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1. GENERAL CHAIR MESSAGE

Sandro Nižetić
University of Split, Croatia

Dear colleagues,

Welcome to the IEEES-9 symposium and please allow me to give you a few introductory words and thoughts.

Currently, and maybe more than ever, the world is generally faced with serious issues related to energy, environment and economy. It is clear and obvious that the population has left a global trace in numerous aspects and that we are entering an era of unpredictable events and scenarios. The three main foundations of the IEEES (International Exergy, Energy and Environment Symposium) are devoted to topics regarding the field of exergy, energy and environment. These foundations had been recognized and put in focus more than 14 years ago, when the founding chair Dr. Ibrahim Dincer had launched the inaugural IEEES symposium in Izmir (Turkey), in 2003. Nowadays, a crucial role in society is played by research engineers and professionals in finding novel and clean energy based solutions in order to ensure their sustainable development and our planet's survival long term. Thus, IEEES events are significantly important as they represent a potential pool of knowledge, ideas and smart solutions that could help the population to bridge serious issues that are already present. The IEEES symposiums were held in the following cities: Kos, Greece (2005); Evora, Portugal (2007); Sharjah, United Arab Emirates (2009); Luxor, Egypt (2011); Rize, Turkey (2013) and Valenciennes, France (2015), Antalya, Turkey (2016). All the symposium chairs, in this regard, deserve a clear recognition. Our warm thanks and respect goes to all the organizers who have contributed in the success of IEEES events.

The 9th Exergy, Energy and Environment Symposium covers a wide area of topics and it could be apprehended as a synergy factor for all engineering based disciplines primarily. As already emphasized, the main topics of the conference are related to exergy, energy and environment, but also to other topics related to ecology, economics, social sciences, management, energy policy and information technology. Finally, all papers were related to current problems, new solutions, modelling and simulations, experiments in all relevant disciplinary areas.

Regarding numbers, the IEEES-9 event has again attracted a large number of submissions where we received 315 abstracts, 198 full papers and finally 183 scheduled presentations. The IEEES-9 symposium includes plenary sessions, keynotes, invited talks, parallel oral sessions, author workshops, and finally poster presentations regarding general topics that had already been addressed above.

I would like to take this opportunity to express my sincere appreciation to Dr. T. Nejat Veziroglu, who is the symposium's Honorary Chair. The heart of the conference, as well as Founding Chair, is Professor Dr. Ibrahim Dincer, and I would like to thank him for the given opportunity to organize the IEEES-9 event in Split and give him my

warmest thanks and respect in general. A special thank you goes to the keynotes, invited speakers, session chair persons, reviewers and finally authors. In the end, I would like to thank all my colleagues from my own organization team for their efforts and devoted time as without them we would never have successfully and smoothly organized the IEEES-9 event!

Thank you for your attention and welcome to the beautiful city of Split and I am sure that you will enjoy your time during the IEEES-9 event!

Sandro Nižetić
IEEES-9 Symposium Chair

2.COMMITTEES

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FOUNDING CHAIR

Ibrahim Dincer University of Ontario Institute of Technology, Canada

HONORARY CHAIR

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WEB MASTER

Željka Milanović University of Split, Croatia

3. FINAL PROGRAM OUTLINE

Sunday, May 14, 2017 (location: Split, FESB)

15:00 - 19:00 Registration

Monday, May 15, 2017 (location: Split, FESB)

08:00 Registrations

09:00 - 09:30 Opening ceremony

09:30 - 10:50 Keynote lectures

Group photo

10:50 - 11:20 Coffee Break

11:20 - 12:50 Oral and poster sessions

Lunch

14:00 - 15:00 Invited talks

15:00 - 16:30 Oral and poster sessions

16:30 - 17:00 Coffee Break

17:00 - 18:30 Oral sessions

18:30 - 19:30 Welcome cocktail

Tuesday, May 16, 2017 (location: Split, FESB)

08:00 Registrations

09:00 - 09:40 Keynote lecture

09:40 - 10:10 Invited talk

10:10 - 10:30 Coffee Break

10:30 - 12:00 Oral and poster sessions

Lunch

13:00 - 14:00 Invited talk

14:00 - 15:30 Oral sessions

14:00 - 17:00 IJER Editorial board meeting

15:30 - 16:00 Coffee Break

16:15 Bus transportation – Guided Touristic tour (City of Split)

19:00 - 21:00 Conference dinner at Diocletian's palace

Wednesday, May 17, 2017 (location: Split, FESB)

08:00 Registrations

08:20 - 09:00 Keynote lecture

09:00 - 09:30 Invited talk

09:30 - 10:30 Author workshop (organized by Wiley&Sons publishing house)

10:30 - 11:00 Coffee Break

11:00 - 12.30 Oral sessions

12:30 - 12:40 Closing ceremony

Lunch

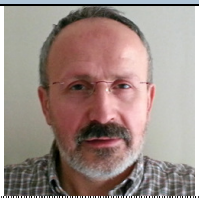
14:00 Optional Touristic Bus Tour (Salona&Trogir)

4.KEYNOTE SPEAKERS

KEYNOTE SPEAKER

Monday, May 15

09:30-10:10 (A100)



Ibrahim Dincer

University of Ontario Institute of Technology, Canada
International Association for Hydrogen Energy,
World Society of Sustainable Energy Technologies

Innovation and exergization

Innovation can be defined as the process of creating (and/or developing) new things (such as models, products, services, systems, technologies, etc.) and is recognized as a unique tool to link the research dimensions to commercialization. The role of innovation is significantly recognized by numerous countries as a critical component in technology development for more value-added economic activities and greater prosperity which will make a country truly a developed one. In addition, exergization is introduced as the art of using exergy and its enhanced tools for better design and analysis, assessment and evaluation, and improvement of energy systems and applications. Defining exergy previously as the confluence of energy, economy, environment and sustainable development confirms that any tangible innovation should be interacted with exergization to better cover all dimensions of energy, efficiency, economy, environment, resources and sustainable development and create more tangible systems, applications, processes, components, products, services, etc. In this regard, the present plenary talk will discuss all the relevant issues and provide a prescription about how to prepare right policies and strategies for research, innovation and commercialization with respect to exergization. It will also include some illustrative and practical examples.

Ibrahim Dincer is a full professor of Mechanical Engineering in the Faculty of Engineering and Applied Science at UOIT. He is Vice President for Strategy in International Association for Hydrogen Energy (IAHE) and Vice-President for World Society of Sustainable Energy Technologies (WSSET). Renowned for his pioneering works in the area of sustainable energy technologies he has authored and co-authored numerous books and book chapters, more than 1000 refereed journal and conference papers, and many technical reports. He has chaired many national and international conferences, symposia, workshops and technical meetings. He has delivered more than 250 keynote and invited lectures. He is an active member of various international scientific organizations and societies, and serves as editor-in-chief, associate editor, regional editor, and editorial board member on various prestigious international journals. He is a recipient of several research, teaching and service awards, including the Premier's research excellence award in Ontario, Canada in 2004. He has made innovative contributions to the understanding and development of sustainable energy technologies and their implementation. He has actively been working in the areas of hydrogen and fuel cell technologies, and his group has developed various novel technologies/methods/etc.

KEYNOTE SPEAKER

Monday, May 15

10:10-10:50 (A100)

Neven Duić

University of Zagreb, Croatia

Smart Energy Systems - Issues to solve on the way to 100% RES systems

Transition to decarbonized energy systems is becoming more attractive with fall of investment costs of renewables and volatile prices and political insecurity of fossil fuels. The renewable energy resources are bountiful, especially wind and solar, while integrating them into current energy systems is proving to be a challenge. The limit of cheap and easy integration for wind is 20% of yearly electricity generation, while a combined wind and solar may reach 30%. Going any further asks for implementation of really free energy markets (involving day ahead, intraday and various reserve and ancillary services markets), demand response, coupling of wholesale and retail energy prices, and it involves integration between electricity, heat, water and transport systems. The cheapest and simplest way of increasing further the penetration of renewables is integrating power and heating/cooling systems through the use of district heating and cooling (which may be centrally controlled and may have significant heat storage capacity), since power to heat technologies are excellent for demand response. In countries with low heat demand water supply system may be used to increase the penetration of renewables, by using water at higher potential energy as storage media, or in dry climates desalination and stored water may be used for those purposes, and reversible hydro may be used as balancing technology. Electrification of personal car transport allows not only for huge increase of energy efficiency, but also, electric cars due to low daily use may be excellent for demand response and even for storage potential, through vehicle to grid technology. That will allow reaching 80% renewable in energy system, but the remaining 20% may be more an uphill battle without technology breakthrough. Long haul freight road transport, aviation and ship transport, as well as some high temperature industrial processes, cannot currently be easily electrified. Biomass, if not used for producing electricity and heat, may cover half of those needs, but the rest will have to come from some other technology. Inductive highways, innovative high energy density batteries and power to synthetic fuels, or so called efuels, which include hydrogen, are all very hot research issues.

Neven Duic is a Professor in Energy Planning, Policy and Economics since 2001, at Department of Energy, Power Engineering and Environment, Faculty of Mechanical Engineering and Naval Architecture, University of Zagreb. He is member of International Scientific Committee of Dubrovnik Conference on Energy, Water and Environment Systems since 2003 and chair of its Local Organising Committee since 2007. He is Editor of Energy Conversion and Management, subject Editor of Energy, Editorial Board member of Applied Energy, member of regional editorial board of Thermal Science Journal and Editor-in-Chief of Journal of Sustainable Development of Energy, Water and Environment Systems. His research covers areas of energy planning of energy systems with high penetration of renewables, sustainable communities, energy policy, energy economics, mitigation of climate change, energy efficiency and combustion engineering.

KEYNOTE SPEAKER

Tuesday, May 16

09:00-09:40 (A100)

Frano Barbir

University of Split, Croatia

Hydrogen and Fuel Cells Technologies: Status and Perspectives and Their Role in the Energy System of the Future

Fuel cells, as an efficient conversion technology, and hydrogen, as a clean energy carrier, have great potential to contribute to addressing the energy, environmental and economic challenges that are facing the world. Hydrogen fuel cells allow renewable energy technology to be applied to transport as well as facilitate distributed power generation, while helping to cope with the variable power and intermittent nature of renewable energy sources. Efforts are underway to transform the transport and energy systems. In the transport sector, fuel cell and hydrogen (FCH) technologies are most advanced in propulsion of fuel cell electric vehicles (FCEVs), most notably passenger vehicles and buses. Significant progress has been made in recent years to address technical issues such as start-up, driving range and refuelling times -reliability of 98% has been achieved. FCEVs are now on the verge of market introduction, however costs must be reduced, lifetimes increased and of course the hydrogen infrastructure, i.e., setting up the network of hydrogen refuelling stations has yet to be established. In the energy sector, FCH technologies are used in a wide range of applications and show great promise in the integration of intermittent renewable energy sources into the overall energy system. However, the key technologies of electrolysis, large scale storage and the injection of hydrogen into the grid require further development. Hydrogen production from renewable energy sources, such as solar, wind, biogas and waste streams, is generally at a low level of maturity, so further development and demonstration of the different methods for hydrogen production is still required. Fuel cells for combined heat and power (CHP), power only, stationary industrial, commercial, residential and small applications are relatively mature and, like FCH for transport, are on the verge of commercialisation.

