

SUSTAINABLE ENERGY AND EMPOWERING THE FUTURE CONFERENCE 2026

Technical Programme



21 - 22
January



University of Hafr Al Batin
Kingdom of Saudi Arabia

Day 1

Date:

January 21, 2026



Agenda	Time
Welcome Address	9:10 AM
Recitation of the Holy Qur'an	9:15 AM
University Address	9:17 AM
Visual Presentation-1	9:25 AM
Plenary Session-1	9:40-10:40 AM
Scientific Session 1 (Main Theater)	10:45-12:05 PM
Scientific Session 3 (Theater 2)	10:45-12:05 PM
Poster Presentation / Exhibition Visit / Break	12:05 PM
Scientific Session 2 (Main Theater)	1:00-2:00 PM
Scientific Session 4 (Theater 2)	1:00-2:00 PM

Lunch Break

Workshops (Hall A)	Time & Venue
By Hafr Al Batin Municipality	10:30 AM - 11:20 AM
By Saudi Youth Association For Sustainability 1	1:00 PM - 1:50 PM

Plenary Sessions # 1

(Main Theater)

Event	Time
Plenary Sessions #1 / Keynote Talks (Session Chairs) Prof. Housseem Boucekara & Dr. Ibrahim Alzahrani	9:45 AM - 10:30 AM
Electrolyte-engineered in-situ formation of Mn-based cathode composite with cotton fiber-derived hierarchical porous carbon for high-performance zinc-ion hybrid supercapacitors Prof. Atif Alzahrani Director of the Research Center for Energy Systems and Renewable Energy at King Fahd University of Petroleum and Minerals	9:45 AM - 10:00 AM
High-Efficiency H ₂ Synthesis via CO ₂ Dry Reforming of Methane: A Route to Carbon Utilization Prof. Ahmed S. Al-Fatesh Professor of Chemical Engineering at King Saud University	10:00 AM - 10:15 AM
From Vision to Implementation: Pathways to a Low-Carbon and Resilient Energy Future Dr. Mohammed S. Al-Surf Saudi Sustainability Professionals Academy	10:15 AM - 10:30 AM
10 Minute Discussion	

Scientific Session #1

(Main Theater)

Venue	Session Theme
Main Theater	Hydrogen as a Sustainable Energy Carrier (Session Chairs) Prof. Ahmed S. Al-Fatesh & Dr. Dalal Alshammari

Time	Session Title & Presenter
10:45 AM - 11:05 AM	New technologies of green process for carbon dioxide conversion to chemicals Prof. Kuen-Song Lin Professor of Chemical Engineering and Materials Science Yuan Ze University-Taiwan
11:05 AM - 11:25 AM	Empowering a Net Zero Future: From Circular Bioeconomy to Sustainable Aviation Fuel Prof. Ahmed Osman Senior Lecturer in Energy Engineering, Catalytic Materials and Sustainability, University of Canterbury-UK
11:25 AM - 11:45 AM	Bridging Biomass Valorization and Methane Reforming Using Ni-Based Catalysts Toward Biofuel and Syngas Production Prof. Hanan Atia Research Scientist of chemistry Sciences Leibniz Institute for Catalysis-Germany
11:45 AM - 12:00 PM	Hydrogen bound in Methanol: Catalyst Developments and Process Designs for a full Storage and Release Cycle Dr. Erdmann Sebastian Wohlrab Head of the Heterogenous Catalytic Process Department, Leibniz Institute for Catalysis, Rostock Germany

5 Minutes Discussion

Break

Scientific Session #2

(Main Theater)

Venue	Session Theme
Main Theater	Energy efficiency and storage solutions (Session Chairs) Dr. Iftikhar Ul Hasan & Dr. Muath Alkadi

Time	Session Title & Presenter
1:00 PM - 1:20 PM	Plasma effect on the structure, morphology and catalytic activity of nano $\text{Fe}_3\text{O}_4@\text{SiO}_2@\text{TiO}_2$ Core@Shell system Prof. Zeinhom El-Bahy Professor of Materials Science and Catalysis , at Al Azhar University - Egypt
1:20 PM - 1:40 PM	Enhanced $\text{Ni}\backslash\text{ZrO}_2$ Catalysts for Methane Partial Oxidation: The Role of Al, Ti, and Y support modifiers in Syngas Production Prof. Ahmed Aidid Research Scientist of Chemical Engineering, at King Saud University
1:40 PM - 1:55 PM	Optimizing gadolinium-promoted SBA-16-supported Ni-catalysts for syngas production via dry reforming of methane Ibtisam Ali Al-Ghamdi Lab technician, Princess Noura University (PNU)

5 Minutes Discussion

Lunch Break

Scientific Session #3

(Theater-2)

Venue	Session Theme
Theater 2	Renewable energy sources and their applications (Session Chairs) Prof. Zeinhom El-Bahy & Dr. Mohammad Shoaib

