

## FINAL PROGRAM

"Alternative Energy Sources, Materials & Technologies (AESMT'26)", Sofia, Bulgaria

### MONDAY (May 11, 2026):

1. **Sightseeing** of Sofia, Bulgaria: 14:00 - 18:00 h (on your own).
2. **Registration and Welcome party**: 19:00 - 21:00 h (venue in the hotel "Dom na uchenia"/ Hotel of Bulgarian Academy of Sciences, BAS - Address: 50 "Shipchenski prohod" blvd, 1113 Sofia): <http://www.domnaucheniya.com>.

### TUESDAY (May 12, 2026):

1. **Registration (Large hall, hotel BAS)**: 8:00 - 8:25 h
2. **Plenary sessions (Large hall, hotel BAS)**:
  - 2.1. **Opening**: 8:25 - 8:30 h.
  - 2.2. **Plenary session 1**: 8:30 - 10:30 h (**Chair: Aleksandar Georgiev**)  
**8:30 - 9:00 h; Milan Rashevski (Sofia, Bulgaria)**: Milan Rashevski, M. Datcheva, S. Slavtchev, D. Dzhonova, R. Stoykov, M. Ganchev. Simulations and Parametric Analysis of Geothermal Heating System with Seasonal Borehole Thermal Energy Storage (**ORAL**).  
**9:00 - 9:30 h; Zhandos Baizhuma (Almaty, Kazakhstan)**: Aerodynamic Optimization and Structural Reliability of Vertical Axis Wind Turbines (VAWT) in Ice-Prone Regions (**ON-LINE**).  
**9:30 - 10:00 h; Phong Ba Dao (Krakow, Poland)**: Debela A. Teklemariyem, Nasir H.R. Syed, Cuong D. Dao, Wieslaw J. Staszewski, Phong Ba Dao. A Statistical Comparison Framework for Fleet-Wide Wind Turbine Condition Monitoring and Fault Detection (**ORAL**).  
**10:00 - 10:30 h; Miroslav Variny (Bratislava, Slovakia)**: Miroslav Variny, D. Hříbik, M. Vondra, I. Cervenanský. Integration of heat syn- and disproportionation equipment to valuable materials recovery from industrial brines (**ORAL**).
  - 2.3. **Coffee break**: 10:30 - 11:00 h (in hotel BAS);
  - 2.4. **Plenary session 2**: 11:00 - 13:00 h (**Chair: Aleksandar Georgiev**)  
**11:00 - 11:30 h; Arnaldo Walter (Campinas, Brazil)**: Rachel Tamburini, Arnaldo Walter. The potential impact of carbon capture and storage on the carbon intensity of sustainable aviation fuels: a preliminary assessment of the Brazilian case (**ORAL**).  
**11:30 - 12:00 h; Magdalena Dudek (Krakow, Poland)**: Magdalena Dudek, Andrzej Razniak. The Impact of Hydrogen Energy Storage on Enhancing Renewable Energy Utilisation in Households (**ORAL**).  
**12:00 - 12:30 h; Yanjun Dai (Shanghai, China)**: Advancement of solar heating and cooling technologies for building application (**ON-LINE**).  
**12:30 - 13:00 h; Ahmet Alper Aydin (Istanbul, Turkey)**: N. Bektas, Y. F. Seyhan, A. Aydogan, A. A. Aydin. Form-Stable Na<sub>2</sub>CO<sub>3</sub>/H<sub>2</sub>O Eutectic Gels as Phase Change Material for Cold Thermal Energy Storage (CTES) (**ORAL**).
3. **Poster session 1 (Large hall, hotel BAS)**: 13:00 - 13:30 h  
**Andela Stojiljkovic (Nish, Serbia)**: Andela Stojiljkovic, Milutin Petronijevic, Ivana Radonjic. Weather-Sensitive Assessment of Residential Prosumer Profiles for Energy Community Planning.

**Eugenia Rossi di Schio (Bologna, Italy):** Eugenia Rossi di Schio, Abderrahim Mokhefi, Paolo Valdiserri, Sarra Youcefi. CFD-Based Assessment of Natural Convection Influence on Conduction-Based Thermal Bridge Models.

**Paolo Valdiserri (Bologna, Italy):** Paolo Valdiserri, Abderrahim Mokhefi, Eugenia Rossi Di Schio, Sarra Youcefi. Assessing the Impact of Wind Velocity on a Building's Thermal Bridge.

**4. Lunch:** 13:30 - 14:30 h (on your own).

**5. Afternoon session 1 (Large hall): 14:30 - 16:50 h;** Phase Change Materials (PCM) Applications: (**Chair: Eugenia Rossi di Schio**)

**14:30 - 14:50 h; Xin Li (Kunming, China):** Xin Li, Xintian Yang, Ying Zhang, Aiyue Sun, Yali Liu, Ming Li. Construction of MXene/expanded graphite hybrid fillers for enhancing the thermal conductivity of water-based phase change materials and suppressing their antagonistic effects (**ON-LINE**).