Frano Barbir is Professor and Chair of Thermodynamics at Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture, University of Split, Croatia. He has been actively involved in fuel cell technology R&D, engineering and applications since 1989, working in U.S. as a researcher and R&D manager in both industry (Energy Partners, Proton Energy Systems) and universities (University of Miami, University of Connecticut), and in Turkey as the Associate Director of Science and Technology of the UNIDO – International Center for Hydrogen Energy Technologies. His research interests include heat and mass transfer in PEM fuel cells, effects of operational conditions on fuel cell performance and durability, design of fuel cells and fuel cell stacks and systems, fuel cell applications, and hydrogen energy concept and its role in context of energy future. He has authored and/or co-authored more than 200 papers on hydrogen and fuel cells published in scientific and technical journals, books, encyclopedias, and conference proceedings, as well as 7 U.S. patents on various aspects fuel cell stack and system design and operation. His book, PEM Fuel Cells: Theory and Practice, published by Elsevier/Academic Press in 2005 (2nd edition came out in 2013), is being used as a textbook at many universities all over the world. He is the Emeritus Editor of the International Journal of Hydrogen Energy (after serving for 13 years as the Associate Editor), and he serves on the Board of Directors of the International Association of Hydrogen Energy. Prof. Barbir holds a Dipl.-Ing. degree in mechanical engineering and an M.Sc. degree in chemical engineering both from University of Zagreb, Croatia, and a Ph.D. degree in mechanical engineering from University of Miami, Coral Gables, FL

KEYNOTE SPEAKER

Wednesday, May 17

08:20-09:00 (A100)

Agis M. Papadopoulus

Aristotle University of Thessaloniki, Greece

On the energy efficiency of the building envelope's thermal performance: Perspectives and challenges

It has been a long way from the first energy regulations in the 1960w to the Zero Energy Buildings required by contemporary regulations. The way has been paved by intensified, systematic developments, of an advanced, and experimentally well validated, interdisciplinary theoretical background, by its incorporation in the syllabi of most engineering and architectural university courses and by a legislative framework that transcended national regulations and standards offering European directives and harmonized European standards. There is a direct relationship between those developments and the progress made in the field of building materials and systems. The successive, ever tightening regulations act as driving forces for the development of effective insulating materials, airtight buildings and smart façades, not to mention the HVAC and predictive BAC systems. It is the availability of those building elements and materials that enables the implementation of ambitious and innovative designs, ensuring that fewer limitations are imposed on the architects' work. Still, thermal loads still account for almost two third of the buildings' loads. The further reduction of those loads becomes a more challenging task, the lower the loads become in absolute terms; it is this challenge that calls for new, more advanced building materials and elements but also for a more sophisticated, integrated regulatory approach.

Agis M. Papadopoulos obtained his Diploma in Mechanical Engineering from the Aristotle University Thessaloniki (AUT, 1989), his Master of Science in Energy Conservation and the Environment from Cranfield University (UK, 1991), and his Doctorate in Mechanical Engineering, specializing on solar systems, from the AUT (1994). Since 1998 he is Professor at the Department of Mechanical Engineering of the AUT. His main research interests lie in the fields of (a) Energy conservation and rational use of energy in buildings, (b) Energy resources economics and (c) Elaboration, monitoring and evaluation of legislative and regulatory measures to promote Energy Efficiency and Renewable Energy. He has coordinated more than 60 national and international research projects and authored or co-authored more than 320 papers published in peer reviewed journals and in conference proceedings. He is Editor-in-Chief of the International Journal of Sustainable Energy. He has been a Visiting Professor at the University of Cyprus and is now at the International Hellenic University, Greece, and at the Technical University of Hamburg-Harburg, Germany. Since 2014 he is Vice-Chairman of the Governing Board of the Open University of Cyprus.

5.INVITED SPEAKERS

INVITED SPEAKER

Monday, May 15

14:00-14:30 (A100)

Theocharis Tsoutsos

Technical University of Crete, Greece

Nearly Zero Energy Hotels in Southern Europe

Hotels and other buildings of a certain size, frequently visited by the public, should set an example in environmental and energy performance. Moreover, according to the European Directive on the Energy Performance of Buildings (EPBD) recast, being energy intensive buildings, they are at a high priority for becoming nearly Zero Energy Buildings (nZEB). Even though they represent a specific category, along with restaurants, till today there is a lack of credible data for this type of buildings, especially taking into account the wide range of different typologies (coastal, mountain, urban, rural or business, resort, spa/wellness, bed & breakfast). In this work are presented the results of the actual energy performance of six south European countries (Greece, Croatia, France, Romania, Italy and Spain), analyzed in the framework of the nearly Zero Energy Hotels (neZEH) project, as participating countries. The project focused on providing technical assistance to existing pilot hotels for refurbishing into nZEBs, demonstrating the sustainability of investments towards zero energy and undertaking training and capacity building activities at regional, national and EU level. The results showed that the primary energy use for the hosting functions across all sixteen pilot hotels can decrease dramatically – from an average of 277 kWh/m^2/y to an average of 102 kWh/m^2/y; an average reduction of 63%. At the same time, Renewable Energy Sources share for the hosting functions can be increased from an average of 18% to an average of 46%. The analysis also showed that hotel non-hosting functions, i.e. other facilities that require special indoor environmental conditions, such as spa, kitchen etc., are more critical than the hosting functions; their primary energy use can decrease from an average of 727 kWh/m^2/y to an average of 374 kWh/m^2/y.

Theocharis Tsoutsos is Professor in the School of Environmental Engineering, Technical University of Crete, Director Graduate Programme "Environmental Engineering" (Apr 2014-); Head, Renewable and Sustainable Energy Lab (ReSEL) (2005-); Coordinator of the TUC-Energy Group (2013-); Head, Development Dept (Centre for Renewable Energy Sources & Energy Saving - CRES -, 1992- 2005); Adjunct Prof. (Heriot-Watt University, TEI Piraeus, Kingston University, Open University, 1998- 2004); Author of 75+ scientific publications in international scientific peer reviewed journals, 20+ book chapters, 200+ publications in conferences; 2,500+ citations h-factor: 22 (Scopus); 26 (Google Scholar). He has coordinated 40+ projects on RES and energy saving and participated in 100+ totally. Project evaluator in European Research Council (ERC), REA (EC), Erasmus-Mundus (EC), GSRT (GR), State Scholarship Foundation (GR), Research Promotion Foundation (CY), Swiss National Science Foundation (SNSF); New Eurasia Foundation (RU); Netherlands Organisation for Scientific Research (NL); Welsh Government (UK).

INVITED SPEAKER

Monday, May 15

14:30-15:00 (A100)

Wei-Hsin Chen

National Cheng Kung University, Taiwan

Novel technologies of hydrogen production and separation

Over the last several decades, hydrogen has been considered as a promising fuel to substitute fossil fuels used in heat and power generation. This arises from the fact that hydrogen is a non-carbon fuel and the most abundant element in the universe. Hydrogen is a potential energy carrier which can be applied in the transportation sector. By virtue of much higher power density or heating value per unit mass of hydrogen when compared to other gas or liquid fuels, it has been employed in liquid rockets and space shuttles as an important propellant for many decades. In recent years, much progress has been made in fuel cells, resulting in the foreseeable future of hydrogen economy. Hydrogen production is the first step to practice hydrogen economy. This talk will introduce a number of novel thermochemical conversion technologies for producing hydrogen-rich gases. Then, the hydrogen separation methods using palladium-based (Pd-based) membranes will be addressed. The important findings from the studies will be highlighted.

Professor Wei-Hsin Chen received his B.S. degree from the Department of Chemical Engineering, Tunghai University, Taichung City, Taiwan, in 1988, and a Ph.D. degree from the Institute of Aeronautics and Astronautics, National Cheng Kung University in 1993. After receiving his Ph.D. degree, Dr. Chen worked in an iron and steel corporation as a process engineer for one and a half years (1994-1995). He joined the Department of Environmental Engineering and Science, Fooyin University in 1995 and was promoted to a full professor in 2001. In 2005, he moved to the Department of Marine Engineering, National Taiwan Ocean University. Two years later (2007), he moved to the Department of Greenergy, National University of Tainan. Now he is a Faculty Member at the Department of Aeronautics and Astronautics, National Cheng Kung University. Professor Chen visited the Princeton University, USA, from 2004 to 2005, the University of New South Wales, Australia, in 2007, the University of Edinburg, UK, in 2009, and the University of British Columbia, Canada, from 2012 to 2013, as a visiting professor. His research topics include hydrogen production and purification, bioenergy, clean energy, carbon capture, and atmospheric science. He has published over 350 papers in international and domestic journals and conferences with a h-index of 33. He is the editorial member of a number of international journals, including Applied Energy, International Journal of Energy Research, Energies, etc. He is also the author of several books concerning energy science and air pollution. His important awards include the 2015 Outstanding Research Award (Ministry of Science and Technology, Taiwan), 2015 Highly Cited Paper Award (Applied Energy, Elsevier), 2016 Highly Cited Researcher (Thomson Reuters, Web of Science), etc.

INVITED SPEAKER

Tuesday, May 16

09:40-10:10 (A100)

Mustafa Ozilgen

Yeditepe University, Turkey

Thermodynamic assessment of the biological processes

Exergy analysis were initially used to evaluate efficiency of the fuels and energy utilizing processes. In the early 2010s exergy analyses found application in development of the industrial production processes of the biological origin and later directly in the cellular processes in the body. Assessing the comfort of the body in terms of entropy generation and exergy destruction, exergy efficiency of the metabolic pathways in the brain, exergy efficiency of the muscle work, lifespan entropy generation, understanding and finding ways to postpone the symptoms of aging were among these studies. Application of the biothermodynamics in the medical fields expected to provide opportunities in the health sciences and medical technology and improve the quality of life of the humans and animals. Comparison of the exergetic efficiency of the competing theories on the brain energy metabolism, offering some help to prevent heart attacks in the amputees, calculation and improvement of the muscle work efficiency and finding the causes of the difference in the crop yields of the plants, estimating the emergence and disappearance of an eco-system and its management to obtain the maximum output, e.g., fisheries landingfrom there, are among the outcomes of the current biothermodynamics research.

Mustafa Özilgen is a Chemical Engineer with BS and MS degrees from the Middle East Technical University (Ankara, Turkey) and PhD degree from University of California, (Davis, USA) and a professor at Yeditepe University (Istanbul, Turkey). He is an author of four internationally and one locally published books, including "Handbook of Food Process Modeling and Statistical Quality Control, Taylor and Francis, 2nd ed. USA, 2011". "Artistic Narrative of Technology, Yeditepe University Press, Istanbul, Turkey, 2011" and "Biothermodynamis, Principles and applications (with Esra Sorgüven) Taylor & Francis, USA, 2016". He has approximately 100 research articles published in the refereed international journals. His recent research focuses on medical applications of thermodynamics, improving exergy efficiency and decreasing environmental impact of industrial food processing and food waste valorization.