Time	Session Title & Presenter
10:45 AM - 11:05 AM	Preparation and Application of Fluorinated Polyimide-Based Laser-Induced Graphene Electrodes Prof. John Zhanhu Guo Professor of Mechanical and Construction Engineering, Northumbria University - UK
11:05 AM - 11:20 AM	Solar System: Smart Robotics for Monitoring Solar Panel Performance Dr. Nouf Khalifa Ahmed Al-Saleem Assistant Professor, Imam Abdulrahman Bin Faisal University
11:20 AM - 11:35 AM	First Electronics Using One Binary Oxide for All Transistor Layers Dr. Fawza Hamoud Owaid Al-Shammari Associate Professor and Dean of the University College in Al-Nu'airiyah
11:35 AM - 11:50 AM	Investigation of Electronic, Mechanical, Optical, and Thermoelectric Properties of Stable Double Perovskites Cs ₂ K(Ga/In)I ₆ for Solar Cells and Renewable Energy Dr. Noura Dawas Mubarak Al-Khaldi Assistant professor, University of Hafr Al Batin
11:50 AM - 12:05 PM	First Principal Investigation of Physical Aspects and Hydrogen Storage Potential of double perovskite hydrides X ₂ LiBH ₆ (X = K, Rb) Dr. Hanof Dawas Alkhaldi Assistant professor, Chemistry department, Hafr Al-Batin University

Break

Scientific Session #4

(Theater-2)

Venue	Session Theme
Theater 2	Climate change mitigation and carbon emissions reduction (Session Chairs) Dr. Khaled Al Sodani & Dr. Yahya Alharthi

Time	Session Title & Presenter
1:00 PM - 1:20 PM	Synergistic role of SiO ₂ Support Modification and Samarium Promotion on Ni-Based Catalysts for Efficient Partial Oxidation of Methane Dr. Salwa Alreshaidan Associate Professor of Physical Chemistry - Catalysis, King Saud University
1:20 PM - 1:40 PM	Engineering Metal Sulfide Catalysts Heterointerfaces: From Waste to Energy via Dual-Function Urea Oxidation and Hydrogen Evolution Dr. Saba Aladeemy Assistant Professor of Physical Chemistry (Electrochemistry) at Prince Sattam bin Abdulaziz University
1:40 PM - 1:55 PM	Sustainable Valorization of Rice Agricultural Waste into Functional Materials for Catalytic Applications Prof. Esteban Mejía Group leader / Polymer Chemistry and Catalysis at the Leibniz Institute for Catalysis (LIKAT)

5 Minutes Discussion

Lunch Break

Workshops - (Hall A)

Time	Workshop Title & Instructor
10:30 AM - 11:20 AM	<p>Enhancing Energy Efficiency Through Sustainable Infrastructure: Opportunities and Challenges in the Kingdom of Saudi Arabia</p> <p>Eng. Abdulaziz Al-Dhafeeri Hafr Al Batin Municipality</p>
1:00 PM - 1:50 PM	<p>The Future of Sustainable Energy: Opportunities and Challenges</p> <p>Ms. Fatina Talal Obiad Saudi Youth Association For Sustaibility</p>

- Day 1 Concludes Here -



Day 2

Date:

January 22, 2026



Agenda	Time
Welcome Address	9:33 AM
Plenary Session 2	9:35-10:40 AM
The National Vision Session on Energy and Sustainability	10:45-11:20 AM
Address by His Excellency the Vice Rector for Graduate Studies and Scientific Research	11:20 AM
Visual Presentation-2	11:25 AM
Recognition of Guests and Success Partners / Break	11:30-11:45 AM
Scientific Session 5 (Main Theater)	12:30-1:35 PM
Scientific Session 6 (Theater 2)	12:30-1:35 PM
Announcement of Recommendations and Recognition of Participants and Conference Organizers	1:40 PM

Lunch Break

Workshops (Hall A)	Time
By Saudi Council of Engineers-SCE	10:00-10:50 AM
By Saudi Youth Association For Sustainability 2	12:40-1:30 PM

Virtual Sessions

9:30-11:10 AM

Plenary Sessions # 2

(Main Theater)

Event	Time
Plenary Sessions #2 / Keynote Talks (Session Chair) Dr. Eman Alhajji	9:35 AM - 10:30 AM (Main Theater)
Empowering the Future: AI and Digital Innovation for Sustainable Energy Prof. Essam A. Al-Ammar Professor of Electrical Energy, King Saud University	9:35 AM - 10:10 AM
From Local Vision to Global Transformation: The Importance of Renewable Energy Dr. Yahya Z. Alharthi Associate Professor in Electrical and Computer Engineering, at University of Hafr Al Batin	10:10 AM - 10:30 AM
10 Minute Discussion	
The National Vision Session on Energy and Sustainability	10:45 AM - 11:20 AM
Recognition of Guests and Success Partners	11:20 AM - 11:45 AM
Break	

Scientific Session #5

(Main Theater)

Venue	Session Theme
Main Theater	Circular economic practices in the energy sector (Session Chairs) Dr. Muath Alkadi & Dr. Raed Alharthi