**14:50 - 15:10 h; Xintian Yang (Kunming, China):** Xintian Yang, Xin Li, Aiyue Sun, Ming Li, Yali Liu, Ying Zhang. A molecular dynamics study on the interfacial effects and thermophysical properties of expanded graphite/mannitol water-based composites (**ON-LINE**).

**15:10 - 15:30 h; Aiyue Sun (Kunming, China):** A. Y. Sun, Y. Zhang, G. L. Li, Y. L. Liu, M. Li, Y. Zhang. Interfacial Structure Regulation by Oxygen-Functionalized  $Ti_3C_2O_x$  for Hydrogel-Based Phase Change Materials with High Latent Heat and Structural Stability (**ON-LINE**).

**15:30 - 15:50 h; Daniela Dzhonova-Atanasova (Sofia, Bulgaria):** D. Dzhonova-Atanasova, K. Stefanova, S. Panyovska, N. Paunkov, A. Georgiev, G. Rahnev, Y. Yuan, Z. Zhang. Performance evaluation and design improvement of a latent thermal storage (**ORAL**).

**15:50 - 16:10 h; Çagatay Yildiz (Kocaeli, Turkey):** Çagatay Yildiz, Tunahan Budak, Müslüm Arici. Numerical Analysis of Melting Performance in LHTES Systems Using Gradient Porosity Aluminium Metal Foams (**ON-LINE**).

**16:10 - 16:30 h; Giulia Fredi (Trento, Italy):** F. Palestini, M. Papparotto, A. Pegoretti, G. Fredi. Multifunctional sandwich composites with latent heat thermal energy storage via reactive processing of polyamide-6 (**ON-LINE**).

**16:30 - 16:50 h; Wilson Ivan Chavez Basantes (Guayaquil, Ecuador):** W. Chavez-Basantes, R. Paredes, E. Delgado-Plaza, J. Peralta-Jaramillo, V. H. Hidalgo, G. Abril-Macias. Computational Modelling of Turbulent Flow with Phase Change in Microcapsules in Suspension in a Borehole Heat Exchanger (**ON-LINE**).

**6. Coffee break:** 16:50 - 17:20 h (in hotel BAS)

**7. Afternoon session 2 (Large hall): 17:20 - 19:00 h;** Low-Carbon Technologies (**Chair: Phong Ba Dao**)

**17:20 - 17:40 h; Alexandra Grekova (Novosibirsk, Russia):** M. Tokarev, M. Solovyeva, A. Grekova, L. Gordeeva. Passive adsorptive PV cooling: theoretical analysis and experimental study of heat fluxes (**ON-LINE**).

**17:40 - 18:00 h; Dimitrije Manic (Belgrade, Serbia):** D. Manic, M. Komatina, D. Ivezic. Decarbonization of Domestic Hot Water Systems in Multi-Unit Residential Buildings Using CO<sub>2</sub> Air-Source Heat Pumps: Toronto Case Studies (**ORAL**).

**18:00 - 18:20 h; Jan Taler (Kraków, Poland):** A. Kijo-Kleczkowska, M. Szumera, P. Rutkowski, J. Taler, J. Krzywanski, R. Lach, M. Lesniak. Innovative insights into heat transport mechanisms during coal-biomass co-pyrolysis: a hybrid experimental and physics-informed artificial intelligence modeling approach (**ON-LINE**).

**18:20 - 18:40 h; *Matej Koritar (Bratislava, Slovakia)***: M. Koritár, M. A. Nazari, A. R. Khurram, J. Haydary. Gasification feedstock composition design and optimisation in an integrated waste (bio)refinery (**ORAL**).

**18:40 - 19:00 h; *Muhammad Raynaldi (Budapest, Hungary)***: M. Raynaldi, G. Harangozo, M. Variny. A Comparative Analysis of CCUS Deployment and Economic Outlooks in Indonesia and the Visegrad Countries (**ON-LINE**).

**8. Official dinner:** 19:30 - 22:30 h (in restaurant BAS)

### **WEDNESDAY (May 13, 2026):**

**1. Morning parallel session 1 (Large hall):** 8:30 - 10:30 h; Energy storages (**Chair: Arnaldo Walter**)

**8:30 - 8:50 h; *Zhuo Chang (Ferrara, Italy)***: Z. Chang, E. Baccega, M. Bottarelli. Coupled effects of bed thickness, airflow and humidity on the thermal performance of an open thermochemical energy storage system (**ON-LINE**).

**8:50 - 9:10 h; *Jianwen Yu (Hefei, China)***: Jianwen Yu, Zhongxi Zhao, Zhuojun Zhang, Jiangfeng Huang, Peng Tan. Resolving the True Origin of Mossy Morphology in Aqueous Zn Batteries (**ORAL**).

**9:10 - 9:30 h; *Tadas Ždankus (Kaunas, Lithuania)***: T. Zdankus, S. W. Qammar. Utilization of soil moisture for thermal energy accumulation in building heating applications (**ON-LINE**).

