PROGRAMME Symposium Schedule

		AULA MAGNA	AULA CAPELLA	AULA RAMÓN Y CAJAL
25-oct	9:30-11:30	REGISTRATION		
	11:30-12:00	Welcome and Opening Ceremony		
	12:00-12:50	Plenary Session: A. Hauer *Thermal Energy - The sleeping giant of the energy transition starts moving*		
	13:00-14:30	LUNCH		
	14:30-14:50	Session 1.1. Thermal Energy Storage PCM (I) **Keynote:** Y. Ding. Thermal energy storage for net-zero energy transition	Session 1.2 TES in CSP **Keynote:** C. Prieto. Net-zero industry through developing technologies to decarbonize its thermal processes	Session 1.3 . Energy materials **Keynote:** A. Tarancon. 3D printing of functional ceramics for Solid Oxide Cells
	14:50-15:10	117.Almendros-Ibáñez. Differential thermal performance and entropy generation of thermal energy storage tanks containing a PCM and water	187. S. Funayama. High-temperature thermal energy storage based on molten salt thermocline and thermochemical energy storage	162. W. Odukomaiya. Processing of Phase Change Materials by Fused Deposition Modeling: Toward Efficient Thermal Energy Storage Designs
	15:10-15:40	177. O. Manca. A comparison between flat and corrugated internal tubes for thermal energy storage in shell and tube systems filled by PCM and metal foam	188. A. Gil. Concentrated Solar Power on Demand (CSPonD) Demonstrative Project: Lessons Learned	198. E. Jaime-Barquero. InfraRed Thermography for aged Li-ion battery defect detection and diagnosis
	15:40-16:00	208. K. Hiromori. Synthesis of bio-based latent heat storage material with a desired melting point	164. H. Navarro. Dynamic flow tests on a molten salt handling rig for chloride salt and lessons learned	146. C. Forte. Nuclear Magnetic Resonance: a powerful technique for the investigation of energy materials
	16:00-16:30	COFFEE BREAK		
	16:30-16:50	Session 2.1 Thermal Energy Storage PCM (II) Chair: I. Fernández 111. M. Duran. Solvent extraction based injection method for the production of thermoregulating Polymer-PCM fibers	Session 2.2 Sorption/TCM materials Chair: V. Palomba 138.L. Calabrese. Assessment of a graphite/SAPO-34/S-PEEK composite coatings for adsorption heat pumps	Session 2.3 Systems Chair: A. Gil 114. M. Ebadi.Energy modeling of Surrey's district energy network
	16:50-17:10	155. J. Cristy. Optimization of DSC Measurements for Organic Phase Change Materials	130. M. Cotti. Maximum heat generated by hydration of porous salt mm-particles	119. C. McCague. Sorption Thermal Energy Storage for 5th Generation of District Heating and Cooling Systems
	17:10-17:30	193. L. Hernández. Characterization of hybrid carbon - paraffin/water nanoemulsions for DASC: stability, thermal energy storage and optical properties.	190. A. Velte. Hydrothermal Stability of Binder-Based Adsorptive Coatings with MOFs Aluminium-Fumarate, MIL-160(Al), and CAU10-H and the Zeotype TiAPSO: Impact on Adsorption Dynamics	212. C. Rosa. Energy Efficiency through Air Conditioning Operational Modes and Illumination for Commercial Buildings in Tropical Climates
	17:30-17:50	185. G. Rubio. Thermal Analysis of the Nano-Enhanced Phase Change Material (NEPCM) Methyl Palmitate / Capric Acid eutectic mixture with SiO2 nanoparticles	214. E. Yousefi. Development of hierarchical silica-expanded natural graphite sorbent matrix	205. M. Prestipino. Introduction of a new Renewability Indicator based on the Cumulative Exergy Demand for integrated bioenergy systems: application on a LCA study of a biomass-fed cogeneration system
	20:00-1:00	GALA DINNER		

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26-oct	9:00-9:50	Plenary Session: L.F. Cabeza *Thermal energy storage: is research lost in roadmaps?*		
		Session 3.1. Thermochemical Energy Storage Materials (I)	Session 3.2 Cold storage	Session 3.3. Thermal energy storage SHTES
		Chair: A. Hauer	Chair: L. Hernández	Chair: J.A. Almendros