INVITED SPEAKER

Tuesday, May 16

13:00 - 13:30 (A100)

Manuel Romero

IMDEA Energy, Spain

High Flux/High Temperature Concentrated Solar Thermal Power Technologies and Applications

Even though solar radiation is a source of high temperature and exergy at origin, with a high radiosity of 63 MW/m^2, sun-to-earth geometrical constraints lead to a dramatic dilution of flux. It is therefore an essential requisite for efficient solar thermal power plants and high temperature solar chemistry applications to make use of optical concentration devices that enable the thermal conversion to be carried out at high solar fluxes and with relatively low heat losses. Solar Thermal Power Plants (STPP) have generated since 2006 a dynamic market for renewable energy industry and a pro-active networking within R&D community worldwide. At present there are 5 GW of STPP installed in the world, however most of them located in few countries (Spain, US, Morocco, South-Africa, Chile, China, UAE and other). In the short period of 10 years STPP have achieved a noticeable reduction of cost and the most recent Power Purchase Agreements (PPAS) in countries like Morocco or Chile are moving in the range of 10 to 14 c€/kWh. However, in today's competitive global market this is not enough and concentrated solar technologies are forced to speed up their learning curves because of the drastic reduction of costs by other renewable energy technologies and the need of optimizing dispatch and grid integration for markets with high penetration of solar and wind. The urgent need to accelerate the learning curve by moving forward to PPA below 10 c€/kWh and the promotion of sun-to-fuel applications, is driving the R&D programs for the new SET Plan in Europe. Both, industry and R&D community are accelerating the transformation by approaching high flux/high temperature technologies and promoting the integration with high efficiency conversion systems. In optical engineering the technology evolution is heading to ultra-modular concentrators of plug-and-play type with high degree of automatism, reliability and flexible unmanned operation that might be subject to integration in different environments. In heat transfer R&D is accelerating the development of new thermal fluids for operation at higher temperatures and pressures; new thermal (sensible heat and phase change) and thermochemical energy storage systems; solar receivers and reactors with advanced volumetric absorbers, micro and mini-channels or clouds of particles for higher apparent absorptivity. Energy conversion development is looking for the use of new turbomachinery and cycles making use of supercritical fluids as well as the integration of direct conversion systems. Potential for levelized cost of electricity below 10 c€/kWh by 2020 and less than 7 c€/kWh by 2030; incrementing dispatchability; the production of solar fuels and chemicals and the optimized integration in some industrial processes are guiding R&D globally.

PhD in Chemical Engineering by the University of Valladolid (Spain), Manuel Romero has received the "Farrington Daniels Award" in 2009, created by the International Solar Energy Society (ISES), conferred for his contributions since 1985 to the development of high temperature solar concentrating systems. Guest Professor, in summer 2007 and summer 2014, in the Professorship of Renewable Energy Carriers at ETH Zürich, Switzerland. He has been in 2002-2004 Director of the Plataforma Solar de Almería and the Director of the Renewable Energy Division of CIEMAT in Spain since June 2004 till August 2008. At present, he is Deputy Director of the IMDEA Energy Institute and Principal Researcher of its Solar Energy R&D Unit with activities in high-flux modular concentrating solar power technologies and solar fuels and chemicals production. During his career, he has participated in 58 collaborative R&D projects in energy research, 20 of them financed by the European Commission. He has been ExCo Member of the Implementing Agreement of the IEA on Solar Heating and Cooling (SHC) and Operating

Agent and ExCo Member at the IEA-Solar Power and Chemical Energy Systems (SolarPACES). From 2012-2015 he has been Vice-president of ISES and Chair of the Scientific Committee of the Solar World Congresses SWC2013, SWC2015 and SWC2017. He is member of the Editorial Board of the International Journal of Energy Research (IJER) published by Wiley & Sons since December 2009. From 2007 to 2013 he has been Associate Editor of the ASME Journal of Solar Energy Engineering. He was Associate Editor of the International Journal of Solar Energy of Elsevier since January 2002 till January 2007. Editor of 6 books related to solar concentrating technologies. Author of 3 chapters in handbooks of solar energy, 75 papers in scientific journals and more than 100 publications in books of proceedings with ISBN and peer review. He is co-inventor of eight patents on solar technologies and applications.

INVITED SPEAKER

Tuesday, May 16

13:30-14:00 (A100)

Ilhami Yildiz

Dalhousie University, Canada

Introducing a New Technology: Invention, Innovation and Diffusion

There exist three stages in the process of introducing a new technology: *invention, innovation,* and *diffusion*. The first development of a new scientific or a technical product or process is called the invention stage. If the new product or process is commercialized, then we talk about the next stage, the innovation stage. The third stage of the life cycle of many innovations is the diffusion, by which an innovation is communicated through a number of different channels with individuals, groups, or local or global communities as a whole. Individual or community responses to invention, innovation and diffusion reveal themselves as *use*, *adaptation*, and *resistance*. Without a market, no matter how innovative a technical change is, the product or process developed has no commercial value. This Invited Lecture provides an overview of the current challenges and opportunities in innovation and commercialization, as well as a number of initiatives from research to commercialization.

Ihami Yıldız is a controlled environment systems engineer, and has expertise in energy, environment and sustainability issues, such as bioreactors, environmental biotechnology, microalgae-based biofuels and bioproducts using waste streams, complex systems modeling, air- and ground-source heat pumps, combined heat and power generation, flue gas recovery and greenhouse gas mitigation, hydronic heating and hot water storage systems, and energy and water conservation. He has designed and built a number of environmentally friendly energy systems transferring extensive research findings to commercial operations in Canada, Mexico, Russia, Turkey, and the United States.

INVITED SPEAKER

Wednesday, May 17

09:00-09:30 (A100)

Mohamed Adly Gadalla

American University of Sharjah, United Arab Emirates

Heliostat Solar Field Design

In general, Heliostat field contains several flat mirrors that direct the sun radiation toward the top of the tower where the receiver is located. A two-axes tracking mechanism is required to permanently focus the sun radiation on the receiver. The surface area of each heliostat is ranging from 50-150 m2 whereas the tower height can be varied from 75-150 m. Heliostat field collectors' mathematical formulation is arguably the most complicated among all the available solar collectors. In particular, determining instantaneous optical efficiency of a heliostat depends on the time and its location with respect to the tower and neighboring heliostats. Consequently, annual field efficiency calculation and optimization of the field are significantly complex and time consuming.

Mohamed Gadalla is a full Professor in the Mechanical Engineering Department at American University of Sharjah. He has over 25 years of experience in industry and academia. He published more than 100 papers in refereed Journal and International conferences. He carried out many industrial researches and participated in many projects in different industrial sectors in the USA, UAE, GCC, and Egypt. He has given many training courses, keynote lectures and workshops to many industries and scientific organizations. He has chaired many international conferences, symposiums, and technical meetings. He is an active member of various international scientific organizations and societies, and serves in editorial board in various prestigious international journals and symposiums. His main area of interests is in renewable energy technologies, Design of heliostat solar field collector, Design of parabolic trough collector, hybridization of power generation cycles, thermal energy storage, absorption systems, polygeneration systems, energy systems and energy management, thermal stability of polymeric/composite structures, systems, UAV systems, efficient building operations, Fuel cells, HVAC systems design. He is a recipient of several research, teaching and service awards.

6. PROGRAM

Monday, May 15

Monday, May 15, 11:20 - 12:50

A1: Solar energy and applications (A101)

Chair: Mohamed Gadalla, American University of Sharjah, UAE

1. **Solar powered drip Irrigation system**
   Yi Jin and Guiqiang Li (University of Science and Technology of China, China); Muhammad Waqar Akram and Muhammad Muzammil (University of Agriculture Faisalabad, Pakistan)
2. **Optical performance comparison between a symmetric and an asymmetric mini-CPC in Athens**
   Dimitrios Korres and Christos Tzivanidis (National Technical University of Athens, Greece)
3. **Investigation of a coaxial flow evacuated tube collector with a mini-compound parabolic concentrator**
   Dimitrios Korres and Christos Tzivanidis (National Technical University of Athens, Greece)
4. **Application of Taguchi and Response Surface Methods in Optimizing Flat Plate Solar Collector Design parameters**
   Mohamed Abokersh, Abdelghani A Elimam, Mohamed El-Morsi (The American University in Cairo, Egypt)
5. **Optimal operation schedule of semi-fixed PV system**
   Kwak In-Kyu, Mun Sun-Hye, Park Kwang-Il, Huh Jung-Ho (University of Seoul, South Korea)

B1: Fuels and combustion technology (Room VV)

Chairs: Luis Rojas-Solórzano, Nazarbayev University, Kazakhstan; Wei-Hsin Chen, National Cheng Kung University, Taiwan

1. **Experimental methods to investigate the Droplet Combustion characteristics of Pinewood Bio-oil/Butanol**
   Shou Yin Yang and Ming-Sheng Wu (National Formosa University, Taiwan)
2. **Biodiesel production from non-edible oil using heterogeneous solid base catalysts**
   Karim Khiaril, Zakaria Bekkar Djelloul Sayah, Lyes Tarabet and Rachid Mahmoud (Ecole Militaire Polytechnique, Algeria); Khaled Loubar and Mohand Tazerout (Ecole des Mines de Nantes, France)
3. **Combustion and emission characteristics of wood pyrolysis oil-butanol blended fuel in diesel generator and tractor**
   Seokhwan Lee, Minjae Kim and Yongrae Kim (Korea Institute of Machienry and Materials, South Korea)
4. **Comparision of pretreatment methods for the bioethanol production from kitchen waste**
   Mine Nazan Kerimak Öner (Kocaeli University, Turkey)
5. **Optimisation of catalytic cracking of biomass pyrolysis oil with mixed catalysts: comparison between simulation and experimental results**
   Chawannat Jaroenkhasemmeesuk and Nakorn Tippayawong (Chiang Mai University, Thailand); Maria Elena Diego, Derek B. Ingham and Mohammed Pourkashanian (University of Sheffield, Sheffield, United Kingdom

C1: Fluid Mechanics, Heat and Mass Transfer (A100)
Chair: Branko Klarin, University of Split, Croatia

1. **Aerodynamic Design of a Twin-Entry Radial-Inflow Turbine's Impeller: A Numerical and Experimental Investigation**
   Siavash Vaezi and Farshad Ravosh (Sharif University of Technology, Iran); Misagh Irandoost Shahrestani (University of Tehran, Iran)
2. **Performance Investigation of PAT for the Purpose of Utilization in Water Distribution Network for Pressure Reduction and Power Production Applications**
   Mojtaba Tahani, Roshanak Fahimi, Hossein Yousefi, Younes Noorollahi and Majid Najafpour (University of Tehran, Iran)
3. **Analytical investigation of magnetohydrodynamics flow and heat transfer over exponentially stretching sheet in presence of thermal radiation using OHAM**
   Mojtaba Tahani and Zeynab Deldoost (University of Tehran, Iran); Ali Asghar Sedighi (University of Technology, Iran)
4. **Metaheuristic Technique for Section Selection across the Horizontal Axis Turbines**
   Mojtaba Tahani, Narek Babayan and Roshanak Fahimi (University of Tehran, Iran); Kasuyoshi Miyagawa (Waseda University, Japan); Foroogh Mohandespour (TAHA Company, Iran)
6. **Performance Evaluation of Shrouded Horizontal Axis Wind Turbines Using Potential Flow Analysis**
   Mojtaba Tahani, Vahid Esfahanian and Mohammad Fereidoonnezhad (University of Tehran, Iran)