Time	Session Title & Presenter
12:30 PM - 12:50 PM	Collaborative Innovation for Sustainable Energy Prof. Basheer Alshammari Senior researcher at the Institute of Advanced Materials Technology in King Abdulaziz City for Science and Technology (KACST)
12:50 PM - 1:10 PM	From Waste to Wealth: Laser-Induced 3D Graphene for Next-Generation Batteries Dr. Eman Alhajji Founder and CEO Golden Ratio Institute for Research, Development, and Innovation
1:10 PM - 1:30 PM	Renewable energy and the circular economy... a strategic partnership that shapes the future economy and strengthens the sustainability of the energy sector Prof. Mohammed Alghassab Associate Professor in Electrical and Computer Engineering, at Shaqra University

Announcement of Recommendations and Recognition of Participants and Conference Organizers

Break

Scientific Session #6

(Theater-2)

Venue	Session Theme
Theater 2	Smart grids and digital transformation in the renewable energy (Session Chairs) Dr. Abdulgafar Alfares & Dr. Sami Ibn Shamsah

Time	Session Title & Presenter
12:30 PM - 12:50 PM	Hybrid Microgrid for Islanded loads: Modeling, Optimization and Sustainability Dr. Mohammad Shoaib Associate Professor in Electrical Engineering, at University of Hafr Al Batin
12:50 PM - 1:05 PM	A Multifunctional Quantum Material: Harnessing Ba ₂ CoWO ₆ for Next-Generation Devices Prof. Bouadjemi Bouabdellah Professor Research Team, Technology and Solid's Properties Laboratory (LTSP), University of Mostaganem - Algeria
1:05 PM - 1:20 PM	Simulation-Based Evaluation of Energy Harvesting from Foot Traffic and Elevators: A Case Study of a Hotel Building Dr. Salah Alghamdi Assistant Professor, Department of Building Engineering, College of Architecture and Planning, Imam Abdulrahman Bin Faisal University
1:20 PM - 1:35 PM	Implementation of Roselle as a Dye-synthesizer for Solar Applications Dr. Manahil Elnoor Edam Mofdal Assistant Professor, Qassim University

Break

Workshop - (Hall A)

Time	Workshop Title & Instructor
10:00 AM - 10:50 AM	<p>The Role of the Saudi Council of Engineers in Regulating and Developing the Engineering Sector</p> <p>Eng. Mohammed Al-Jumah Saudi Council of Engineers (SCE)</p>
12:40 PM - 1:30 PM	<p>Empowering Youth to Lead the Future of Energy</p> <p>Ms. Fatinah Talal Obiad Saudi Youth Association For Sustaibility</p>

Virtual Sessions

Time	Session Chairs
09:30 AM - 11:10 AM	Dr. Jibrin Mohammed, Dr. Rawesh Kumar, Dr. Iftikhar UI Hasan

Time	Session Title & Presenter
9:30 AM - 9:55 AM	<p>Cost affective strontium promoted MgO supported Ni catalyst for hydrogen rich syngas production through partial oxidation of methane</p> <p>Dr. Rawesh Kumar Assistant Professor of Catalytic Material, Patna University, Bihar, India</p>

Virtual Sessions - Continued...

Time	Session Title & Presenter
9:55 AM - 10:15 AM	<p>Mass Transfer Enhancement for Gas Diffusion Electrode Based Electrochemical Reactors</p> <p>Prof. Terence Xiaoteng Liu Professor of Renewable energy, at Northumbria University -UK</p>
10:15 AM - 10:35 AM	<p>Simple oxide catalyzed aldol-condensation of furfural with acetone for synthesis of bio-jet fuel intermediates</p> <p>Dr. Asima Sultana Senior Researcher Solid Catalytic Process Research Group, Chemical Process Research Division, National Institute of Advanced Industrial Science and Technology (AIST), Japan</p>
10:35 AM - 10:55 AM	<p>Catalyst 4.0 for Green Hydrogen Production: Quaternary Co₃O₄-NiO-Fe₂O₃-Ag Nanocomposites for Efficient Seawater and Wastewater Electrolysis</p> <p>Prof. Gowhar A. Naikoo Associate Professor of Chemistry, Department of Mathematics and Sciences , College of Arts and Applied Sciences, Dhofar University, Salalah, Oman</p>
10:55 AM - 11:15 AM	<p>Environmental Impact of the Fashion Industry and the Role of Sustainable Textile Technologies</p> <p>Dr. Ashgan Abdel Fattah Mohamed Al-Baha University, Applied College, Sewing and Tailoring Department, Assistant Professor of printing, Dyeing and finishing of Textiles</p>
11:15 AM - 11:35 AM	<p>AI-Enabled MPPT-Integrated PV System for Smart Battery Storage and Wireless Power Distribution</p> <p>Md Sabab Late Md Jahangir Late Akkel Ali Hawladar Jamil, Student, Bangladesh University of Business and Technology</p>

- Day 2 Concludes & Closing Ceremony -