ANNUAL REPORT

2025

Ege University
Solar Energy Institute

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EGE UNIVERSITY

SOLAR ENERGY INSTITUTE

ANNUAL REPORT

2025

Prepared By:

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Harun Gümüş
Melek Ersoy
Gülay Zeynep Günel
Ayşe İsmet Çalış

CONTENTS

CHAIR'S MESSAGE

Welcome to the Annual Report 2025 of the Solar Energy Institute (EGE-SOLAR). Our core mission is to advance society through progressive education and impactful research. This year's report highlights the urgent demand for sustainable energy strategies in response to global challenges such as climate change and environmental degradation.

Despite the considerable difficulties experienced over the past year, our academic community has continued to work collectively toward envisioning and shaping a more sustainable future. We remain confident that rigorous research and technological innovation can generate meaningful societal and environmental benefits, even in periods marked by rapid transformation and economic volatility.

Since its establishment, the Solar Energy Institute has maintained a leading position in renewable energy education and research. Through collaborations with universities, research centers, and industry partners both nationally and internationally, we strive to develop applied, forward-looking solutions addressing global energy challenges.

At EGE-SOLAR, we foster an intellectually vibrant and interdisciplinary research ecosystem. Our scholars integrate diverse expertise to produce novel concepts, technologies, and methodologies aimed at enhancing environmental sustainability and improving quality of life.

This report presents the scientific outputs and innovative developments achieved by our academic staff over the past year. It showcases our most recent findings and contributions, reaffirming our institutional commitment to advancing sustainable energy systems through intelligent and environmentally responsible approaches.

In the context of the accelerating climate crisis, the transition toward sustainable energy systems is no longer optional but imperative. The Solar Energy Institute recognizes this urgency and remains devoted to pioneering advanced solar energy solutions capable of meeting evolving energy demands. By expanding investments in renewable technologies, reducing reliance on fossil fuels, and mitigating greenhouse gas emissions, we aim to contribute to a resilient and sustainable energy future. We are proud to lead initiatives in this critical domain and remain optimistic about the expanding opportunities within the renewable energy sector.

PROF. DR. CEYLAN ZAFER

Ege University Solar Energy Institute

ABOUT US:

Ege University Solar Energy Institute serving as a research and education centre for renewable energy resources such as solar power, biomass, wind and geothermal is established in 1978. It is the first and only institute leading these fields in Turkey. In accordance with the order from Council of Higher Education that taken into account on 23 December 1982, two departments have structured; namely Energy and Energy Technology. As of 2025, 29 academic, 8 administrative personnel, and 10 staff serve in our institute. Currently, there are 59 masters and 47 doctorate researchers are proceeding with their studies.

OUR MISSION & VISION

We are aspiring to be an international institute holding up to universal standards in terms of generating information and technological development regarding energy resources and their utilization, with the objective of having a say in national energy policies by setting an example in our field through constant improvement.

Our mission is to produce information regarding renewable and clean energy resources, developing technologies, apply and extend the scope of these technologies by providing education, research and consultancy services to universities, research centers, industrial establishments and the society in general in order to achieve a sustainable environment.

OUR TEAM

ENERGY TECHNOLOGY DEPARTMENT

Chair

Prof. Dr.

Ceylan ZAFER

Prof. Dr.

Günnur KOÇAR

Prof. Dr.

Hayati OLGUN

Prof. Dr.

Önder ÖZGENER

Prof. Dr.

Engin KARATEPE

Vice Chair

Prof. Dr.

Melih Soner ÇELİKTAŞ

Assoc. Prof. Dr.

Numan Sabit ÇETİN

Assoc. Prof. Dr.

Koray ÜLGEN

Assoc. Prof. Dr.

Mete ÇUBUKÇU

Assist. Prof. Dr.

Ahmet ERYAŞAR

Assist. Prof. Dr.

Hasan SARPTAŞ

Assist. Prof. Dr.

Halide DİKER

Assist. Prof. Dr.

Özben KUTLU

Assist. Prof. Dr.

Adem MUTLU

Res. Assist. Dr.

Ayşe İsmet ÇALIŞ

Res. Assist. Dr.

Fırat SALMANOĞLU

Res. Assist.

Özkan NUHOĞLU

Res. Assist.

Tayfun Mustafa Tavman

Res. Assist.

Gülay Zeynep GÜNEL

Res. Assist. Dr.

Şefik ARICI

Lect. Dr.