G2: Thermal systems, Components & Applications (A103)
Chair: Neven Duić, University of Zagreb, Croatia

1. **Desiccant Wheel Design Using Metaheuristic Approach**
   Mojtaba Tahani and Narek Babayan (University of Tehran, Iran); Foroogh Mohandespour (Islamic Azad University, Iran); Sadegh Tavakoli Bina (Sharif University of Technology, Iran); Saeede Mirmahdian (TAHA Company, Iran)
2. **Analysis of a Combined 660MWe Supercritical Rankine-Kalina Cycle Thermal Power Plant for Condenser Waste Heat Recovery**
   Goutam Khankari (Damodar Valley Corporation, India); Sujit Karmakar (National Institute of Technology Durgapur, India)
3. **Development of Cooling Performance of Clinker Cooler Process Based On Energy Audit**
   Mohammadreza Emami and Kevser Dincer (Selcuk University, Turkey); M.Ziya Söğüt and T. Hikmet Karakoc (Anadolu University, Turkey)
4. **Absorption power cycle for low temperature waste heat recovery – performance comparison of different working fluids**
   Vaclav Novotny, Monika Vitvarova and Michal Kolovratnik (Czech Technical University in Prague, Czech Republic)
5. **Experimental analysis of construction parameters on thermal efficiency of induction air heaters**
   Umit Unver, Fikret Yuksel, Ahmet Yuksel and Alper Kelesoglu (University of Yalova, Turkey); H. Murat Unver (Kırıkkale University, Turkey)

I1: Energy and Buildings, Energy Efficiency (A102)
Chair: Agis Papadopoulos, Aristotle University of Thessaloniki, Greece

1. **The Effect of Residential Progressive Electricity Tariffs on the Economic Performance of the Building-Integrated Photovoltaic Blind**
   Jeongyoon Oh and Taehoon Hong (Yonsei University, South Korea); Choongwan Koo (Hong Kong Polytechnic University, Hong Kong)
2. **Framework for calculating the rooftop solar photovoltaic (PV) footprint considering building electricity supply and demand from the urban-level**
   Taehoon Hong and Minhyun Lee (Yonsei University, South Korea)
3. **Experimental estimation of factors influencing the equivalent outdoor temperature for the multi-family building**
   Tomasz Cholewa (Lublin University of Technology, Poland)
4. **Thermo- Economic and Environmental Analysis of Solar Energy Water Heating System in Public Buildings**
   M.Ziya Sogut and Suleyman Ozkaynak (Piri Reis University, Turkey); T.Hikmet Karakoc (Anadolu University, Turkey)
5. **Building trust in Energy Performance Contracting for tertiary sector energy efficiency and sustainable energy projects in Southern European Countries. The Trust EPC South European initiative.**
   Theocharis Tsoutsos, Stavroula Tournaki and Maria Frangou (Technical University of Crete, Greece); Paolo Michele Sonvilla (Creara Consultores S.L, Spain); Marko Bišćan (Energy Institute Hrvoje Požar, Croatia)
6. **Multi-objective optimization on the use of Phase Change Materials (PCM) in the building envelope in Mediterranean climates**
   Christina Konstantinidou and Agis M. Papadopoulos (Aristotle University of Thessaloniki, Greece); Werner Lang (Technical University of Munich, Germany)

PT1: Poster presentations (Room MV)
Chair: Tea Marasović, University of Split, Croatia

1. **Converting an automotive fuel cell system to a stationary power generation system**
   Martina Mirković, Jakov Šimunović and Frano Barbir (University of Split, Croatia)
2. **Tracking the process at PEM fuel cell cathode in h-x diagram**
   Željko Penga, Ivan Pivac, Ivan Tolj, Frano Barbir (University of Split, Croatia)
3. **Small-scale stand-alone renewable hydrogen energy system**
   Jakov Šimunović, Nikolina Pivac and Frano Barbir (University of Split, Croatia)
4. **Landscape dynamics and spatial changes in the steppe ecosystem of North-West of Algeria**
   Haddouche Driss, Zennouche Smina and Abdelmalek TOUNKOB (University of Tlemcen, Algeria)
5. **LED Lighting Solutions for Energy Efficient Greenhouse Lighting**
   Canan Perdahci (University of Kocaeli, Turkey)
6. **Numerical investigations of photovoltaic panels coupled with phase change material**
   Feyza Bilgin and Müslüm Arıcı (University of Kocaeli); Sandro Nizetic (University of Split, Croatia)

FESB, University of Split, Monday, May 15						
TIME/HALL	**A100**	**A101**	**A102**	**A103**	**Room VV**	**Room MV**
08:00	**REGISTRATION***					
09:00 - 09:30	**Opening Ceremony**					
09:30 - 10:10	**Keynote speech (A100)** Ibrahim Dincer (University of Ontario Institute of Technology, Canada), *Innovation and exergization*					
10:10 - 10:50	**Keynote speech (A100)** Neven Duic (University of Zagreb, Croatia), *Smart Energy Systems - Issues to solve on the way to 100% RES systems*					
10:50 - 11:20	**Coffee Break**					
11:20 - 12:50	**C1: Fluid Mechanics, Heat and Mass Transfer**	**A1: Solar energy and applications**	**I1: Energy and Buildings, Energy Efficiency**	**G2: Thermal systems, Components & Applications**	**B1: Fuels and combustion technology**	**PT1: Poster Presentations**
12:50 - 14:00	**Lunch**					
14:00 - 14:30	**Invited talk (A100)** Theocharis Tsoutsos (Technical University of Crete, Greece), Nearly Zero Energy Hotels in Southern Europe					
14:30 - 15:00	**Invited talk (A100)** Wei-Hsin Chen (National Cheng Kung University, Taiwan), Novel technologies of hydrogen production and separation					
15:00 - 16:30	**F1: Energy storage, CO2 issues, Environment**	**H1: Exergy & Energy analysis**	**A2: Solar energy and applications**	**D1: Sustainable development, energy planning, energy management**	**E1: Fuel cells**	**PT2: Poster Presentations**
16:30 - 17:00	**Coffee Break**					
17:00 - 18:30	**G1: Thermal systems, Components & Applications**	**H2: Exergy & Energy analysis**	**I2: Energy and Buildings, Energy Efficiency**	**C2: Fluid Mechanics, Heat and Mass Transfer**	**E2: Fuel cells**	**B2: Fuels and combustion technology**
18:30 - 19:30	**Welcome Cocktail**					

FESB, University of Split, Tuesday, May 16						
TIME/HALL	**A100**	**A101**	**A102**	**A301**	**Room VV**	**Room MV**
08:00	**REGISTRATION***					
09:00 - 09:40	**Keynote speech (A100)** Frano Barbir (University of Split, Croatia), *Hydrogen and Fuel Cells Technologies: Status and Perspectives and Their Role in the Energy System of the Future*					
09:40 - 10:10	**Invited talk (A100)** Mustafa Ozilgen (Yeditepe University, Turkey), *Thermodynamic assessment of the biological processes*					
10:10 - 10:30	Coffee Break					
10:30 - 12:00	F3: Energy storage, CO2 issues, Environment	H5: Exergy & Energy analysis	D2: Sustainable development, energy planning, energy management	B3: Fuels and combustion technology	E3: Fuel cells	PT3: Poster Presentations
12:00 - 13:00	Lunch					
13:00 - 13:30	**Invited talk (A100)** Manuel Romero (IMDEA Energy, Spain), *High Flux/High Temperature Concentrated Solar Thermal Power Technologies and Applications*					
13:30 - 14:00	**Invited talk (A100)** Ihami Yildiz (Dalhousie University, Canada), *Introducing a New Technology: Invention, Innovation and Diffusion*					

TIME/HALL	**Room MV**	**A100**	**A101**	**A102**	**A106**	**Room VV**
14:00 - 15:30	IJER Editorial board meeting (14:00 - 17:00)	F2: Energy storage, CO2 issues, Environment	G3: Thermal systems, Components & Applications	I3: Energy and Buildings, Energy Efficiency	A3: Solar energy and applications	H3: Exergy & Energy analysis
15:30 - 16:00		Coffee Break				
16:15		Guided Touristic Tour				
19:00 - 21:00	Conference dinner at Diocletian's palace					

FESB, University of Split, Wednesday, May 17				
TIME/HALL	**A100**	**A101**	**A102**	**Room VV**
08:00	**REGISTRATION***			
08:20 - 09:00	**Keynote speech (A100)** **Agis M. Papadopoulos (Aristotle University of Thessaloniki, Greece), On the energy efficiency of the building envelope's thermal performance: Perspectives and challenges**			
09:00 -09:30	**Invited talk (A100)** **Mohamed Adly Gadalla (American University of Sharjah, United Arab Emirates), Heliostat Solar Field Design**			
09:30 - 10:30	**Author workshop organized by Wiley&Sons publishing house (A102)**			
10:30 - 11:00	**Coffee Break**			
11:00 - 12:30	**F4: Energy storage, CO2 issues, Environment**	**I4: Energy and Buildings, Energy Efficiency**	**B4: Fuels and combustion technology**	**H4: Exergy & Energy analysis**
12:30 - 12:40	**Closing Ceremony (A100)**			
12:40 -13:40	**Lunch**			
14:00	**Optional Touristic Bus Tour (Salona&Trogir)**			

*Registration break is during the lunchtime

Monday, May 15, 15:00 - 16:30

A2: Solar energy and applications (A102)

Chair: Agis Papadopoulos, Aristotle University, Greece

1. **Experimental investigation of a passive cooling technique for photovoltaic panels: Preliminary results**
   Filip Grubišić Čabo, Sandro Nižetić and Duje Čoko (University of Split, Croatia)
2. **Environmental benefits and Economic Feasibility of Single Effect and Multi Effect Active Vertical Solar Desalination Units**
   K. Srinivas Reddy and H. Sharon (Indian Institute of Technology Madras, India)
3. **Thermoelectric Cooling of a Photovoltaic Panel**
   Hossein Moshfegh, Mohammad Eslami and Arian Hosseini (Shiraz University, Iran)
4. **Parametric optimization of concentrated photovoltaic-thermoelectric hybrid system**
   Ravita Lamba and S.C. Kaushik (Indian Institute of Technology Delhi, India)
5. **Optimized CPC reflectors for an ICS solar water heater**
   Olfa Helal, Raouf Ben Rjab and Béchir Chaouachi (National School of Engineers of Gabes, Tunisia)
6. **Development of a Solar Thermal System with Thermal Storage for Fresh Water and Power Production**
   Murat Emre Demir (University of Ontario Institute of Technology, Canada); Ibrahim Dincer (University of Ontario Institute of Technology, Canada)

D1: Sustainable development, energy planning, energy management (A103)

