

## FINAL PROGRAM

"Alternative Energy Sources, Materials & Technologies (AESMT'19)", Sofia, Bulgaria

### SUNDAY (June 2, 2019):

**1. Sightseeing** of Sofia, Bulgaria: 14:00 - 18:00 h (meeting point in hotel "Dom na uchenia"/ Hotel of Bulgarian Academy of Sciences, BAS)

**2. Registration and Welcome party:** 19:00 - 21:00 h (in hotel BAS)

### MONDAY (June 3, 2019):

**1. Registration (Large hall, hotel BAS):** 8:30 - 8:55 h

**2. Plenary sessions (Large hall, hotel BAS):**

2.1. **Opening:** 8:55 - 9:00 h;

2.2. **Plenary session 1:** 9:00 - 10:30 h (**Chair: Aleksandar Georgiev**)

**9:00 - 9:30 h; Venko Beschkov (Sofia, Bulgaria):** V. Beschkov, E. Razkazova-Velkova. Methane and carbon dioxide – two sides of one coin?

**9:30 - 10:00 h; Juan Ramón Morante (Barcelona, Spain):** J. R. Morante. Renewable gas as energy source for an energetic transition to sustainable society based on a circular economy of the CO<sub>2</sub>.

**10:00 - 10:30 h; Gang Pei (Hefei, China):** Integrated utilization of sky radiation cooling and solar energy.

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

2.4. **Plenary session 2:** 11:00 - 12:00 h (**Chair: Aleksandar Georgiev**)

**11:00 - 11:30 h; Jing Li (Hull, United Kingdom):** J. Li, F. Yi, A. Badiei, X. Zhao, G. Pei, X. Ma. Thermodynamic analysis of an innovative mixed indoor/outdoor air source heat pump system using two-stage evaporation.

**11:30 - 12:00 h; Mustafa Mutlu (Bursa, Turkey):** M. Mutlu, E. Çaliskan. Numerical investigation of thermostat position in a cooled room with a cassette type air conditioner in terms of thermal comfort, energy consumptions, and particle distributions.

**3. Poster session 1 (Large hall, hotel BAS):** 12:00 - 13:00 h (**Chair: Yunlan Li**)

**Iliia Iliev (Russe, Bulgaria):** A. A. Genbach, K.K. Shokolakov, D.Y. Bondartsev, I. K. Iliev, A. Terziev. Research of specific destruction energy of the porous coatings at power units.

**Juliana Javorova (Sofia, Bulgaria):** DULUCHEANU Constantin, SEVERIN Traian Lucian, POTORAC Alexandru, IRIMESCU Luminita, JAVOROVA Juliana. Influence of the initial structure on the critical points in solid-state phase transformation of some hypoeutectoid steels.

**Saltanat Bolegenova (Almaty, Kazakhstan):** A. S. Askarova, S. A. Bolegenova, V. Yu. Maximov, A. G. Georgiev, S. A. Bolegenova, R. K. Manatbayev, A. O. Nugymanova. Simulation of pulverized coal combustion using direct-flow and vortex burners.

**Aleksandar Georgiev (Plovdiv, Bulgaria):** Jingyang Han, Xu Ji, Qiangqiang Xu, Haiyang Xu, Chao Liao. Solar desalination by heat-concentrated vaporization.

**Aleksandar Georgiev (Plovdiv, Bulgaria):** Xu Haiyang, Ji Xu, Wang Jinkang, Han Jingyang. Study on solar desalination by electrodialysis.

**Aleksandar Georgiev (Plovdiv, Bulgaria):** Cong Wang, Xu Ji, Jingyang Han, Changchun Yang, Bianfeng Yang. Study on the performance of solar evaporative air conditioning with different dehumidifying materials.

**Saltanat Bolegenova (Almaty, Kazakhstan):** A.S. Bergaliyeva, A. Askarova, S.A. Bolegenova, V.Yu. Maksimov, S.A. Bolegenova, Zh.K. Shortanbayeva. 3D Computer Simulation of Heat and Mass Transfer Processes to Improve the Energy Efficiency of Combustion Chambers.

**Saltanat Bolegenova (Almaty, Kazakhstan):** A. S. Askarova, S. A. Bolegenova, V. Yu. Maximov, S. A. Bolegenova, N.R. Mazhrenova, M.R. Mamedova. Numerical simulation of turbulent combustion of pulverized coal flame.

**Bo Cao (Beijing, China):** Bo Cao, Weijie Cui, Yixue Chen. Development and parameter sensitivity analysis of radionuclide atmospheric dispersion modeling code based on Gaussian plume model.