**9:30 - 9:50 h; *Aijing Yan (Hefei, China)***: Aijing Yan, Zhuojun Zhang, Xu Xiao, Yasen Hao, Gaofeng Yan, Peng Tan. O<sub>2</sub>-Boosted Li-CO<sub>2</sub> Battery Performance via Microscopic Regulation (**ORAL**).

**9:50 - 10:10 h; *Ismail Kaan Keskin (Nottingham, UK)***: I. K. Keskin, Y. Su, Z. Chen, J. Chen. Effect of Impregnation Time on Vermiculite–CaCl<sub>2</sub> Composites for Thermochemical Energy Storage (**ON-LINE**).

**10:10 - 10:30 h; *Kai Sun (Hefei, China)***: Kai Sun, Xueyan Li, Kang Fu, Zhuojun Zhang, Anmin Wang, Xingmin He, Lili Gong, Peng Tan. Li<sup>+</sup> Crosstalk-driven Calendar Aging in Si/C Composite Anodes (**ORAL**).

**2. Coffee break:** 10:30 - 11:00 h (in hotel BAS)

**3. Morning parallel session 2 (Large hall):** 11:00 - 13:00 h; Energy storages, Geothermal Energy Applications, Energy Materials Science (**Chair: Milan Rashevski**)

**11:00 - 11:20 h; *Zehui Zhao (Hefei, China)***: Zehui Zhao, Xu Xiao, Zhuojun Zhang, Aijing Yan, Yasen Hao, Tenghui Qiu, Peng Tan. Capacity Enhancement in Quasi-Solid-State Lithium-Oxygen Batteries via Self-Constructing Li<sup>+</sup> Transport Channels (**ORAL**).

**11:20 - 11:40 h; *Nadezhda Bondareva (Tomsk, Russia)***: N. S. Bondareva, M. A. Sheremet. The influence of fin length distribution on melting rate in a latent-heat storage system (**ON-LINE**).

**11:40 - 12:00 h; *Dimitrios Graikos (Limassol, Cyprus)***: L. Aresti, D. Graikos, D. Pasiyas, G. Florides, P. Christodoulides. Initial performance investigation of ground source heat pumps within shared-loop systems in the Mediterranean island of Cyprus (**ORAL**).

**12:00 - 12:20 h; *Ge Wang (Hefei, China)***: Ge Wang, Bin Xu, Yue Fei, Xing-ni Chen, Tao Wu, Gang Pei. Heat and mass transfer simulation and performance analysis of porous hygroscopic hydrogels for long-duration electronic cooling (**ON-LINE**).

**12:20 - 12:40 h; Anastasia Cherpakova (Novosibirsk, Russia):** A. Cherpakova, A. Grekova, L. Gordeeva. Sorption properties of a new composite adsorbent based on lithium nitrate and activated carbon fiber felt for adsorptive PV cooling and atmospheric water harvesting (**ON-LINE**).

**12:40 - 13:00 h; Radhamanohar Aepuru (Santiago, Chile):** Radhamanohar Aepuru, Kishore Kumar Sambangi, Leonardo Saavedra S, Francisco Nancupil, Vijaya Bhaskar Bhaviripudi. Multifunctional flexible perovskite nanocomposites with enhanced dielectric and electromechanical performance for hybrid energy harvesting based sensors (**ON-LINE**).

**4. Poster session 2 ([https://aesmt.lima-city.de/Poster\\_session'26.html](https://aesmt.lima-city.de/Poster_session'26.html)):** 13:00 - 13:30 h

**Hong Zhao (Kunming, China):** H. Zhao, M. Li, W. Li. Design of a Solar-Assisted Heat Pump Combined Drying System and Optimization of Segmented Drying Process for Veneer.

**Rui Ma (Kunming, China):** R. Ma, M. Li, H. Zhao. Multi-objective Cooperative Optimization of Photovoltaic-driven Refrigerated Warehouse with Ice Storage.

**Peng Pei (Guiyang, China):** Jinghu Sun, Peng Pei, Chen Wang, Long Tang. Heat Transfer Analysis and Calculation for Borehole Heat Exchangers with Groundwater Through-flow inside and outside Wellbore.

**Peng Pei (Guiyang, China):** Peng Pei, Xiaolin Tian, Jinghu Sun. Characterization of Bedrock Hydrogeology for Development of Shallow Geothermal Energy: A Review of Key Technologies and Application Cases.

**Peng Pei (Guiyang, China):** Yudi Wang, Peng Pei. Research Progress of Backfill Materials for Borehole Heat Exchangers: from Performance Optimization to Solid Waste Utilization.

**David Bondartsev (Almaty, Kazakhstan):** A. Genbach, D. Bondartsev, M. Yerbolatov, A. Georgiev. Optical Diagnostics of Vapor - Liquid Phase Formation Processes in Capillary-Porous Materials.

**Aleksandra Šaponjić (Belgrade, Serbia):** A. B. Šaponjić, I. D. Tomanović, S. V. Belošević, S. M. Ilić, N. G. Manić, M. M. Vuksanović, M. S. Komatina. Thermophysical Properties and Numerical Prediction of Temperature Evolution in Mullite-Based Ceramics.