Chair: Anica Trp, University of Rijeka, Croatia

1. **Development of a Sustainable Enterprise Architecture for Green Ships**
   Murat Koray and M. Ziya Sogut (Piri Reis University, Turkey); Murat Pasa Uysal (Baskent University, Turkey); T. Hikmet Karakoc (Anadolu University, Turkey)
2. **Computational Framework for Managing Electric Vehicle Charging Infrastructure**
   Dario Pevec, Jurica Babić, Vedran Podobnik (University of Zagreb, Croatia); Martin A. Kayser and Yashar Ghiassi-Farrokhfal (Erasmus University, Netherlands); Arthur Carvalho (Miami University, USA)
3. **Grids energy integration using H2as an energy carrier. Boosting smart hydrogen economy**
   Beatriz Maestro, Bernardo Llamas and Marcelo F. Ortega (Technical University of Madrid, Spain)
4. **PPI4Waste project: Current practice and new trends in waste management sector**
   Bojan Ribić and Robert Kostić (Zagreb City Holding, Croatia); Anne Dominique Furphy and Lorenzo Chacon Ladron de Guevara (Andalusian Institute of Technology, Spain)
5. **Endorsing Stable and Steady Power Supply by Exploiting Energy Storage Technologies –A Study of Kuwait's Power Sector**
   Ruba Al-Foraih, Sreekanth. K. J, Ahmad Al Mulla and B. Abdulrahman (Kuwait Institute for Scientific Research, Kuwait)

E1: Fuel cells (Room VV)
Chair: Frano Barbir, University of Split, Croatia

1. **PEM single fuel cell as a dedicated power source for superconducting coils**
   Linares Rafael, Raël Stéphane, Berger Kévin, Hinaje Melika and Lévêque Jean (Université de Lorraine, France)
2. **Hydrogen production from ethanol steam reforming followed by water gas shift reaction**
   Chih-Chun Chen (University of Toronto, Canada); Huan-Hsiung Tseng and Yu-Li Lin (Industrial Technology Research Institute, Taiwan); Wei-Hsin Chen (National Cheng Kung University, Taiwan)
3. **Finite Time Thermodynamic Analysis of a Solar Hydrogen and Electricity Production Plant Using High Temperature PEM Electrolzer**
   Faeze Moradi and Ehsan Baniasadi (University of Isfahan, Iran); Nader Javani (Yıldız Technical University, Turkey)
4. **Thermodynamic and Experimental Investigation of a Unique Photoelectrochemical Hydrogen Production System**
   Canan Acar (Bahcesehir University, Turkey); Ibrahim Dincer (University of Ontario Institute of Technology, Canada)
5. **Design of Waste Gasification Energy Systems with Solid Oxide Fuel Cells**
   Masoud Rokni (Technical University of Denmark, Denmark)

F1: Energy storage, CO2 issues, Environment (A100)
Chair: Adam Smoliński, Central Mining Institute, Poland

1. **The Effect of Salinity Concentration on Algal Biomass Production and Nutrient Removal from Wastewater by Dunaliella salina**
   Yu Liu and Ilhami Yildiz (Dalhousie University, Canada)
2. **Experimental and numerical investigations of "In situ bioremediation of soils contaminated by hydrocarbons and outcomes of the research applied in Andalusia (Spain)"**
   Juan Pous, Bernardo Llamas and Ma Jose Herrero (University Polytechnic of Madrid, Spain)
3. **Feasibility studies for CO2 reforming of methane in a membrane reactor for simultaneous CO2 utilization and ultra-pure H2 production**
   Sehwa Kim and Hankwon Lim (Catholic University of Daegu, Republic of Korea); Shin-Kun Ryi (Korea Institute of Energy Research, Republic of Korea)
4. **A thermoeconomic comparative analysis between different approaches of specific carbon dioxide emission reduction for a simple gas turbine power plant**
   Mohammad Saghafifar and Mohamed Gadalla (Department of Mechanical Engineering, UAE)
5. **Multi-criteria method and its application for compressed air energy storage in salt domes**
   Maria De La Cruz Castañeda, Bernardo Llamas, Carlos Laín and Juan Pous (Technical University of Madrid, Spain)
6. **Chemometric exploration of the data concerning gases emitted from burning mine waste dump**
   Adam Smoliński, Natalia Howaniec and Patrycja Kuna-Gwoździewicz (Central Mining Institute, Poland)

7. **Effect of water waves on the erosion of permafrost**
   Wojciech Sulisz, Maciej Paprota, Dawid Majewski and Marek Szmytkiewicz (Institute of Hydro - Engineering, Poland

H1: Exergy & Energy analysis (A101)
Chair: Vedat Oruc, Dicle University, Turkey

1. **Energetic and exergetic comparative analysis of innovative vapor compression cycles for cooling applications using alternative refrigerants**
   Bahaa Morad, Mohamed Gadalla and Saad Ahmed (American University of Sharjah, UAE)
2. **Energy and exergy evaluations of catalytic dry reforming of methane for syngas production in fixed-bed reactors**
   Rei-Yu Chein and Wen-Huai Hsu (National Chung Hsing University, Taiwan)
3. **Sustainability assessment of power generation from fossil and renewable energy sources by applying the Total Cumulative Exergy Loss method**
   Lydia Stougie and Hedzer van der Kooi (Delft University of Technology, Netherlands); Natalìa Giustozzi and Anna Stoppato (University of Padova, Italy)
4. **Exergo-economic analysis of concentrated solar thermal cogeneration power plant**
   Reddy K. S. and Prakash Saxena (Indian Institute of Technology Madras, India)
5. **The IAEA DE-TOP: A Tool for Thermodynamic Assessment of Nuclear Cogeneration**
   I. Khamis and R. El-Emam (International Atomic Energy Agency, Austria)

PT2: Poster Presentations (Room MV)
Chair: Duje Čoko, University of Split, Croatia

1. **Finding the Losses of a Special Squirrel Cage Induction Motor**
   Mine Setsöz (Anadolu University, Turkey); Mehmet Kurban (Bilecik University, Turkey)
2. **Assessment Energy Performance Indicators of Low-Charge Multiplex Refrigeration Systems used in Supermarket**
   M.Ziya Sogut and Suleyman Ozkaynak (Piri Reis University, Turkey); T. Hikmet Karakoc (Anadolu University, Turkey)
3. **Mathematical Modelling and Simulation of an Irreversible Heat Engine**
   Yasin Şöhret (Suleyman Demirel University, Turkey); Isil Yazar (Eskisehir Osmangazi Univesity, Turkey); T. Hikmet Karakoç (Anadolu University, Turkey)
4. **Eddy-Diffusion Turbulent Transport Theory for Wind Energy Application**
   Sevinc A. Sirdas and Çağatay Bahadir (Istanbul Technical University, Turkey)
5. **Syn-gas production by BFB biomass gasification: Comparison study among white-pine, Posidonia Oceanica and citrus peel feedstocks**
   Francesco Urbani, Susanna Maisano, Giovanni Zafarana and Vitaliano Chiodo (Institute CNR-ITAE, Italy)
6. **Numerical and experimental study of operative temperature related energy savings using different types of heat emitters**
   Jura Tomorad, Ivan Horvat and Damir Dović (University of Zagreb, Croatia)
7. **A Flexible Free-standing Si@C/graphene Paper for High-stability Li-Ion Battery Anodes**
   Deniz Nalci, Mustafa Guzeler, Aslihan Guler, Mustafa Mahmut Singil, Engin Alkan, Mucahit Dogan,

Mehmet Oguz Guler and Hatem Akbulut (Sakarya University, Turkey)

8. **Cr doped graphene based LiMn2O4 cathode electrodes for high efficiency lithium ion batteries**
   Aslihan Guler, Seyma Ozcan Duman, Deniz Nalci, Mustafa Guzeler, Emrah Bulut, Mehmet Oguz Guler and Hatem Akbulut (Sakarya University, Turkey)
9. **A study on the functional interpretation and design for a natural circulation solar heating system with wall-installed thermal collector**
   Nam choon Baek and Wang je Lee (Korea Institute of Energy Research, Korea); U cheul Shin (Daejeon University, Korea)

Monday, May 15, 17:00 - 18:30

B2: Fuels and combustion technology (Room MV)

Chair: Hasan Ozcan, Karabuk University, Turkey

1. **Methane steam reforming using a membrane reactor equipped with a Pd based composite membrane for effective hydrogen production**
   Chang-Hyun Kim, Jae-Yun Han and Kwan-Young Lee (Korea University, South Korea); Hankwon Lim (Catholic University of Daegu, South Korea); Shin-Kun Ryi (Korea Institute of Energy Research, South Korea)
2. **Cyclic irregularity and combustion characteristics of DI diesel engine operating with biodiesel and H2/NG gas under dual fuel mode**
   Tarabet Lyes and Khiari Karim (Ecole Militaire Polytechnique, Algeria); Lounici Mohand Said (Université de Boumerdes, Algeria), Loubar Khaled, and Mohand Tazerout (Ecole des Mines de Nantes, France)
3. **Thermodynamic Assessment of Modified Organic Rankine Cycle Integrated with Parabolic Trough Collector for Hydrogen Production**
   Yunus Emre Yüksel (Afyon Kocatepe University, Turkey)
4. **Research for optimization of two cylinder gasoline engine for RE-EV**
   Jinyoung Jang, Youngmin Woo, Youngjin Jung, Chongpyo Cho, Gangchul Kim and Youngdug Pyo (Korea Institute of Energy Research, South Korea); Myunghoon Han and Seungcheol Lee (Blueplanet, South Korea)
5. **Investigation of the Effects of Equivalence Ratio and Thermal Power on the Combustion and Emission Behaviour of Premixed Hydrogen Air Mixture in a Micro Combustor**
   Harun Yılmaz (Erzincan University, Turkey); İlker Yılmaz and Omer Cam (Erciyes University, Turkey)

C2: Fluid Mechanics, Heat and Mass Transfer (A103)

Chair: Zoran Milas, University of Split, Croatia

1. **Industrial validation of thermal model applied to steel coils annealed under hydrogen gas**
   Maxence Bigerelle (University of Valenciennes and Hainaut-Cambresis, France); Abdallah Haouam (Badji Mokhtar University, Algeria)
2. **Numerical Investigations of the Cavitating Behaviour of Screw Pumps**
   Jaison Philip and Abhilash Suryan (College of Engineering Trivandrum, India); T.V. Sanand and P. Unnikrishnan Nair (LPSC, India)

3. **Statistical Estimation of Nano-Fluidic Characteristics in Heterogeneous Porous Gas Diffusion Layer using Lattice-Boltzmann Method**
   Jiawen Liu, Ah-Reum Kim and Sukkee Um (Hanyang University, South Korea)
4. **Investigation on Hypersonic Wind Tunnel Heaters: Past to Present**
   Keivan Mostoufi and Hadi Rostamzadeh (Sharif University of Technology, Iran); Mohammad-Ali Jozvaziri and Amir-Hosein Hosein (Imam Hossein Jame University, Iran)
5. **The investigation of concrete pavements for energy saving in urban area**
   Muhammet Vefa Akpınar (Karadeniz Technical University, Turkey); Sedat Sevin (Gumushane University, Turkey)
6. **Experimental And Numerical Investigations Of Small Wind Turbine Airfoils For Low Reynolds Number Condition**
   Cevahir Tarhan and İlker Yılmaz (Erciyes University, Turkey)