	10:00-10:20	100. M. Eberbach. Investigating clays as hosts for salt hydrates for thermochemical energy storage	148. S. Tafelmeier. Development of a phase change material for vaccine transport without dry ice	108. Z. Xin. Development of Alumina-Based Composite Ceramics with Excellent Absorption Properties at High Temperatures and Study of Their Adaptation to Hollow-Structure Thermal Storage Devices
	10:20-10:40	133. A. Malara. Microfibres of hydrated salts for low temperature heat storage	170. A. Gil. Experimental analysis and potential improvement when using a commercial shell and tubes heat exchanger for cold thermal energy storage (CTES) applications	116. M. Díaz-Heras. Characterization and experimental tests of black volcanic sand particles for CSP applications
	10:40-11:00	152. A. Shkatulov. Salt hydrates for low- and ultralow-temperature heat transformation	183. E. Piperopoulos. Comparison of filled composite macroporous foams for low-temperature heat storage	229. B. Koçak. Numerical Analysis of Waste-Based Thermal Energy Storage System for CSP Plants
	11:00-11:20	204. E. Mastronardo. Calcium Lactate/Sulfonate Polyether Ether Ketone (SPEEK) Composite Coatings for Thermochemical Heat Storage	226. A. Ribezzo. A multi-scale study of phase change nanocomposites for the numerical design of a cold energy storage system	221. M. Rahjoo. Geopolymer based concrete as thermal energy storage (TES) for high temperature solar applications
	11:20-11:45	COFFEE BREAK		
		Session 4.1 Thermochemical Energy Storage Materials (II)	Session 4.2 Sorption materials	Session 4.3 High temperature concepts
	11:45-12:05	**Keynote:** H. Huinink. Power output of salt hydrated thermal chemical energy storage	**Keynote:** A. Frazzica. Experimental characterization of composite sorbents for thermal energy storage and desalination applications under variable boundary conditions	**Keynote:** M. Romero. Advances and challenges in the development of redox materials for thermochemical solar fuels production
	12:05-12:25	103. J. Aarts. Polymeric stabilization of salt hydrates for thermochemical energy storage	109. S. Hassanabadi. Kinetics of Composite Salt within Porous Matrix (CSPM) Used in Sorption Systems	175. L. F. Cabeza. Implementation of different thermal energy storage concepts in CSP plants
	12:25-12:45	106. S. Nimali. Ammonia- MnCl2 thermochemical heat storage reaction kinetics investigation in Sieverts type apparatus- A methodological study	125. A. Freni. Novel adsorbent coatings for open-cycle HVAC systems: stability verification	158. X. Chen. Screening and Development of Redox-type Thermochemical Energy Storage Material for Medium-high Temperature Range
	12:45-13:05	128.N. Mazur. Deliquescent salts boost the thermochemical performance of SrBr2	157. Ch. Suppanat. Zeolite/aluminum composite preparation and water vapor adsorption investigation for adsorption cooling system	200. T. Enosawa. Material Development for Chemical Heat Pump Using Magnesium Chloride and Ammonia Reaction System
	13:05-13:25		176. L.F.Cabeza. Assessment of a hybrid electrical/thermal energy storage system performance in a residential building in Mediterranean climate	
	13:00-14:30	LUNCH		
	14:30-15:30	POSTER SESSION (I)		
		Session 5.1 Thermal Energy Storage PCM (III)	Session 5.2. Techno-economical analyses	Session 5.3 Sorption Systems (I)
		Chair: H. Navarro	Chair: C. Prieto	Chair: A. Freni
	15:30-15:50	171. B. Koçak. Microencapsulation of Phase Change Materials with Calcium Carbonate and Demolition Waste Dust	153. L. Whelan. Techno economical analysis of various greenhouse dehumidification systems in Canadian cold climate	126. M. Mikhaeil. A comparative experimental study on the dynamic performance of two different adsorber plate heat exchangers for adsorption energy transformation processes
	15:50-16:10	131. A. Svobodova. Nanofluids specific heat capacity database and statistical analysis	118. J. Lozano. Operation strategy optimization of a heat pump with thermal energy storage to improve cost effectiveness	150. R. Critoph. Resorption heat pump and heat transformation experiments using ammonia-halide salt reactions
