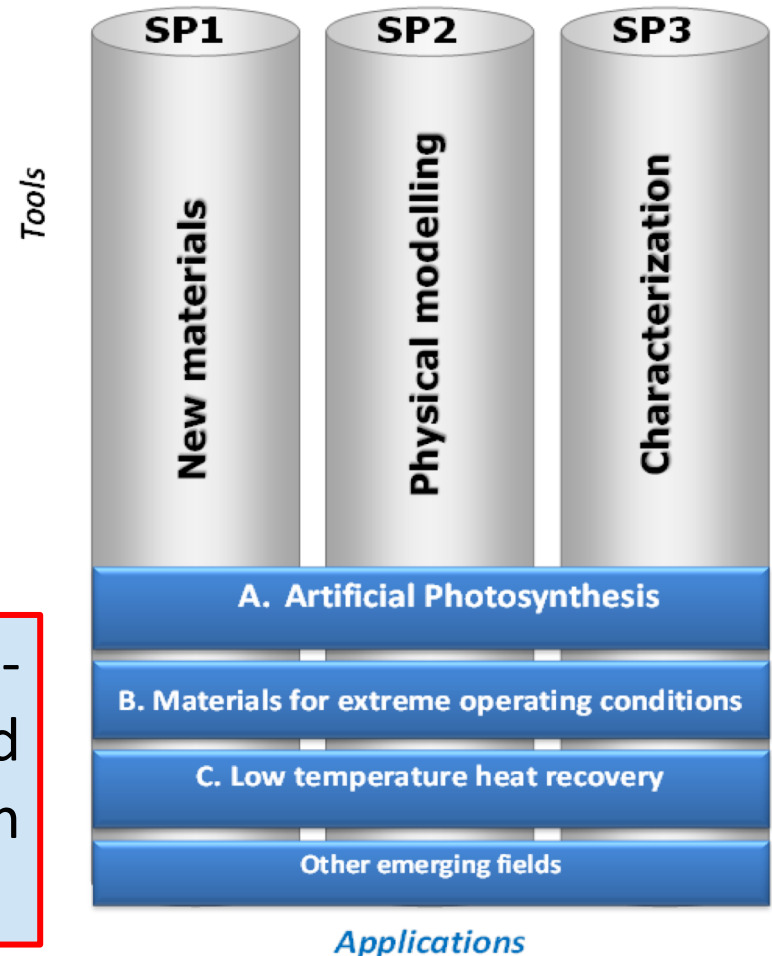
- **"Tools"** sub-programmes (SPs)

→ Generic research areas

- **"Applications"** transversal SPs

→ Future emerging energy technologies not (yet) covered by another applicative JP

Main challenges: achieve a cross-fertilization between *"Tools"* and *"Applications"* SPs and with applicative EERA JPs



→ **Coordination activities**

→ Networking, workshops, mobility scheme, summer schools, training sessions

→ **Collaborative activities**

→ Funding opportunities within H2020 to implement common objectives through joint projects

→ **Proposing to EERA and the EU a research strategy on basic science for energy to meet the 2020 and 2050 targets in terms of low carbon energy**

→ Roadmapping, connections with other EERA JPs to propose common strategies and roadmaps

→ SET Plan Integrated Roadmap

→ **Connection with industry**

Strategy of AMPEA to be connected to a forum of industrials in the field of materials for energy rather than to a few industrials



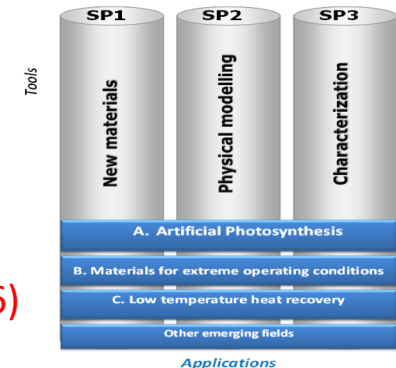
Energy Materials Industrial Research Initiative
www.emiri.eu



Agreement between the 2 organizations (April 4th 2016)
Observer status of EMIRI in AMPEA and the reciprocal



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Joint actions and events between AMPEA and EMIRI:

- [Materials side event](#) at the SET Plan Conference, Rome, 2014
- EERA Inter-JP cross-fertilization workshop on materials for energy, Brussels, April 2015
- [Joint collaborative actions](#) between members of both organizations
- Working on a [common strategy](#) regarding materials for energy: proposing calls, joint vision paper (underway)

- **March 2012:** Paris, Kick-off meeting (CEA)
- **November 2012:** Berlin (HZB)
- **March 2013:** Rome (CNR)
- **October 2013:** Uppsala (Uppsala University)
- **May 2014:** Jülich (FZ Jülich) → *WS on Materials for energy devices*
- **November 2014:** Valencia (CSIC) → *WS on Materials for energy devices*
- **June 2015:** London (UCL, UKERC) → *WS on Modelling and characterization*
- **November 2015:** Torino (PoliTo) → *WS on Low temperature heat recovery*
- **June 2016:** Nancy (Lorraine University) → *WS on Power to chemical technologies*
- **February 2017:** Oslo (SINTEF) → *WS on Materials for membranes in Energy Applications*
→ *WS on Power to chemical technologies*
- **November 2017:** Prague (J. Heyrovský Inst., Prague) → *WS on Photo- and Electro- Catalysis in Energy Conversion*
- **June 2018:** Brussels (EERA) → *Joint AMPEA-EoCoE-WS on Accelerating the energy transition: challenges in materials design enabled by recent advancements in high performance computing*
- **November 2018:** Berlin (Helmholtz Zentrum Berlin) → *WS on Synchrotron radiation and neutron scattering for energy materials*

- R&D projects: *AMPEA labelled initiatives (collaborative projects, ITNs), Informal collaborations and exchanges based on in-kind money, electronic brokerage event,...*
- Joint programme steering committee (JPSC) meetings
- Organization of **15 workshops**, summer schools and conferences
- Dissemination events and highlights (13 in total)
- Joint publications
- Contribution of AMPEA to the SET Plan Integrated Roadmap
- Lobby: Impact on calls in the work programmes 2016-2017
- Connection between AMPEA and industry
- **FET Flagship proposals:**
 - SUNRISE: Solar Energy for a circular economy: www.sunriseflagship.com
 - Clean Energy: www.mission-cleanenergy.eu
 - ENERGY-X www.energy-x.eu

Difficulties

SWOT analysis

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Strengths

- Key committed european actors and organizations member of the JP
- Attractiveness of the JP (new applications)

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Weaknesses

- Broad field with many European actors of diverse sizes
 - Availability of JPC and SPs coordinators (not a full time job !)
- **No support for coordination**

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Opportunities

- Highly motivated members
- AMPEA at the core of EERA and other JPs
- AMPEA european player on materials for energy
- Collaboration with EMIRI
- Context: SET Plan and Energy Union

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Threats

- High expectations of the members on outcomes of the JP
- Lack of visibility of materials for energy in the H2020 WPs
- Evolution of project calls towards higher TRLs (H2020)

Scientific/technological hurdles

The main hurdles at present for AMPEA are:

- Low visibility of materials for energy in the WPs of H2020
- Too few low TRL calls with very low success rates (FET) and with competition between different low carbon energy technologies

Future ?

Priorities to be addressed in the future:

- Foster interactions and coordination with other EERA JPs where material issues are critical
- Strengthen the cooperation with EMIRI to build a common strategy on materials for energy within the SET Plan and future framework programmes