**Tao Zhang (Shanghai, China):** W. L. Zhang, T. Zhang. Numerical investigation on the switching logic of a photovoltaic solar-assisted loop thermosiphon/heat-pump hybrid system.

**Kai Sun (Hefei, China):** Kai Sun, Lili Gong, Peng Tan. Li + Crosstalk-driven Calendar Aging in Si/C Composite Anodes.

**Gulzhan Ilyassova (Almaty, Kazakhstan):** G. O. Ilyassova, Z. E. Baizhuma, N. B. Kalassov, B. Zh. Bektibay, B. T. Amir, B. T. Yelubayeva, M. S. Isatayev, A. Georgiev, C. Son. Towards Reliable Prediction of Hydraulic Resistance in Hollow Channels of Wind Turbine Blades: From Modeling to Experimental Validation.

**Nurkeldi Auyezkhan (Almaty, Kazakhstan):** N.T. Auyezkhan, N.B. Kalassov, Zh.E. Baizhuma, M. S. Isatayev, Zh. K. Seydulla, A. Kuykabayeva, A. G. Georgiev, C. Son. Numerical Investigation of Layout Configurations for Different Vertical Axis Wind Turbines.

**Nurkeldi Auyezkhan (Almaty, Kazakhstan):** M. S. Isataev, B. Zh. Bektibai, Zh.K. Seydulla, N. T. Auyezkhan, Zh. G. Kuntubayeva, B. T. Amir, R. K. Manatbayev. Vertical Axis Wind Turbine with Coaxial Shafts and a 30° Overrunning Clutch for Enhanced Self-Starting Performance.

**Tingsen Liu (Kunming, China):** Tingsen Liu, Xu Ji, Bianfeng Yang. Design and Evaluation of a Heat-Pipe-Based Concentrating Solar Vacuum Photothermal Reactor.

**Xiangwen Tan (Beijing, China):** X. Tan, H. Xian, Y. Chen. Multiscale Modeling and Closure-Boundary Parameterization of Vapor-Liquid Coplanar Ultrathin Vapor Chambers.

**Yingxu Chen (Beijing, China):** Yingxu Chen, Haizhen Xian, Mingchao Ouyang, Xiangwen Wen. Performance Enhancement of PEM Electrolyzer by Sinusoidal Flow Channel with Mass Transport Intensification.

**Jingyang Han (Hangzhou, China):** Jingyang Han, Jian Zhang, Shangbin Bai. Effect of incident intensity and operating temperature on the conversion efficiency of triple-junction GaAs cells for wireless laser power transmission.

**Zhanibek Seidulla (Almaty, Kazakhstan):** Zh. K. Seydulla, M. S. Isataev, B. Zh. Bektibai, B. E. Baizhuma, N. B. Kalassov, Zh.G. Kuntubayeva, N.T. Auyezkhan. Comparative aerodynamic analysis of a darrieus rotor with symmetrical and modified asymmetrical blades.

**Andrei Chiciuc (Chishinau, Moldova):** Andrei Chiciuc, Vasile Rachier, NicoaleCristian. Renewable Energy Sources in the Republic of Moldova: Realities, Security Factors, and Development Prospects.

**Aigerim Satkynova (Almaty, Kazakhstan):** A. K. Satkynova, R. K. Manatbayev, N. B. Kalassov, Zh. E. Baizhuma, M. S. Isatayev, Zh. K. Seydulla, K. D. Baizhumanov, B. T. Yelubayeva, A. G. Georgiev. Thermal performance analysis of internally heated wind turbine blades using cfd and experimental validation for anti-icing systems.

**Yifan Wu (Kunming, China):** Yifan Wu, Xu Ji, Tawfik Mohamed, Yanfang Cui, Xu Zhang, Tengyue Huang. Design and Performance Optimization of a Solar-Driven Multi-Effect Membrane Distillation System.

**Xinyu Li (Kunming, China):** Xinyu Li, Xu Ji, Bianfeng Yang. PVA-Based Composite Hydrogel via Phase Separation for High-Performance Atmospheric Water Harvesting.

**Tianfang Zhao (Kunming, China):** Tianfang Zhao, Xu Ji, Bianfeng Yang. Analysis of End Loss and Optimization of Critical Compensation Dimensions for a Non-Tracking Parabolic Trough Concentrator.

**Xuerui Guan (Kunming, China):** Xuerui Guan, Tianfang Zhao, Junneng Nie, Xu Ji, Bianfeng Yang. Solar-driven photocatalytic hydrogen production system based on  $Ti_3C_2(OH)_2$ /porous  $g-C_3N_4$  materials.

**Chunyan Luo (Kunming, China):** Chunyan Luo, Qiong Li, Junyi Zhang, Jiawei Liu. Patterns of Microenvironmental Evolution in Photovoltaic Greenhouses Under Dynamic Solar Irradiance Conditions.

**Jiapeng Yang (Kunming, China):** Jiapeng Yang, Xiaoqiao Huang, Yonghang Tai. Multimodal Short-Term Solar Irradiance Forecasting Using Meteorological Data and Sky Images.