**Bo Cao (Beijing, China):** Bo Cao, Weijie Cui, Jingyu Zhang. Assessment of dose rate to aquatic biota around an inland nuclear power plant.

**Bo Cao (Beijing, China):** Bo Cao, Weijie Cui. Assessment of atmospheric dispersion and radiological consequences for blackout accident of marine reactor.

**Ilia Iliev (Russe, Bulgaria):** A. A. Genbach, D. Yu. Bondartsev, I. K. Iliev, A. G. Georgiev. Scientific method of creation of ecologically clean capillary-porous systems of cooling of power equipment elements of power plants on the example of gas turbines.

**Saltanat Bolegenova (Almaty, Kazakhstan):** A. S. Askarova, S. A. Bolegenova, M.N. Mazhrenova, S. A. Bolegenova, Zh. K. Shortanbayeva, A.O. Nugymanova, P. Safarik. Calculation of standards for permissible environmental impact for boilers with known technical characteristics.

**Saltanat Bolegenova (Almaty, Kazakhstan):** A.Askarova, S.Bolegenova, W.Laptev, I.Berezovskaya, R.Musabekov, A.Adilbekov, E.Kaymuldinova. Autonomous sources of energy based on the freepiston stirling's engine.

**Yuanbin Zhao (Jinan, China):** Wenjing Ge, Yuanbin Zhao. Feasibility Study of Reconstructing Natural Draft Wet Cooling Tower into Dry Cooling Tower and Relevant Multi-tower Coupling Optimizations.

**Daniela Chakyrova (Varna, Bulgaria):** Nadezhda Doseva, Daniela Chakyrova. Life cycle cost analysis of different residential heat pump system.

**Janis Kleperis (Riga, Latvia):** A. Plavniece, G. Dobele, A. Volperts, A. Zhurinsh, I. Kruusenbergs, J. Kleperis. Influence of precursor pretreatment on the properties of activated carbons for energy applications.

**4. Lunch:** 13:00 - 14:00 h (on your own).

**5. Afternoon session 1 (Large hall): 14:00 - 16:00 h;** Solar and Hybrid Thermal Systems, Energy Efficiency (**Chair: Juan Ramón Morante**)

**14:00 - 14:20 h; Çagri Kutlu (Nottingham, United Kingdom):** Cagri Kutlu, Yanan Zhang, Yuehong Su, Saffa Riffat. Solar Assisted Heat Pump system to Meet Domestic Hot Water Demand by Novel Controlling method of Supercooled PCMs.

**14:20 - 14:40 h; Debing Wang (Shanghai, China):** Debing Wang, Lingling Wang, Huaqing Xie, Wei Yu. Application of Magnetic Nanoparticle Rotor in Directly Absorption Solar Collector.

**14:40 - 15:00 h; Ayse Altun (Bursa, Turkey):** A. F. Altun, M. Kilic. Dynamic simulation of a solar absorption cooling system.

**15:00 - 15:20 h; Qiongwang Yu (Hefei, China):** Qiongwang Yu, Gang Pei, Junfei Li, Yunyun Wang. Effects of frame shadow on photovoltaic performance of building-integrated photovoltaic/ thermal system.

**15:20 - 15:40 h; Halil Bayram (Amasya, Turkey):** AA S. Mahmoudinezhad, D.T. Cotfas, A. Rezania, P.A. Cotfas, L.A. Rosendahl. Transient response of Bi<sub>2</sub>Te<sub>3</sub> based thermoelectric generator to variant solar radiation: an experimental and numerical study.

**15:40 - 16:00 h; Halil Bayram (Amasya, Turkey):** H. Bayram, G. Sevilgen, M. Kiliç. Simulation of Air Source Heat Pump Systems for Electric Vehicles.

**6. Coffee break:** 16:00 - 16:30 h (in hotel BAS)

**7. Afternoon session 2 (Large hall):** 16:30 - 18:30 h; Shallow Geothermal Energy Applications, Hydrogen Energy (**Chair: Michele Bottarelli**)

**16:30 - 16:50 h; Bojan Žlender (Maribor, Slovenia):** P. Jelušič, B. Žlender. Determining optimal designs of geothermal energy piles for 10-story building, Slovenia.

**16:50 - 17:10 h; Ayse Altun (Bursa, Turkey):** A. F. Altun, M. Kilic. Thermodynamic performance evaluation of a geothermal ORC power plant.

**17:10 - 17:30 h; Borja Badenes (Valencia, Spain):** Javier F. Urchueguía, Burkhard Sanner, Borja Badenes, Miguel Ángel Mateo Pla, José Manuel Cuevas, Lenin Lemus Zuñiga. Advanced materials and processes to improve performance and cost-efficiency of Geothermal Heat Pump Systems and Underground Thermal Storage.

