

## MISSION INNOVATION

### Accelerating the Clean Energy Revolution

#### Innovation Challenge 7: Affordable Heating & Cooling of Buildings & Innovation Challenge 6: Clean Energy Materials

#### Workshop on

### Thermal Energy Storage Materials Acceleration Platform, TESMAP

Thermochemical storage materials experts are cordially invited to participate in this workshop, that is aimed at drafting a roadmap for the realisation of a TESMAP. An important element in the development of the TESMAP is the identification of suitable material characterisation techniques, possibly beyond the “standard” techniques, that enable a fast classification and multi-modality characterization of TCS materials. For a materials acceleration platform to perform best we need to have not only chemical, but also physical, thermal, mechanical, structural and possibly surface properties of the materials that enable a fast characterization.

The workshop will be held in Erlangen, Germany on Monday 11 and Tuesday 12 November. We will start at noon and end at the second day at about 16:00 h.

**Venue:** Helmholtz-Institute Erlangen-Nuremberg/ZAE Bayern  
Immerwahrstr. 2, 91058 Erlangen  
Germany

#### Background

Mission Innovation Challenge 7 (IC7) is aimed at developing affordable heating and cooling technologies for buildings. One of the six priority areas identified for IC7 is Thermal Energy Storage (TES) in order to tackle one of the biggest problems faced in low-carbon heating and cooling, which is the mismatch between supply and demand associated with the utilization of variable renewable sources. Thermal energy storage (TES) solves this problem and can be adapted in a variety of settings inside buildings and building components, and as part of wider network grids.

A key technology for the successful achievement of IC7 objectives is the urgent development of low-cost high energy density storage materials with low regeneration temperatures, for which materials and components are being developed by a large number of R&D organisations worldwide.

The discovery and development of novel, advanced, compact thermal energy storage materials is therefore crucial for the deployment in the market place of integrated, advanced, compact heat storage heating ventilation and air conditioning (HVAC) building technologies of the future. The development of these materials will be accelerated by adopting the methodology developed in the Mission Innovation, Clean Energy Materials



Innovation Challenge, IC6, led by Canada and Mexico and articulated in the pivotal IC6 workshop report: Materials Acceleration Platform. Here, the convergence of technologies of Artificial Intelligence, Smart Robotics and High Performance Computing are combined to compose, test, analyse and improve materials in a much faster way than previously possible. The ultimate goal is to accelerate materials discovery and development by more than a factor of 10 in time and cost.

The class of thermochemical materials is chosen as the first class for the Materials Acceleration Platform approach.

AEE INTEC, represented by Wim van Helden, has taken the initiative for the TESMAP development. The development is supported by the experts in the IEA joint Task58/Annex33 on *Material and Component Development for Thermal Energy Storage*

### **Mission Innovation support**

Innovation Challenge 7 is led by the European Commission, the United Kingdom and the United Arab Emirates, and the European Commission is leading the TES priority area in IC7. A large number of other IC7 countries also supports this priority area. In order to have a broad support for the TESMAP initiative, please contact your national IC7 representative to discuss your participation and further possibilities for support. (<http://mission-innovation.net/our-work/innovation-challenges/affordable-heating-and-cooling-of-buildings/>)

Within IC6, the MAP initiative is led by Canada and Mexico. (<http://mission-innovation.net/our-work/innovation-challenges/clean-energy-materials/>)

### **Outline of the workshop**

- Introduction to Materials Acceleration Platforms and to Thermal Energy Storage; goals of the workshop
- Visit of the Materials Acceleration Platform at the Erlangen University
- Discussion of the steps in the definition of the TESMAP; workflow examples; formation of discussion subgroups
- Work in subgroups
- Recapitulation of subgroup work; next steps and actions

### **Registration**

To register, please contact Wim van Helden at AEE INTEC: [w.vanhelden@aee.at](mailto:w.vanhelden@aee.at)

### **References:**

1. [Mission Innovation: Affordable Heating and Cooling of Buildings Challenge, 2017. November 2017 Expert Workshop Summary](#)
2. [Materials Acceleration Platform Report:](#)
3. [Nature paper: Accelerating the discovery of materials for clean energy in the era of smart automation](#)
4. [Nobel Laureate Molina remarks](#)
5. IEA HC/ECES joint Task58/Annex33: <http://task58.iea-shc.org>