E2: Fuel cells (Room VV)
Chair: Can Ozgur Coplan, Dokuz Eylul University, Turkey

1. **Development of a semi-empirical model for a high temperature proton exchange membrane fuel cell**
   Yagmur Nalbant and Can Ozgur Colpan (Dokuz Eylul University, Turkey); Yilser Devrim (Atilim University, Turkey)
2. **Numerical Studies of a 3D DMFC Short-Stack**
   David Ouellette and Can Ozgur Colpan (Dokuz Eylul University, Turkey)
3. **Comparison of Serpentine and Constructal Theory Based Flow Fields in DMFCs**
   Hadi Ganjehsarabi (Erzincan University, Turkey); David Ouellette (University of Toronto Institute for Sustainable Energy, Canada and Dokuz Eylul University, Turkey); Mustafa Ercelik and Can Ozgur Colpan (Dokuz Eylul University, Turkey)
4. **Three Dimensional and Two Phase Modeling of a Flowing Electrolyte – Direct Methanol Fuel Cell**
   Faruk Atacan, David Ouellette and Can Ozgur Colpan (Dokuz Eylül University, Turkey)
5. **A Renewable Energy Based and Integrated Hydrogen Energy System for Residential Applications**
   F. Sorgulu and I. Dincer (University of Ontario Institute of Technology, Canada)

G1: Thermal systems, Components & Applications (A100)
Chair: Manuel Romero, IMDEA Energy Institute, Spain

1. **A feasibility study of Organic Rankin Cycle (ORC) power generation using thermal and cryogenic waste energy on board an LNG passenger vessel**
   Emmanouil-Loizos Tsougranis and Dawei Wu (Newcastle University, United Kingdom)
2. **Performance analysis of an integrated solar-based power generation plant using nanofluids**
   Mohamed Gadalla and Adnan Alashkar (American University of Sharjah, UAE)
3. **Investigations of the thermal performance of a cylindrical wicked heat pipe**
   Kods Grissa, Adel Benselama and Yves Bertin (Institut PPRIME, France); Zied Lataoui and Abdelmajid Jemni (University of Monastir, Tunisia)
4. **Experimental study on a thermoacoustic refrigerator driven by a cascade thermoacoustic engine**
   Patcharin Saechan (King Mongkut's University of Technology North Bangkok, Thailand); Isares

Dhuchakallaya (Thammasat University, Thailand)

5. **Self-healing distribution network design with renewable power sources considering adaptive relay protection**
   Mehmet Tan Turan, Yavuz Ates and Erdin Gokalp (Yildiz Technical University, Turkey)
6. **Thermodynamic analysis of a refrigeration system operating with R1234yf refrigerant**
   Vedat Oruç and Atilla G. Devecioğlu (Dicle University, Turkey)

H2: Exergy & Energy analysis (A101)
Chair: Kristian Lenić, University of Rijeka, Croatia

1. **Exergetic optimization of solar air heater having chamfered-rib-groove roughness on absorber plate**
   Apurba Layek (National Institute of Technology Durgapur, India)
2. **Exergetic Improvement Potential Analysis of a Solar Photovoltaic Module Considering Irreversibilities and Loses**
   Mehmet Özalp and Mutlucan Bayat (Karabuk University, Turkey); Cantekin Ulukaya (Ulukaya Enerji Mühendislik Company, Turkey)
3. **The energy and exergy analyses of a newly designed solar air collector**
   Atilla G. Devecioğlu, Vedat Oruç and Zafer Tuncer (Dicle University, Turkey); Ebru Kavak Akpinar (Fırat University, Turkey)
4. **Sustainability Assessment of a Solar Photovoltaic Module with Exergetic Efficiency Approach**
   Mutlucan Bayat and Mehmet Özalp (Karabuk University, Turkey)
5. **Minimization of losses in natural rubber films for dielectric energy harvesters**
   Alexandra Shakun, Essi Sarlin and Jyrki Vuorinen (Tampere University of Technology, Finland)
6. **Wind and slope contribution in a grassfire second law analysis**
   Elisa Guelpa and Vittorio Verda (Politecnico di Torino, Italy)

I2: Energy and Buildings, Energy Efficiency (A102)
Chair: Theodoros Theodosiou, Aristotle University, Greece

10. **Analysis of solar collectors application and the influence of domestic hot water consumption on energy demand in multi-family buildings with implementation of LCA methodology**
    Justyna Gołębiowska and Agnieszka Żelazna (Lublin University of Technology, Poland)
11. **Effect of Encapsulated Ice Thermal Storage System on the Cooling Cost for a Hypermarket**
    Dogan Erdemir and Necdet Altuntop (Erciyes University, Turkey)
12. **EPBD recast: The effect of embodied impact on the cost optimal levels of nearly zero energy residential buildings - A case study in Greece**
    Panagiotis Chastas, Theodoros Theodosiou, Karolos J. Kontoleon and Dimitrios Bikas (Aristotle University of Thessaloniki, Greece)

13. **Improving Energy Efficiency in a Municipal Building: Case Study of Ekurhuleni Metropolitan Municipality Buildings in South Africa**
    Johanna Pérez, Fernando Alay, Aashis Joshi, Rocío Nallim and Lucas Chacha (École des Mines de Nantes, France); Luis Rojas-Solórzano (Nazarbayev University, Republic of Kazakhstan)
14. **Numerical analysis of energy efficiency performance and noise emissions of building roof fan**
    Ivo Marinić-Kragić, Zoran Milas and Damir Vučina (University of Split, Croatia)
15. **Thermodynamic Analysis of a Planar SOFC Integrated S-CO2 Micro-Gas Turbine for Residential Applications**
    Ugur Akbulut and Adnan Midilli

Tuesday, May 16

Tuesday, May 16, 10:30 - 12:00

B3: Fuels and combustion technology (A301)

Chair: Yunus Emre Yüksel, Afyon Kocatepe Universitesi ANS Kampusu Egitim, Turkey

1. **Active modular internal combustion engine system concept analysis**
   Nikola Matulić, Gojmir Radica and Sandro Nižetić (University of Split, Croatia)
2. **Increasing the efficiency of the cylinder gas exchange at the gasoline engine at part load by using double exhaust valve operation**
   Ante Kozina, Gojmir Radica and Sandro Nižetić (University of Split, Croatia)
3. **Microwave ignited combustion-Exergy depending on dielectric qualities of Coal Types and Ash Minerals**
   Yıldırım İsmail Tosun (Şırnak University, Turkey)
4. **Thermodynamic Assessment of a novel geothermal energy based hydrogen production process**
   Yunus Emre Yuksel (Afyon Kocatepe University, Turkey); Murat Ozturk (Suleyman Demirel University, Turkey); Ibrahim Dincer (University of Ontario Institute of Technology, Canada)
5. **Environmental impact categories of hydrogen and ammonia driven transoceanic**
   Yusuf Bicer and Ibrahim Dincer (University of Ontario Institute of Technology, Canada)

D2: Sustainable development, energy planning, energy management (A102)

Chair: Teocharis Tsoutsos, Technical University of Crete, Greece

1. **Analyzing statistically the energy consumption and production patterns of European REScoop members: Results from the H2020 project REScoop Plus**
   Charilaos Akasiadis, Georgios Chalkiadakis and Michail Mamakos (Technical University of Crete, Greece); Nikolaos Savvakis and Theocharis Tsoutsos (Technical University of Crete, Greece); Thomas Hoppe (Delft University of Technology, The Netherlands); Frans Coenen (University of Twente, The Netherlands)
2. **Impact assessment of sustainable mobility in touristic cities of Europe: The CIVITAS DESTINATIONS approach on energy, environment and economy**
   Stavroula Tournaki, Theocharis Tsoutsos, Vassias Mathioudakis and Eleni Farmaki (Technical University of Crete, Greece)
3. **Biomass as a renewable energy option in electricity generation: Trakya Region case study**
   Betül Özer and Sinem Bayar (Kırklareli University, Turkey)

4. **Cost Modelling for Gasification of Turkish Lignite, Şırnak Asphaltite and Agricultural Biowaste in Fluidized Bed for Power Generation**
   Yıldırım İsmail Tosun (Şırnak University, Turkey)
5. **On-Grid PV Opportunities in University Campuses: A Case Study at Nazarbayev University in Astana, Kazakhstan**
   Daniyar Aitkulov, Zhuldyz Assylova, Elnara Suanbekova and Luis Rojas-Solórzano (Nazarbayev University, Kazakhstan)
6. **Utilisation of Fuzzy Multicriteria Method for Selection of Energy Alternatives for Turkey**
   Hasan Hüseyin Turan (Qatar University, Qatar); Hikmet Erbıyık and Ümit ÜNVER (University of Yalova, Turkey)

E3: Fuel cells (Room VV)
Chair: Hadi Ganjehsarabi, Erzincan University, Turkey

1. **Development of hydrogen production by liquid phase plasma process of water with Ni-TiO2/carbon nanotube photocatalysts**
   Sangmin Jeong, Kyong-Hwan Chung, Heon Lee and Sang-Chul Jung (Sunchon National University, Korea); Young-Kwon Park (University of Seoul, Korea)
2. **New concentrated solar power plants based on fuel cells**
   Elena Díaz, Laura Martín, Michael Epstein, Manuel Romero and José González-Aguilar (IMDEA Energy Institute, Spain)
3. **Analysis and Performance Assessment of NH3 and H2 fed SOFC with Proton-Conducting Electrolyte**
   Yildiz Kalinci (Dokuz Eylul University, Turkey); Ibrahim Dincer (University of Ontario Institute of Technology, Canada and Yildiz Technical University, Turkey)
4. **Fabrication of PEO and Nafion nanofibers for PEM fuel cells by the forcespinning technique**
   Yu-Han Huang and Min-Hsing Chang (Tatung University, Taiwan)

F3: Energy storage, CO2 issues, Environment (A100)
Chair: Ilhami Yildiz, Dalhousie University, Canada

1. **Effect of Contamination in Cooling Water Circuit and in fuel of Main Engine on Safety Valve and Funnel of Vessels**
   Munir Suner (ITU Maritime Faculty, Turkey); Tankut Yildiz (Alsancak Academy, Turkey)
2. **Electrochemical oxidation of sulphites by DWCNTs, MWCNTs, higher fullerenes and manganese**
   Dzhamal Uzun, George Pchelarov, Ognian Dimitrov, Sasho Vassilev and Willi Obretenov (Institute of Electrochemistry and Energy Systems, Bulgaria); Elena Razkazova-Velkova, Ljutzkan Ljutzkanov, Nadezhda Dermendzhieva and Konstantin Petrov (Institute of Chemical Engineering, Bulgaria)
3. **Thermodynamic Analysis of Sensible Thermal Energy Storage into PET Bottles Filled with Water**
   Dogan Erdemir and Necdet Altuntop (Erciyes University, Turkey)
4. **Porous hard carbon prepared from polymeric precursor for hydrogen storage**
   Hye-Min Lee, Soo-Jin Park and Young-Jung Heo (Inha University, Korea); Byung-Joo Kim (Korea