	16:10-16:30	192. L. Hernández. Development and validation of a low temperature T-history setup for thermal characterization of nanomaterials dispersions	180. D. Davi. Environmental impacts of redispatching in the decarbonized electricity systems	107. M. Bahrami. Natural dropwise condensation on flat surfaces
	16:30-17:00	COFFEE BREAK		
		Session 6.1 Thermal Energy Storage PCM (IV)	Session 6.2 Electrolysers and Fuel Cells	Session 6.3 Energy Harvesting
		Chair: C. Barreneche	Chair: T. Andreu	Chair: A. Calderón
	17:00-17:20	147. Y. Shimizu. Microencapsulation of ternary alloy-based phase change material for high temperature application	179. V. Baglio. Evaluation of catalysts and operating conditions for Anion Exchange Membrane Water Electrolysis	219. A. Pérez-Rodríguez. Oxide-based Strategies for UV-selective Transparent Solar Cells: perspectives and challenges
	17:20-17:40	165. S. Emir. Increasing Thermal Conductivity of Phase Change Materials by Encapsulating with Multiple Natural Layers	207. I. Gatto. Anion Exchange Membrane based MEAs for Fuel Cell Application	145. Y. Kansha. Design of New Energy Harvesting Technologies for Cyber Physical Systems
	17:40-18:00	149. B. Grégoire. Composite phase change material for mobile thermal energy storage (M-TES) – formulation, manufacturing and optimisation	142. M. Okazaki. Electrochemical Ammonia Synthesis Using a Bimetallic Catalyst on a Proton-Conducting Ceramic Electrolyte	139. H. Kiyomoto. Possible Application of Magnetic Phase Transition in Energy Harvesting Wireless Sensors for Body Temperature

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27-oct		Session 7.1 Thermal Energy Storage PCM (V)	Session 7.2 Sorption systems (II)	
	9:30-9:50	**Keynote:** Y. Kato. IMPRES for Green Transformation	**Keynote:** B. Dawoud. On the Application of Closed-Structured, Asymmetric Plate Heat Exchangers in Adsorption Appliances Chair: M. Bahrami	
	9:50-10:10	110. S. Santos. Solid state NMR characterization of temperature-driven solid-solid phase transition of tris(hydroxymethyl)aminomethane	167. M. Mikhaeil. Experimental investigation of an adsorbent mixture for a closed-structured adsorber plate heat exchanger	
	10:10-10:30	172. Ö. Güngör. Poly (vinyl alcohol)/Gelatin Hydrogel Synthesis for Thermal Energy Storage Applications	141. R. Critoph. Ammonia-halide salt Large Temperature Jump (LTJ) experiments and model validation	
	10:30-10:50	220. R. Salgado. Evaluation of hybrid organic inorganic compound for thermal energy storage	174. V. Palomba. Dynamic evaluation of sorption working pairs and hybrid configurations for waste heat – to- cool solutions	
	10:50-11:30	COFFEE BREAK		
		Session 8.1 Thermochemical Energy Storage Materials (III)	Session 8.2 H_2 prduction	
		Chair: M. Linder	Chair:	
	11:30-11:50	123. J. Ryu. The role of Li compounds on the reaction of magnesium hydroxide for thermochemical energy storage	101. Y. Kato. Fabrication of H2-permeable Palladium-Copper Alloy Membranes Composited Porous Nickel Support for Hydrogen Production	
	11:50-12:10	127. K. Jain. Modelling of a thermochemical energy storage system using potassium carbonate salt hydrate.	169. F. Zimbardi. Syngas conditioning and Hydrogen production by Pd/Ag Membrane Reactor	
	12:10-12:30	140. A. Cosquillo. Thermochemical cycling of modified Ca(OH)2-based granules: real-time visualisation and analysis	189. M. Prestipino. Analysis of carbon-neutral/carbon-negative bio-hydrogen production from critical bio-residues coupled with a cogeneration system	
	12:30-12:50	191. C. Milone. Materials perspective and innovation strategies for thermochemical heat storage at low- and middle-temperature ranges		
	13:00-14:30	LUNCH		
	14:30-15:30	POSTER SESSION (II)		
	15:30-16:00	COFFEE BREAK		
	16:00-16:30	Plenary lecture: J.R. Morante. *Renewable gases in the energy transition*		
	16:30-17:00	Closing ceremony		