**Junyi Zhang (Kunming, China):** Junyi Zhang, Qiong Li, Chunyan Luo, Jiawei Liu. Coupling characteristics of multiphysics fields on the wing surface of solar-powered unmanned aerial vehicles.

**Yao Luo (Kunming, China):** Yao Luo, Xiaoqiao Huang, Yonghang Tai. Multi-Modal Time Series Foundation Models for Solar Irradiance Prediction: A BERT-ViT Cross-Modal Fusion Method.

**Qiwei Gao (Kunming, China):** Qiwei Gao, Qiong Li\*, Zijian Wang, Hai Yao. CFD-Informed PPO Control for Active Cooling of Photovoltaic Modules.

**Shuai Hu (Kunming, China):** Shuai Hu, Xiaoqiao Huang, Yonghang Tai. MT-CrossLinear: A Novel Multi-Task Feature Model for Solar Irradiance Forecasting.

**Xin Li (Kunming, China):** Xin Li, Qiong Li, Hai Yao, Zijian Wang. A Robust MPPT Framework for Photovoltaic Direct-Drive Thermal Systems Overcoming RHPZ Dynamics.

**Zhiwen Hu (Nanjing, China):** Zhiwen Hu, Xiuwei Li, Feng Cheng, A. Georgiev. Remaining-useful-life estimation of solid-state batteries based on convolutional network-long short-term memory method.

**Hanbo Gao (Nanjing, China):** H. Gao, X. Li, F. Cheng, A. Georgiev. Research on a compressed air energy storage system with variable pressure ratio and geothermal-solar cascade heating.

**Shaoliang Yin (Beijing, China):** Shaoliang Yin, Lei Qin, Zuwei Xu, Ben Sun, Chengyun Xin, Tairan Fu. Analysis of Local Thermohydraulic Synergistic Performance of H-Type Finned Tubes.

**Ivan Pešić (Belgrade, Serbia):** Ivan Pešić, Marko Spasenović, Vanja Vojnović, Katarina Tošić, Andjela Gavran, Marija Pergal. Tailoring Electrochemical Properties of Nb<sub>2</sub>CT<sub>x</sub> MXene through Organosilane Surface Modification for Improved Supercapacitor Performance.

**Thierry Lemenand (Angers, France):** R. Aridi, M. Aridi, L. Pannier, T. Lemenand. A Comparative Assessment of Environmental, Social, and Economic Impacts of Renewable and Non Renewable Energy Systems.

**Bulbul Ongar (Almaty, Kazakhstan):** G. Sh. Tokpeissova, A. Georgiev, B. Ongar. Hybrid tubular solar systems: Thermo-economic and environmental analysis of atmospheric water harvesting and electricity generation.

**Darhan Yerezhep (Almaty, Kazakhstan):** D. Yerezhep, Zh. Omarova, A. Dossymbekova, A. Lesbayev, A. Akylbayeva, A. Zhakypov, A. Aldiyarov. Multiscale Modeling of Perovskite Solar Cells: A Review of DFT, TMM, and SCAPS-1D Approaches for Performance Optimization and Degradation Analysis.

**Zhansaya Omarova (Almaty, Kazakhstan):** Zh. B. Omarova, A. K. Dossymbekova, A. M. Yessentay, D. Y. Yerezhep. Optoelectronic modeling of perovskite solar cells using TMM and SCAPS-1D.

**Dana Adenova (Almaty, Kazakhstan):** A. A. Aben, D. B. Adenova, A. A. Zhumatova, M. T. Yussupov. Prospects for the development of hydrogen energy: technologies of production, storage, and application.

**Bagzhan Shynaly (Almaty, Kazakhstan):** B. U. Shynaly, Z. E. Baizhuma, N. B. Kalassov, R. Manatbayev, J. Cao. Improvement of the Brooks–Pope–Marcolini Method for Estimating Wind Turbine Blade Acoustic Parameters.

**Kamshat Kassymova (Almaty, Kazakhstan):** K. Kassymova, N. Kalassov, R. Manatbayev, D. Dzhonova, Z. Baizhuma, Z. Seydulla, C. Son. Hydrodynamic design principles for high-performance membrane-based hydrogen separation.

**Kuat Baubekov (Astana, Kazakhstan):** Kuat Baubekov. Energy Efficiency Enhancement of CCGT-200 Units via Multi-stage R718 Heat Pumps.

**Saulesh Minazhova (Almaty, Kazakhstan):** S. Minazhova, A. Dauletkanova, Ye. Yerbayev, A. Georgiev, B. Ongar. Experimental Analysis of Combined Air and Water Cooling for Rooftop PV Module.

**Jingyong Cai (Shanghai, China):** Jingyong Cai, Qian Chen. Performance degradation and energy loss mechanisms of flexible perovskite mini-modules: An opto-electro-thermal multi-physics analysis.

**Dimitra Antonia Bagaki (Chania, Greece):** D. A. Bagaki, T. Tsoutsos. Investigation of Alternative Fuel Pathways in Shipping following IMO guidelines.