Institute of Carbon Convergence Technology, Korea); Kay-Hyeok An (Jeonju University, Korea); Sang-Chul Jung (Sunchon National University, Korea)

5. **Effect of electrolyte concentration on the electrochemical properties of the perovskite-type oxide LaGaO3 used as a novel anode material for Ni-MH secondary batteries**
   Abbes Kaabi, Mohamed Tliha, Chokri Khaldi and Jilani Lamloumi (University of Tunis, Tunisia); Abdessalam Dhahri (University of Monastir, Tunisia)

H5: Exergy & Energy analysis (A101)
Chair: Canan Acar, Bahcesehir University, Turkey

1. **Energy and exergy analysis of biodiesel-biogas dual-fuel engine**
   Saket Verma, S.C. Kaushik and L.M. Das (Indian Institute of Technology (IIT) Delhi, India)
2. **Exergy Analysis of Combined Solar Thermal Power Plant with a Hydrogen Production Process**
   Urška Novosel and Jurij Avsec (University of Maribor, Slovenia)
3. **Thermodynamic and thermoeconomic analyses and optimization of basic and regenerative triple-evaporator combined power and refrigeration cycles for different applications**
   Hadi Rostamzadeh and Keivan Mostoufi (Sharif University of Technology, Iran); Mohammad Ebadollahi and Majid Amidpour (K.N. Toosi Uinversity of Technology, Iran); Hadi Ghaeb (Mohaghegh Ardabili Uinversity, Iran)
4. **Optimization of Energy Cost Sea Water Desalinization by Reverse Osmosis: Case of Bousmail Station in Algeria.**
   Souad Bouzid-Lagha and Yacine Matrouh (University of Sciences and Technologies Houari Boumediene, Algeria)
5. **Exergy analysis of thermally interconnected manufacturing processes**
   Jella Winterling, Frank Dammel and Peter Stephan (Institute for Technical Thermodynamics, Germany)

PT3: Poster Presentations (Room MV)
Chair: Toni Perković, University of Split, Croatia

1. **The investigate of concrete pavements for energy saving in urban area**
   Muahmmet Vefa Akpınar (Karadeniz Technical University, Turkey); Sedat Sevin (Gumushane University, Turkey)
2. **Evaluation of the thermal and visual comfort: strategies bioclimatic in office buildings**
   David Carlos Avila (University of Guadalajara, Mexico)
3. **Criteria and indicators for the development of sustainable tourist sites**
   Silvia Arias Orozco (University of Guadalajara, Mexico)
4. **Performance of supercapacitors based on different electrolytes from polymeric precursor-based activated hard carbons: III. Physical activation mechanism and electrochemical properties**
   Jin Baek and Byung-Joo Kim (Chonbuk National University, South Korea); Jae-Seung Roh (Kumoh National University of Technology, South Korea)
5. **Finding The Losses of a Special Squirrel Cage Induction Motor**

Mine Setsöz (Anadolu University, Turkey); Mehmet Kurban (Bilecik University, Turkey)

6. **Reduced graphene oxide@Cu6Sn5 nanocomposite anode electrodes for high-performance lithium ion batteries**
   Mustafa Guzeler, Aslihan Guler, Deniz Nalci, Mustafa Mahmut Singil, Engin Alkan, Mucahit Dogan, Mehmet Oguz Guler and Hatem Akbulut (Sakarya University, Turkey)

Tuesday, May 16, 14:00 - 15:30

A3: Solar energy and applications (A106)

Chair: Ivan Marasović, University of Split, Croatia

1. **Evaluation of the Desiccant Cooling System and Solar Collectors Application as Regeneration Tool, Case Study: Iran**
   Mojtaba Tahani and Narek Babayan (University of Tehran, Iran); Foroogh Mohandespour (Islamic Azad University, Iran); Mohammad Ali Fallahian (TAHA Company, Iran); Morteza Tahani (Semnan, Iran)
2. **Performance Analysis of Solar Assisted Multi-Effect Absorption Cooling Systems Using Nanofluids: A Comparative Analyses**
   Tahir A. H. Ratlamwal (Cyprus International University Turkey); Muhammad Abid (Shaheed Zulfikar Ali Bhutto Institute of Science and Technology, Pakistan)
3. **Dynamic simulation of a phase change material storage tank connected to a parabolic solar concentrator**
   Elias Abdenour, Gouasmi Belkacem, Boumeddane Boussad and Hamid Abdelkader (Faculty of Technology, Algeria)
4. **Solar water heating for aquaculture in cold climates: A case study of Finland**
   Michael Anees, Maresa Bussa, Cristina Dominguez, Marco Duran and Mandar Kadam (École des Mines de Nantes, France); Luis Rojas-Solórzano (Nazarbayev University, Kazakhstan)
5. **Effectiveness and prospects of implementing a solar water heating system in Astana, Kazakhstan**
   Askar Absemetov, Medet Mukushev, Alibek Yerubayev, Zarina Zhumanalina, Luis Rojas-Solórzano (Nazarbayev University, Kazakhstan)

F2: Energy storage, CO2 issues, Environment (A100)

Chair: Rami El-Emam, IAEA, Canada and Serge Nyamsi, University of the Western Cape, South Africa

1. **A Study on pesticide use pattern among farmers in Haryana, India**
   Nitu Sindhu and Joginder Singh Malik (CCS Haryana Agricultural University, India)
2. **Experimental investigation of the multidisciplinary electric-thermal-mechanical interaction of Lithium-ion battery**
   Lijun Zhang, Hongzheng Cheng, Dejian Meng and Zhuoping Yu (Tongji University, China)
3. **Investigation of cultivation and wastewater treatment potential of microalgae and cyanobacteria in controlled environment minkery wastewater**
   Yuchen Ji and Ilhami Yildiz (Dalhousie University, Canada)
4. **Comparative analysis of four analytical methods for measuring microalgae and cyanobacteria biomass growth in controlled environment minkery wastewater**
   Yuchen Ji, Ilhami Yildiz, and Craig MacEachern (Dalhousie University, Canada)

5. **DFT Simulation of Hydrogen Storage on Manganese Phosphorous Trisulphide (MnPS3)**
   Iván Cabria (Universidad de Valladolid, Spain); A. El-Meligi (AMA International University, Bahrain and National Research Center, Egypt)

6. **Thermal performance assessment of thermal energy storage systems using composite phase change materials**
   Mustafa Asker (Adnan Menderes University, Turkey); Ersin Alptekin and Mehmet Akif Ezan (Dokuz Eylul University, Turkey); Hadi Ganjehsarabi (Erzincan University, Turkey)
7. **Synthesis of Tungsten Oxide doped TiO2 Photocatalyst using LPP method and Its Photocatalytic Activity**
   Heon Lee, Sang-Chul and Sung-Jin Lee (Sunchon National University, Korea); Byung-Joo Kim (Korea Institute of Carbon Convergence Technology, Korea); Kay-Hyeok An (Jeonju University, Korea); Young-Kwon Park (University of Seoul, Korea)

G3: Thermal systems, Components & Applications (A101)
Chair: Umit Unver, Yalova University, Turkey

1. **Experimental investigation of MgOHCl hydrochlorination for decreased power consumption of the four-step Magnesium-Chlorine Cycle**
   Hasan Ozcan (Karabuk University, Turkey); Ibrahim Dincer (University of Ontario Institute of Technology, Canada)
2. **Effect of Design Changes in the Primary Heat Exchanger of a Combi-Boiler on the Performance and Emission Parameters**
   O. Faruk Atacan and Can Ozgur Colpan (Dokuz Eylül University, Turkey); K.Zafer Turhan and H. Murat Altay (Bosch Termoteknik Isıtma ve Klima Sanayi Ticaret Anonim Şirketi, Turkey)
3. **Thermal modelling of a plate type heat exchanger based biomass fired regenerative organic Rankine cycle**
   Ozum Calli (Izmir University of Economics, Turkey); Can Ozgur Colpan (Dokuz Eylul University, Turkey); Huseyin Gunerhan (Ege University, Turkey)
4. **Design of a renewable assisted absorption cooling system for gas turbine intake air cooling**
   Umit Unver and Gokcen Ozkara (University of Yalova, Turkey); Elif M. Kalyoncu (Celal Bayar University, Turkey)
5. **A Comparative Study of Evolutionary Algorithms for Optimization of Fin-and-tube Heat Exchangers**
   Vladimir Glažar, Marko Perčić, Anica Trp and Kristian Lenić (University of Rijeka, Croatia)

H3: Exergy & Energy analysis (Room VV)

Chair: Zdeslav Jurić, University of Split, Croatia and Javani Nader, Yildiz Technical University, Turkey

1. **Exergy Analysis of Steam Boiler in an Integrated Iron & Steel Plant**
   Mutlucan Bayat and Mehmet Özalp (Karabuk University, Turkey); Güray Yıldız (Kardemir Iron & Steel Industry Trade and Manufacturing Company, Turkey)
2. **Energy and exergy analyses of a novel plate heat exchanger with multi-scale fluidic network**
   Cyril Pistoresi, Yilin Fan and Lingai Luo (Université de Nantes, France)
3. **The impact of conductor material on the critical diameter of particle produced in overhead line conductor clashing**
   Matislav Majstrović (Energy Institute Hrvoje Požar, Croatia); Ivan Ramljak ("Logos centar" College Mostar, BiH); Elis Sutlović and Sandro Nizetić (University of Split, Croatia)
4. **Exergetic Optimization of a Parabolic Trough Solar Collector**
   Ceyda Gunay, Anil Erdogan and Can Ozgur Colpan (Dokuz Eylul University, Turkey)
5. **Dynamic exergy analysis for the built environment: fixed or variable reference?**
   Valentina Bonetti (University of Strathclyde, United Kingdom)
6. **Entropy generation transient analysis of a grassfire event through numerical simulation**
   Elisa Guelpa and Vittorio Verda (Politecnico di Torino, Italy)
1. **Modeling and performance comparison of shell and tube heat exchanger used in subcritical and supercritical organic Rankine cycles**
   Anil Erdogan and Can Ozgur Colpan (Dokuz Eylul University, Turkey)

I3: Energy and Buildings, Energy Efficiency (A102)

Chair: Vlasta Zanki, HEP ESCO, Croatia and Thomas Lützkendorf, Karlsruhe Institute of Technology, Germany

1. **Effective envelope insulation and heating strategies in apartment buildings in mid-temperate regions: A case study of Nova Scotia, Canada**
   Hamid Jamil, Danurachman Krishana, Jesus Rubio and Gabriela Tristan (Ecole des Mines de Nantes, France); Luis Rojas-Solórzano (Nazarbayev University, Kazakhstan)
2. **Comparative study on energy comsumption in hospitals of Spain**
   Justo García-Sanz-Calcedo, Alfonso G. González and David R. Salgado (University of Extremadura, Spain)
3. **LED Lighting for Healthcare Facilities**
   Canan Perdahci (University of Kocaeli, Turkey)
4. **Energy and economic analysis of an auditorium's air conditioning system with heat recovery in various climatic zones**
   Konstantinos T. Papakostas, Ioannis Tiganitis and Agis M. Papadopoulos (Aristotle University of Thessaloniki, Greece)

