INNOSTORAGE: USE OF INNOVATIVE THERMAL ENERGY STORAGE FOR MARKED ENERGY SAVINGS AND SIGNIFICANT LOWERING CO2 EMISSIONS

1st Training School - Advanced TES materials for building and industrial applications

25-27 June 2014, Universitat de Barcelona

Program

Day 1 - 25th June 2014

- 8.30 Registration of participants
- 9.00 Welcome to participants **(UB Authorities, Dean, & A. I. Fernández)**
- 9.20 Presentation of the Innostorage project **(C. Dominguez)**
- 9.40 Presentation of Host Institution: DIOPMA **(E. Galindo)**
- 10.00 Introduction to Energy Storage **(L.F. Cabeza)**
- 11.00 Coffee break
- 11.30 Materials for TES **(C. Barreneche)**
- 12.00 Requirements/problems/materials availability/goal for sensible heat **(A. I. Fernández),** latent heat and thermochemical reaction heat **(L.F. Cabeza)**
- 13.30 Lunch
- 15.00 Use of the CES Edupack software for the TES materials selection **(C. Barreneche/ A.I. Fernández)**
- 17.00 Use of nanomaterials for TES **(J. Khodadadi)**

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SEVENTH FRAMEWORK PROGRAMME

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Day 2 - 26th June 2014

- 9.00 Welcome to the second session **(A.I. Fernández)**
- 9.10 Microencapsulation of TES materials **(M. Farid)**
- 10.00 Enhancement of TES materials properties: conductivity, segregation, corrosion, nucleation, fire retardants **(Halime Paksoy)**
- 11.00 Coffee break
- 11.30 Poster session **(C. Barreneche)**
- 12.00 PCM characterization: DSC, T-History, three layer calorimetry, TGA. **(A. Solé)**
  Cycling stability. Thermocycler. **(A. Solé)**
- 12.45 Other properties characterization: thermal difusivity and conductivity (hot wire, laser flash), viscosity (rheometer), density (densimeter), flammability, VOCs, chemical characterization (FTIR, DRX, SEM...) **(C. Barreneche)**
  Self-developed devices to characterize TES materials: Thermal Analyzer Device, conductivimeter, T-t curves **(C. Barreneche)**
- 13.30 Lunch
- 15.00 Workshop DSC, TGA, Thermal Analyzer Device, Thermocycler, FTIR

  Presentation of DSC **(F. Català)**

  DSC: Paraffin **(F. Català)**

  TGA: MPCM **(R. del Valle)**

  TAD: Gypsum + impregnated paraffin **(C. Barreneche)**

  TC: PCS **(J. Giró / C. Barreneche)**

  FTIR: PCS, MPCM, paraffin **(J. Giró)**

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Day 3 - 27th June 2014

- 9.00 Welcome to the third session **(A.I. Fernández)**
- 9.10 Mechanical characterization of microencapsulated PCM (AFM, nanoindentation) **(J. Giró)**
- 10.15 Compatibility between TES materials and container materials **(I. Martorell)**
- 11.00 Coffee break
- 11.30 Poster session **(I. Martorell)**
- 12.30 Embodied energy +CO_2 **(L.F. Cabeza)**
- 13.15 Closing session of training school **(A.I. Fernández)**
- 13.30 Lunch

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