**Aizhan Nugymanova (Almaty, Kazakhstan):** S. Bolegenova, A. Askarova, S. Bolegenova, A. Nugymanova, V. Maximov, Sh. Ospanova, S. Umarov, A. Georgiev. Digital Tools for Combustion Management in the Tasks of Environmental Modernization of Energy Facilities.

**Zhannat Bekbolatova (Almaty, Kazakhstan):** Z. K. Bekbolatova, D. V. Grigoryev, A. G. Georgiev, R. S. Abitayeva, B. Ongar. Renewable Energy Integration and Regional Deficit Mitigation in Kazakhstan's Electricity Market.

**F. Philibert Andriniriniamalaza (Le Tampon, France):** D. Soumah, N. M. Murad, A. F. Rabearivony, S. G. Menard, P. Andriniriniamalaza, A. Georgiev. Predictive design and layer-by-layer characterization of 3D-printed multi-layer micro-perforated panels for broadband sound absorption.

***Gulmira Akimbek (Almaty, Kazakhstan):*** G. A. Akimbek, D. Z. Nurzhanov, B. Ongar, M. B. Kumargazina, A. G. Georgiev. Aerodynamic Screening of a Yurt-Inspired Passive Wind-Flow Collector.

***Gulmira Akimbek (Almaty, Kazakhstan):*** G. A. Akimbek, M. B. Kumargazina, B. Ongar, K. K. Jurayeva, A. G. Georgiev. Simulation modeling of measurement information for solving the boundary inverse heat conduction problem under electrocontact heating.

***Qiyue Wang (Shanghai, China):*** Qiyue Wang, Tianguan Xu, Zaiguo Fu, Qunzhi Zhu, Shengyu Pei, Yongwei Li. Numerical study on the enhanced performance of the solid oxide electrolysis cell with a shared cathode flow channel for H<sub>2</sub>O and CO<sub>2</sub> co-electrolysis.

***Hoang Anh TUAN (Dong Nai, Vietnam):*** Anh Tuan Hoang, Dao Nam Cao, Minh Thien Nguyen. Sensitivity-guided performance prediction of nanofluid-based Organic Rankine thermal systems.

***Hoang Anh TUAN (Dong Nai, Vietnam):*** Anh Tuan Hoang, Van Huong Dong, Phuc Phat Pham. Explainable machine learning framework for optimized solar electricity production under climatic variability.

***Hoang Anh TUAN (Dong Nai, Vietnam):*** Anh Tuan Hoang, Thanh Hieu Chau, Dao Nam Cao, Minh Chuong Nguyen. Integrated renewable energy system design for clean power generation through HOMER Pro-based optimization.

***Ali Keçebas (Mugla, Turkey):*** A. Keçebas, A. G. Georgiev, O. V. Güler, E. Y. Gürbüz. Comparative evaluation of strip heat pipe placement strategies in photovoltaic modules: front-side, inter-cell, and rear-side configurations.

***Ali Keçebas (Mugla, Turkey):*** B. Çalca, O. V. Güler, A. G. Georgiev, H. Koçak-Güler, E. Y. Gürbüz, A. Keçebas. Combustion optimization, boiler fouling monitoring, and internal consumption reduction in lignite-fired thermal power plants via a hybrid digital twin model.

***Ali Keçebas (Mugla, Turkey):*** O. V. Güler, H. Koçak-Güler, A. G. Georgiev, E. Y. Gürbüz, A. Keçebas. Experimental investigation and artificial intelligence-based operational optimization of a solar air collector with biomimetic design and fabric absorber.

***Ali Keçebas (Mugla, Turkey):*** L. D. Kolotoglu, E. Y. Gürbüz, A. G. Georgiev, O. V. Güler, A. Keçebas. Solar-assisted hybridization of coal-fired power plants: A comprehensive techno-economic and emission control analysis.

***Iliya Iliev (Ruse, Bulgaria):*** A. Kryukov, H. Beloev, D. Seredkin, E. Voronina, A. Kryukov, I. Iliev, I. Beloev, K. Suslov. Mitigation of Adverse Impacts of Electromagnetic Fields from High-Voltage Power Lines on the Natural Environment.

**5. Lunch:** 13:30 - 14:30 h (on your own).

**6. Afternoon parallel session 1 (Large hall):** 14:30 - 15:50 h; Wind Energy (**Chair: Mirko Komatina**)

**14:30 - 14:50 h; *Nasir H. R. Syed (Krakow, Poland):*** N. H. R. Syed, D. A. Teklemariyem, . Al Hassan, P. B. Dao. Toward Reliable Condition Monitoring and Fault Detection in Nonstationary Wind Turbine Systems: A Mixed-Order Cointegration Framework (**ORAL**).

**14:50 - 15:10 h; *Debela A. Teklemariyem (Krakow, Poland):*** Debela A. Teklemariyem, Nasir H.R. Syed, Abu A. Hassan, Wieslaw J. Staszewski, Phong B. Dao. A Nonparametric Statistical Distance-Based Framework and Hypothesis-Testing for the Condition Monitoring of Multiple Turbines (**ORAL**).