**17:30 - 17:50 h; Borja Badenes (Valencia, Spain):** Borja Badenes, Miguel A. Mateo Pla, Jose M. Cuevas, Lenin G. Lemus, Jose V. Oliver, Javier F. Urchueguía. Theoretical and experimental optimization of borehole heat exchangers (BHE) according to hydrogeological conditions, geometric characteristics and material properties.

**17:50 - 18:10 h; Bachirou Guene Lougou (Harbin, China):** Bachirou Guene Lougou, Yong Shuai, Hao Zhang, Jiupeng Zhao, Basile Bruno Kounouhewa, Ogugua Paul Chinonso, Heping Tan. Design of porous NiFe<sub>2</sub>O<sub>4</sub>-Aluminate as redox material integrated into solar thermochemical reactor for efficient CO<sub>2</sub> reduction and H<sub>2</sub>O-splitting.

**18:10 - 18:30 h; Ilze Dimanta (Riga, Latvia):** Ilze Dimanta, Janis Kleperis, Laila Zemite, Dainis Bošs, Peteris Lesnicenoks, Ainars Knoks. Renewable resources of Bio-hydrogen and Extraction Technologies – Review on up-to-now Developments.

**8. Official dinner:** 19:30 - 23:00 h (in restaurant BAS)

## **TUESDAY (June 4, 2019):**

**1. Morning session 1 (Large hall):** 9:00 - 11:00 h; Solar Photovoltaic Systems, Wind Energy (**Chair: Khairulla Baishagirov**)

**9:00 - 9:20 h; Yovko Rakanov (Sofia, Bulgaria):** Yovko P. Rakanov, Andrei D. Mirev, Anton G. Andonov, Juliana G. Javorova. Topology of Transformerless Grid Connected Inverter for Photovoltaics.

**9:20 - 9:40 h; Samer Ali (Beirut, Lebanon):** Wassim Salameh, Samer Ali, Jalal Faraj, Rabih Murr, Mahmoud Khaled. Improving the efficiency of photovoltaic panels using air exhausted from industrial systems.

**9:40 - 10:00 h; Tadej Bevk (Ljubljana, Slovenia):** T. Bevk. Perception of landscapes changed by solar power plants.

**10:00 - 10:20 h; Biao Li (Harbin, China):** B. Li, Z. Zheng, W. Cai, J. Liu. The design of a lab-scale wind turbine model with the high performance of similarity to its full-scale prototype.

**10:20 - 10:40 h; Angel Terziev (Sofia, Bulgaria):** Angel Terziev, Ilia Iliev, Aleksandar Georgiev, Hristo Beloev. Impact assessment of terrain specifics on wind energy production over semi-complex terrains.

**10:40 - 11:00 h; Hanna Szumilas-Kowalczyk (Warsaw, Poland):** H. Szumilas-Kowalczyk, N. Pevzner, R. Giedych. Long-term visual impacts of aging infrastructure: challenges of decommissioning wind power infrastructure and a survey of alternative strategies.

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

**3. Morning session 2 (Large hall):** 11:30 - 13:30 h; Energy Materials Science, Biotechnologies (**Chair: Venko Beschkov**)

**11:30 - 11:50 h; Michele Bottarelli (Ferrara, Italia):** M. Bottarelli, G. Dino, A. Balbo, S. Milani, A. Ferrari, Y. Su. A study on the effect of high IR-reflective interior coating on building thermal performance.

**11:50 - 12:10 h; Oguz Tunçel (Bursa, Turkey):** O. Tuncel, H. Aydin, S. Cetin. Microstructure and mechanical properties of similar and dissimilar laser welds of DP600 and DP1000 steel sheets.

**12:10 - 12:30 h; Tsvetozar Tsanev (Sofia, Bulgaria):** Mariya Aleksandrova, Tsvetozar Tsanev, Georgi Dobrikov. Study of piezoelectric behavior of sputtered KNbO<sub>3</sub> nanocoatings for flexible energy harvesting.

**12:30 - 12:50 h; Jiangfan Liu (Beijing, China):** J. F. Liu, T. R. Fu. Analysis of the influence of energy migration on upconversion core-shell nanostructures based on the migration diffusion model.

**12:50 - 13:10 h; Oguz Tunçel (Bursa, Turkey):** O. Tuncel, H. Aydin, S. Cetin. Effect of laser power on mechanical and microstructure properties of pulsed Nd:YAG laser welded dissimilar DP600-DP1000 steel sheets.