5. **From energy demand calculation to life cycle environmental performance assessment for buildings: status and trends**
   Thomas Lützkendorf and Maria Balouktsi (Karlsruhe Institute of Technology, Germany)
6. **Numerical simulation of building envelopes with phase change material**
   Mustafa Asker (Adnan Menderes University, Turkey); Ersin Alptekin, Ayça Tokuç and Mehmet Akif Ezan (Dokuz Eylul University, Turkey); Hadi Ganjehsarabi (Erzincan University, Turkey)

Wednesday, May 17

Wednesday, May 17, 11:00 - 12:30

B4: Fuels and combustion technology (A102)

Chair: Gojmir Radica, University of Split, Croatia

1. **Methanation and Pyrolysis of Animal and Human manure with Asphaltite for Power Generation**
   Yıldırım İsmail Tosun (Şırnak University, Turkey)
2. **Syngas production by biomass gasification of solide waste**
   Boumeddane Boussad and Elias Abdenour (University BLIDA 1, Algeria)
3. **Comparative Assessment of Two Integrated Systems Utilizing Liquefied Ammonia as a Fuel for Vehicular Applications**
   M.F Ezzat (Minia University, Egypt); Ibrahim Dincer (University of Ontario, Canada)
4. **Studying the Effect of Molecular Diffusion and Schmidt Number on Simulation of MILD Combustion Regime of CH4/H2 Blended Fuel**
   Ali Salavati-Zadeh, Vahid Esfahanian, Seyed Bahram N. Nourani, Mobin Mohammadi and Hossein Saeed (University of Tehran, Iran)

F4: Energy storage, CO2 issues, Environment (A100)

Chair: Ivan Tolj, University of Split, Croatia

9. **Raw material conservation and pollutants emissions reduction by coprocessing of wastes in cement rotary kilns**
   Ilyes Ghedjatti, Mohamed Tebbal and Khadidja Safer (University of Sciences and Technology of Oran Mohamed Boudiaf (U.S.T.O.M.B), Algeria); Philippe Martin and Boudjelal Kadi Hanifi (Lafarge Ciment d'Oggaz – L.C.O, Algeria)
10. **Enhanced Electrochemical Performance of Graphene Based Intermetallic Ni3Sn4 Anode Electrodes for Lithium Ion Batteries**
    Mehmet Oguz Guler, Mustafa Guzeler, Aslihan Guler, Deniz Nalci, Mustafa Mahmut Singil, Engin Alkan, Mucahit Dogan and Hatem Akbulut (Sakarya University, Turkey)
11. **Kinetic model development and bi-objective optimization of levulinic acid production from sugar cane bagasse**
    Aramide Adesina and David Lokhat (University of KwaZulu-Natal, South Africa)
12. **Selection of metal hydrides-based thermal energy storage: energy storage efficiency and density targets**
    Serge Nyallang Nyamsi and M. Lototskyy (University of the Western Cape, South Africa); Ivan Tolj (University of Split, Croatia)

H4: Exergy and Energy analysis (Room VV)

Chair: Jurij Avsec, University of Maribor, Slovenia

2. **Urban heat island effects of concrete road and asphalt pavement roads**
   Muhammet Vefa Akpınar (Karadeniz Technical University, Turkey); Sedat Sevin (Gumushane University, Turkey)
3. **Exergy analysis of an unglazed flat-plate PhotoVoltaic/Thermal (PVT) solar collector**
   Francesco Calise (University of Naples Federico II, Italy); Rafal Damian Figaj (University of Naples Parthenope, Italy); Laura Vanoli (University of Cassino and Southern Lazio, Italy)
4. **Comparative Energy and Exergy Studies of Combined CO2 Brayton-Organic Rankine Integrated with Solar Tower Power Systems**
   Abdullah A. AlZahrani and Ibrahim Dincer (University of Ontario Institute of Technology, Canada)
5. **Statistical approach on exergyanalysis and optimization of binary distillation column**
   Akshaya Sundar, A. Kannan (Indian Institute of Technology, India)

I4: Energy and Buildings, Energy Efficiency (A101)

Chair: Efrosini Giama, Aristotle University of Thessaloniki, Greece and Tomasz Colewa, University of Lublin, Poland

1. **Energy and thermal modelling of building façade integrated photovoltaics**
   Konstantinos Ordoumpozanis (University of Western Macedonia, Greece); Theodoros Theodosiou and Katerina Tsikaloudaki (Aristotle University of Thessaloniki, Greece); Dimitrios Bouris (National Technical University of Athens, Greece)
2. **Thermoeconomic analysis and evaluation of a Building Integrated Photovoltaic (BIPV) system based on actual operational data**
   Arif Hepbasli, Mustafa Araz and Emrah Biyik (Yasar University, Turkey); Runming Yao, Mehdi Shahrestani, Emmanuel Essah and Li Shao (The University of Reading, UK); Armando C. Oliveira (University of Porto, Portugal); Teodosio del Caño, Elena Rico and Juan Luis Lechón (Onyx Solar Energy S.L., Spain)
3. **Life Cycle Analysis (LCA) and Life Cycle Cost Analysis (LCCA) of Phase Change Materials (PCM) for thermal applications: A review**
   Elli Kyriaki, Christina Konstantinidou, Effrosyni Giama and Agis M. Papadopoulos (Aristotle University of Thessaloniki, Greece)
4. **Comfort sensation vs Environmental Aspects in Office Buildings**
   Panagiota Antoniadou, Effrosyni Giama and Agis M. Papadopoulos (Aristotle University of Thessaloniki, Greece); Santro Nižetić (University of Split, Croatia)
5. **Improving the energy and environmental efficiency of the hotel sector**
   Effrosyni Giama, Dimitris Karakasidis and Agis Papadopoulos (Aristotle University of Thessaloniki, Greece)
6. **Life Cycle Analysis of Solar Thermal Systems in hotel buildings**
   Effrosyni Giama, Elli Kyriaki and Agis Papadopoulos (Aristotle University of Thessaloniki, Greece)

7. AUTHOR WORKSHOP BY WILEY&SONS

Wednesday, May 17, 09:30 - 10:30 (A102)

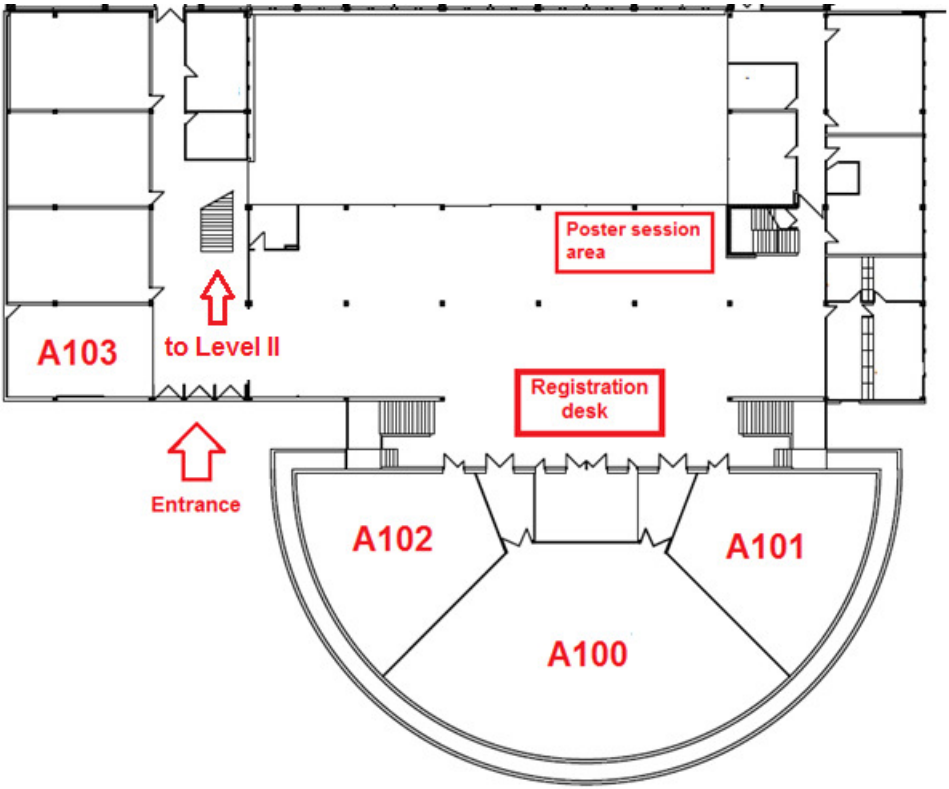
During the IEEES-9 conference, publisher John Wiley and Sons Ltd and the International Journal of Energy Research will present a free workshop on journal publishing for early career researchers, academics and PhD students. During this session Ibrahim Dincer (Professor at the University of Ontario and the Editor in Chief of the International Journal of Energy Research) and Peter Creaton (Journals Publishing Manager at Wiley) will talk you through the writing and publishing of a journal article using current examples, and providing you with helpful hints and tips.

Explore the following topics:

- So you're thinking of writing a paper? Find out how and where to begin the writing process, and how to choose the right journal.
- How to write? We'll guide you through what editors are looking for and how to tailor your writing accordingly.
- The publishing and peer review processes. Everything you need to know about the publishing process.
- Your paper has published, what next? Learn how to increase the exposure of your paper.

8.MAPS

Level I



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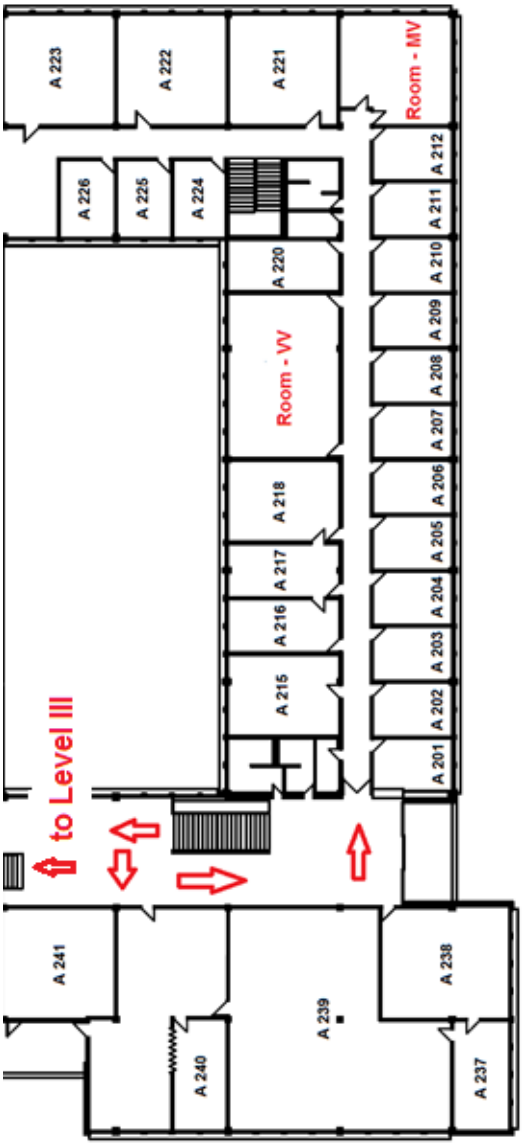
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