**15:10 - 15:30 h; *Abu Al Hassan (Krakow, Poland):*** Abu Al Hassan, Khanh T. P. Nguyen, Kamal Medjaher, Phong Ba Dao. Decoupling Operational Variability for Reliable Fault Detection in Wind Turbines Using Residual-Based Change-Point Analysis (**ON-LINE**).

**15:30 - 15:50 h; *Emre Eroglu (Tirana, Albania):*** E. Eroglu, K. Buyukatak, I. Gunes, H. Sen. Bézier Curve Modeling for Wind Speed Prediction in Renewable and Sustainable Energy (**ORAL**).

**7. Coffee break:** 15:50 - 16:20 h (in hotel BAS)

**8. Afternoon parallel session 2 (Large hall):** 16:20 - 17:40 h; Electrical Engineering (Chair: Miroslav Variny)

**16:20 - 16:40; Spyridoula Trakaki (Athens, Greece):** S. Trakaki, R. Rotas, M. Fotopoulou, D. Rakopoulos. Assessment of an 800 V Electric Vehicle Powertrain: Daily-Cycle Comparison with a 400 V Architecture and Long-term Degradation Projection (ON-LINE).

**16:40 - 17:00; Miroslav Variny (Bratislava, Slovakia):** P. Szaryszová, L. Kuhnová, M. Variny, J. Kopčáková. Digitalization of energy sector and its importance for managing the short-term balance of the electricity system (ORAL).

**17:00 - 17:20; Gilad Orr (Ariel, Israel):** G. Orr, M. Azoulay, G. Golan. Advanced GaN Technology for Alternative Energy :Assessing Material Degradation and Hot Carrier Effects in Power Systems (ON-LINE).

**17:20 - 17:40; Armida Bahrami (Riverside, USA):** Armida Bahrami, Kasra Mazarei Saadabadi, Ipek Aytaç, Tahir Cetin Akinci, Alfredo A. Martinez-Morales. Report title: Thermal Imbalance Early Warning in a Second-Life EV Battery Module Using Multi-Point Surface Temperature Sensing (ON-LINE).

**9. Morning parallel session 1 (Small hall):** 8:30 - 10:30 h; Solar and Hybrid Thermal Systems, Hydrogen Energy (Chair: Magdalena Dudek)

**8:30 - 8:50 h; Cheng Jin (Hefei, China):** Cheng Jin, Zhaokun Zhang, Jamile Mohammadi Moradian, Gang Pei, Bin Zhao. Design of Multiscale Scattering Interfaces through Porosity and Boron Nitride Doping for High-Performance Radiative Cooling (ON-LINE).

**8:50 - 9:10 h; Jiahao Ni (Hefei, China):** Jiahao Ni, Cheng Jin, Jamile Mohammadi Moradian, Gang Pei, Bin Zhao. Towards Synergistic Energy Harvesting via Spatially-Decoupled Solar Heating and Radiative Cooling (ON-LINE).

**9:10 - 9:30 h; Yixin Guo (Chengdu, China):** Yixin Guo, Ya Dan, Adeel Waqas, Yanping Yuan, Mingke Hu. Synergistic integration of photovoltaic-thermal conversion and radiative sky cooling enabled by dual-spectrum radiation tracking and concentration (ON-LINE).

**9:30 - 9:50 h; Danijela Kardaš Ancic (Banja Luka, Bosnia and Herzegovina):** D. Kardaš Ancic, M. Komatina, P. Gvero, M. Kotur, M. Pupcevic. Preliminary experimental analysis of heat transfer and thermal energy storage behaviour in a photovoltaic-thermal system (ON-LINE).

**9:50 - 10:10 h; Peizhe Li (Hefei, China):** Peizhe Li, Rui Liu, Lingfeng Shi, Gang Pei, Bin Zhao. Dynamic and Prospective Life Cycle Assessment of Mainstream Hydrogen Production Pathways in China (ON-LINE).

**10:10 - 10:30 h; Marco Bianchi (Derio, Spain):** Marco Bianchi. Competitiveness and supply risks in hydrogen technologies: evidence for Europe's strategic autonomy (ON-LINE).

**10. Coffee break:** 10:30 - 11:00 h (in hotel BAS)

**11. Morning parallel session 2 (Small hall):** 11:00 - 13:00 h; Biotechnologies, Solar Photovoltaic Systems (Chair: Ahmet Alper Aydin)

**11:00 - 11:20 h; Tianyu Xing (Kunming, China):** T. Y. Xing, Y.F. Wang, M. Li, G. L. Li, M. C. Yao, N. Wang, Y. Zhang. Research on the Response Mechanism and Regulation of Greenhouse Root Zone Thermal Environment Based on Solar Fluctuations and Soil Heat Storage (ON-LINE).