**13:10 - 13:30 h; Yunlan Li (Taiyuan, China):** Li Wang, Xingan Wu, Dan Wang, Rui Xu, Yunlan Li. Antiviral Mechanism of Carvacrol on HSV-2 infectivity through Inhibition of RIP3-Mediated Programmed Cell Necrosis Pathway and Ubiquitin-Proteasome system in BSC-1 Cells.

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

**5. Poster session 2 (Large hall):** 14:30 - 15:30 h (**Chair: Janis Kleperis**)

**Khairulla Baishagirov (Kokshetau, Kazakhstan):** Baishagirov Kh. Zh., Karimbayev T. D., Yermaganbetova S. K. The two-component model of heterogeneous medium deforming and its application to the vibrations of composite bodies.

**Yunlan Li (Taiyuan, China):** Siqing Niu, Xi Chen, Mengjiao Zhang, Yunlan Li. Comparative Study on the Quality Control of Rrihydroxybenzophenones Compounds.

**Yunlan Li (Taiyuan, China):** Dan Wang, Li Wang, Rui Xu, Xingan Wu, Yunlan Li. Comparison of Antiviral Activity of Realgar and Nano-Realgar against Herpes Simplex Virus Type II (HSV-2) in Vitro.

**Yunlan Li (Taiyuan, China):** Mengjiao Zhang, Hongyan Zhou, Siqing Niu, Xi Chen, Yunlan Li. Screening of Antitumor and Hepatoprotective Activity Components from Hedyotis Diffusa.

**Jiangfan Liu (Beijing, China):** C. Y. Xin, T. R. Fu, Congling Shi. Discussion of the local thermal non-equilibrium problems in packed-bed thermal energy storage.

**Yovko Rakanov (Sofia, Bulgaria):** Yovko P. Rakanov, Andrei D. Mirev, Anton G. Andonov, Juliana G. Javorova. Topology of Transformerless Grid Connected Inverter for Photovoltaics.

**Rustem Manatbayev (Almaty, Kazakhstan):** Sh.A. Yershin, A.K. Yershina, R.K. Manatbayev, S.E. Sakipova, N.B. Kalassov. About effectiveness of the carousel type two-rotor wind turbine.

**Zaiguo Fu (Shanghai, China):** Zaiguo Fu, Huanhuan Gao, Jiewen Zhu, Jiang Liu, Peifen Weng. Numerical study on characteristics of pollutant generation of a heavy-duty gas turbine annular combustor.

**Bingzhan Zhang (Hefei, China):** Bingzhan Zhang, Guodong Zhao, Yong Huang, Yaoyao Ni, Mingming Qiu, Kang Huang. Optimal Energy Management for Series-Parallel Hybrid Electric City Bus Based on Improved Genetic Algorithm.

**Rustem Manatbayev (Almaty, Kazakhstan):** R. K. Manatbayev, Zh. E. Baizhuma, K.Baktybekov, A. Syzdykov. CFD simulation of Darrieus wind turbine with NASA-0021 profile.

**Qiongwang Yu (Hefei, China):** Yousef N. Dabwan, Pei Gang, Mujun Li, Guangtao GAO, Jing Li, Junsheng Feng. An efficient Integrated Parabolic Trough Collectors with a Conventional Heat, Cooling, and Power Trigeration Plant: Thermodynamic-Economic-Environmental Analysis.

**Yonghang Tai (Kunming, China):** Xiaoqiao Huang, Bixuan Gao, Qiong Li, Yonghang Tai, Junsheng Shi. Comparison of LSTM network with different structures and parameters in forecasting hourly solar irradiance for case study of Denver.

**Yonghang Tai (Kunming, China):** Lin Xu, Lu Wang, Wenjing Xiao, Jie Guo, Qiong Li, Ming Li. The efficiency characteristic of electrostatic dust precipitation using solar energy.

**Yonghang Tai (Kunming, China):** Jie Guo, Peng Wu, Jun Yuan, Jinghui Mo, Qiong Li, Bingzhe Li. Activation and gas sorption performance in Zr-Co-Y getters on Ge substrates.

**Yonghang Tai (Kunming, China):** Wang Lu, Guo Jie, Hao Ruiting, Qiong Li, Liu Xinxing, Liu Bin, Gu Kang, Sun Shuaihui. Influence of ZnS Sputtering Power on Film Adhesion and Cu<sub>2</sub>ZnSnS<sub>4</sub> Solar Cells.

**Yonghang Tai (Kunming, China):** Qiong Li, Wenfeng Gao, Wenxian Lin, Tao Liu, Xiaoqiao Huang, Yonghang Tai, Bixuan Gao, Xiang Ding. Experiment and simulation study on Convective Heat Transfer of All-glass Evacuated Tube Solar Heater.

