New Material Discovery Activities in the Framework of the European Energy Research Alliance

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The **European Energy Research Alliance (EERA)** is the largest energy research community in Europe. Organised in 17 **Joint Research Programmes (JP)**, EERA coordinates energy research to achieve more efficient and cheaper low carbon energy technologies. With more than 50,000 experts**,** EERA brings together around 250 research centres and universities across 30 European countries**.** EERA is the research pillar of the EU **Strategic Energy Technology Plan (SET-Plan)**, for the acceleration, development and market uptake of low carbon technologies. Working closely with industry and funding decision makers, EERA contributes to all 10 SET-Plan key actions.

The development of new functional and structural materials for energy applications is one of the core tasks in EERA JPs. Joint efforts organised in one of the of EERA JPs will utilise recent game changing developments in digital, materials and manufacturing technologies to catalyse a radical paradigm shift towards clean, reliable, efficient and cost-optimal energy technologies across the entire supply chain, minimizing the use of fossil fuels by fundamental advancements in energy material design, processing and system integration. Strong cost reductions will open up new industrial opportunities and therefore reduce Europe's dependence on fossil fuels. The project is rethinking the constituents of energy generation, conversion and storage in terms of Europe’s material, technology and knowledge assets, ultimately making low-carbon energy sources and efficient, low-emission energy use economically attractive, compliant with social and environmental sustainability aspects and conducive to a stronger, more interconnected and integrated Union. New high energy density materials and technologies, as well as novel manufacturing processes with significant improvement of efficiency and sustainability and their integration into the European energy system network including dense urban systems are needed. This will be achieved by unifying energy material design, processing and integration efforts and methodologies across the full value chain addressing energy production, conversion, storage and systems. The vision is to give European citizens access to a stable supply of affordable low-carbon and renewable energy services.