**11:20 - 11:40 h; Yixun Kong (Kunming, China):** Yixun Kong, Ming Li, Yun feng Wang, Guoliang Li, Muchi Yao, Y. Zhang. Study on the Coupling of Material Velocity and Drying Airflow in Belt Dryers and Its Impact on the Drying Performance of Medicinal Herbs (**ON-LINE**).

**11:40 - 12:00 h; Bowen Jiang (Hefei, China):** Bowen Jiang, Bin Xu, Yue Fei, Tao Wu, Gang Pei. Opto-Electro-Thermal Modeling of Grain Boundary Effects on Efficiency and Thermal Stability in Perovskite Solar Cells (**ON-LINE**).

**12:00 - 12:20 h; Jingwen Li (Kunming, China):** Jingwen Li, Ming Li, Ying Zhang, Tianyu Xing, Yali Liu. Presentation title: A crop-oriented strategy for photovoltaic greenhouses: optimizing light and electricity under fluctuating solar radiation (**ON-LINE**).

**12:20 - 12:40 h; Xudong Wang (Kunming, China):** X. D. Wang, M. L. Y. F. Wang, G. L. Li, B. Ma, S. K. Niu. Numerical study of heat transfer characteristics in the ice bucket of a photovoltaic ice-making and thermal storage system (**ON-LINE**).

**12:40 - 13:00 h; Arban Uka (Tirana, Albania):** A. Uka, B. Papaj, E. Eroglu, F. Skuka, B. Kadrija. Implementation of Photovoltaic System on the EPOKA University campus (**ON-LINE**).

**12. Poster session 2 ([https://aesmt.lima-city.de/Poster\\_session'26.html](https://aesmt.lima-city.de/Poster_session'26.html)):** 13:00 - 13:30 h

**13. Lunch:** 13:30 - 14:30 h (on your own).

**14. Afternoon parallel session 1 (Small hall):** 14:30 - 15:50 h; Energy Efficiency (**Chair: Dimitrios Graikos**)

**14:30 - 14:50 h; Yuchen Liu (Changsha, China):** Yuchen Liu, Jingyu Cao, Jinqing Peng, Wanfang Zhao, Shaodi Tang, Erdem Cuce, Mingke Hu, Qiliang Wang, Gang Pei. Experimental Investigation of Flexibility and Battery Compatibility of Air-Conditioning System with Energy Storage (**ON-LINE**).

**14:50 - 15:10 h; Muchi Yao (Kunming, China):** Muchi Yao, Ming Li, Yi Zhang, Yunfeng Wang, Guoliang Li, Ying Zhang, Jianhuan Deng, Chen Deng, Bo Ma. Thermodynamic characteristics of a transcritical CO<sub>2</sub> heat pump drying system under coupled evaporation temperature and heating temperature lift (**ON-LINE**).

**15:10 - 15:30 h; Nikita Gibanov (Tomsk, Russia):** N. S. Gibanov, M. A. Sheremet. Numerical analysis of mixed convection heat transfer in 3D channel with heat generating source and heat removal porous layer (**ON-LINE**).

**15:30 - 15:50 h; Martin Šimko (Bratislava, Slovakia):** M. Šimko, D. Petráš, M. Sokol, Daniel Szabó. Assessment of Heat Pump Performance Coupled with Large-Area Low-Temperature Radiant Systems (**ORAL**).

**15. Coffee break:** 15:50 - 16:20 h (in hotel BAS)

**16. Afternoon parallel session 2 (Small hall):** 16:20 - 18:00 h; Energy Efficiency (**Chair: Martin Šimko**)

**16:20 - 16:40; Gabor Harangozo (Budapest, Hungary):** A. Norkobilov, A. Kamolov, Z. Turakulov, A. Elmanov, M. Variny, D. Polakovicová, M. Raynaldi, G. Harangozo, V. Vivekanand, H. Abdusalomova, B. Usmonov, M. Fallanza. Comparative Techno-Economic MCDA Analysis of Absorption, Membrane, and Hybrid Carbon Capture Technologies in NGCC Power Plants (**ON-LINE**).

**16:40 - 17:00; František Világi (Bratislava, Slovakia):** F. Világi, M. Variny, P. Mlynár, D. Polakovicová. Problem-Independent Framework for Multiobjective Energy Systems Optimization (**ON-LINE**).

**17:00 - 17:20; Marek Vondra (Brno, Czechia):** M. Vondra, M. Procházková, M. Touš, M. Variny, V. Miklas, V. Máša. Closing the Loop: Synergistic Waste Heat Harvesting and Vacuum Evaporation for Resilient Industrial Laundry Water Recovery (**ON-LINE**).

**17:20 - 17:40; Tomasz Schabek (Lodz, Poland):** T. Schabek, B. Król. Financial efficiency of renewable energy investments in times of energy crisis – individual household perspective (**ON-LINE**).

**17:40 - 18:00; Bruno Armengot Carbo (Valencia, Spain):** Bruno Armengot Carbo, Javier F. Urchueguia, Javier Soriano, Jorge García-Serra García, Borja Badenes. Integration of secondary water networks in urban energy planning: Experimental assessment from a pilot-scale implementation (**ON-LINE**).