**6. Afternoon session 1 (Large hall): 15:30 - 17:30 h; Energy Efficiency (Chair: Gang Pei)**

**15:30 - 15:50 h; Tatyana Petrova (Sofia, Bulgaria):** Tatyana Petrova, Daniela Dzhonova-Atanasova, Konstantina Stefanova. Simulation of liquid distribution in the wall zone of a packed column: A case study.

**15:50 - 16:10 h; Erkutay Tasdemirci (Kocaeli, Turkey):** E. Tasdemirci, M. Hosoz, E. Alptekin. Performance evaluation of an automobile air conditioning system with a variable capacity compressor using HFO1234yf as a replacement for HFC134a .

**16:10 - 16:30 h; Eman Abusaada (Istanbul, Turkey):** Eman Abusaada, Volkan S. Ediger. Assessment of the Transition to Renewable Energy in the United Arab Emirates Based on Bibliometric Analysis.

**16:30 - 16:50 h; Samer Ali (Beirut, Lebanon):** Rabih Murr, Jalal Faraj, Samer Ali, Mahmoud Khaled. Numerical and Experimental studies of a cooling system using buried pipes.

**16:50 - 17:10 h; Samer Ali (Beirut, Lebanon):** Mahmoud Khaled, Samer Ali, Jalal Faraj, Rabih Murr, Thierry Lemenand. Heating/cooling fresh air from hot/cold exhaust air of HVAC systems.

**17:10 - 17:30 h; Samer Ali (Beirut, Lebanon):** Jalal Faraj, Samer Ali, Rabih Murr, Mahmoud Khaled. Experimental study of heat recovery from parked vehicles.

**7. Coffee break:** 17:30 - 18:00 h (in hotel BAS)

**8. Afternoon session 2 (Large hall):** 18:00 - 20:40 h; Mechanical Engineering and Technologies, Energy Efficiency (**Chair: Mustafa Mutlu**)

**18:00 - 18:20 h; Çagri Kutlu (Nottingham, United Kingdom):** Cagri Kutlu, Jing Li, Mehmet Tahir Erdinc, Yuehong Su, Gang Pei, Saffa Riffat. Improved model of scroll expander by eliminating empirical parameters by geometric model.

**18:20 - 18:40 h; Onur Can Kalay (Bursa, Turkey):** Oguz Dogan, Onur Can Kalay, Fatih Karpat. Effects of crack initialization angle on crack propagation path for thin rim gears for wind turbines.

**18:40 - 19:00 h; ; Onur Can Kalay (Bursa, Turkey):** T. G. Yilmaz, F. Karpat, O. C. Kalay. A Comparison: Bending Stress Analysis of Involute Spur Gear with Asymmetric and Asymmetric Trochoid Teeth.

**19:00 - 19:20 h; Yonghang Tai (Kunming, China):** Xiaoqiao Huang, Bixuan Gao, Qiong Li, Yonghang Tai, Junsheng Shi. Comparison of LSTM network with different structures and parameters in forecasting hourly solar irradiance for case study of Denver.

**19:20 - 19:40 h; Yonghang Tai (Kunming, China):** Lin Xu, Lu Wang, Wenjing Xiao, Jie Guo, Qiong Li, Ming Li. The efficiency characteristic of electrostatic dust precipitation using solar energy.

**19:40 - 20:00 h; Yonghang Tai (Kunming, China):** Jie Guo, Peng Wu, Jun Yuan, Jinghui Mo, Qiong Li, Bingzhe Li. Activation and gas sorption performance in Zr-Co-Y getters on Ge substrates.

**20:00 - 20:20 h; Yonghang Tai (Kunming, China):** Wang Lu, Guo Jie, Hao Ruiting, Qiong Li, Liu Xinxing, Liu Bin, Gu Kang, Sun Shuaihui. Influence of ZnS Sputtering Power on Film Adhesion and Cu<sub>2</sub>ZnSnS<sub>4</sub> Solar Cells.

**20:20 - 20:40 h; Yonghang Tai (Kunming, China):** Qiong Li, Wenfeng Gao, Wenxian Lin, Tao Liu, Xiaoqiao Huang, Yonghang Tai, Bixuan Gao, Xiang Ding. Experiment and simulation study on Convective Heat Transfer of All-glass Evacuated Tube Solar Heater

### **WEDNESDAY (June 5, 2019):**

**1. Hiking tour** in the Vitosha Mountains: 9:00 - 17:00 h (meeting point in hotel BAS)