ASİYE GÜL BAYRAKCI ÖZDİNGİŞ

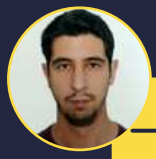
OUR TEAM
ENERGY DEPARTMENT

Prof. Dr.
Mustafa GÜNEŞ

Assoc. Prof. Dr.
Ahmet YILANCI

Lect.
Melek ERSOY

Assist. Prof. Dr.
Bircan DİNDAR



Res. Assist. Dr.
Alper EKİCİ

Prof. Dr.
Şule ERTAN ELA

Assist. Prof. Dr.
Neslihan ÇOLAK

Res. Assist.
Harun GÜMÜŞ

Vice Chair
Assoc. Prof. Dr.
Burak GÜLTEKİN

Res. Assist.
İpek Gülçin UYSAL

OUR TEAM

ADMINISTRATIVE AND SUPPORT STAFF

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Institute Secretary

Hülya Bardakçı
Chair Assistant

Duygu Erol
Student Affairs

Nurcan Arvallı
Student Affairs

Erhan Aslan
Personnel

Erol Suna
Accounting

Gülbahar Yılmaz
Circulating Capital

Faruk Koç
Technician

Ali Adil Arvallı
Electrician

Galip Turan
Electronics Techician

Hüseyin Aykurt
Staff

Serkan Tekin
Staff

Hakan Çetin
Staff

Şeref Şimşek
Staff

Nedret Keret
Staff

Ahmet Bayazit
Staff

Yusuf Ziya Turgut
Personnel

Sinem Onat
Personnel

FELLOWS, GRANTS, HONORS

Name	Programme
Gülşah Yılmaz	TUBITAK - 2211-C National PhD Scholarship Program in the Priority Fields in Science and Technology TÜBITAK 1001 - The Scientific and Technological Research Projects Funding Program Research Universities Support Program (YÖK/ADP)
Gökhan Devekıran	TUBITAK - 2211-C National PhD Scholarship Program in the Priority Fields in Science and Technology
Yasemin Özliman Farımaz	TUBITAK - 2211-C National PhD Scholarship Program in the Priority Fields in Science and Technology TÜBITAK 1001 - The Scientific and Technological Research Projects Funding Program
Harun Gümüş	TÜBİTAK-Clean Energy Transition Partnership-CETPartnership Era-Net Cofund projects
Betül Aksoy	TÜBITAK 1001 - The Scientific and Technological Research Projects Funding Program TUBITAK - 2210-C National MSc/MA Scholarship Program in the Priority Fields in Science and Technology
Gülay Zeynep Günel	TUBITAK - 2211-C National PhD Scholarship Program in the Priority Fields in Science and Technology
Toprak Efe Ayaz	2247 - C STAR-Intern Researcher Scholarship Programme
Tamer Yeşil	2218 - National Postdoctoral Research Fellowship Program
Hatice Arıcı Kahyaoğlu	TUBITAK - 2211-C National PhD Scholarship Program in the Priority Fields in Science and Technology
Burak KAHRAMAN	Ministry of Development
Damla Şahin	TUBITAK - 2211-C National PhD Scholarship Program in the Priority Fields in Science and Technology TÜBITAK 1001 - The Scientific and Technological Research Projects Funding Program Research Universities Support Program (YÖK/ADP)
Müge ÖZTÜRK	TUBITAK - 2211-C National PhD Scholarship Program in the Priority Fields in Science and Technology

FELLOWS, GRANTS, HONORS

Name	Programme
Dilek Çırak	Ministry of Development TUBITAK - 2211-C National PhD Scholarship Program in the Priority Fields in Science and Technology
Sevdiye Başak TURGUT	Ministry of Development TUBITAK - 2211-C National PhD Scholarship Program in the Priority Fields in Science and Technology
Semra Koçyiğit	TUBITAK - 2211-C National PhD Scholarship Program in the Priority Fields in Science and Technology
Aslı Birtürk	TUBITAK - 2211-C National PhD Scholarship Program in the Priority Fields in Science and Technology TÜBITAK 1001 - The Scientific and Technological Research Projects Funding Program
Destan Toksöz	TÜBITAK 1001 - The Scientific and Technological Research Projects Funding Program
Halil Utku Peker	TÜBITAK 1001 - The Scientific and Technological Research Projects Funding Program
Barış Kıyak	ICT ERA-NET
Necip Ali Tuna	TÜBITAK 1001 - The Scientific and Technological Research Projects Funding Program
İpek Gülçin Uysal	ICT ERA-NET

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REPORTER: GÜLTEKİN ÖZGÜR

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REPORTER: GÜLTEKİN ÖZGÜR

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ASSIST. PROF. DR. HASAN SARPTAŞ

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ASSOC. PROF. DR. KORAY ÜLGEN
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RES. ASSIST. DR. ALPER EKİCİ

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ASSOC. PROF. DR. KORAY ÜLGEN

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RES. ASSIST. ÖZKAN NUHOĞLU (PH.D CAND)

STUDENT REPRESENTATIVE

RES. ASSIST. GULAY ZEYNEP GUNELİ (PH.D CAND)
SEVDİYE BAŞAK TURGUT (PH.D CAND)

LIST OF PUBLICATIONS

2025 Publications

ENERGY TECHNOLOGY DEPARTMENT

Improved Mechanical and Physical Properties of Epoxy Acrylate Oligomers by Chemical Modification for the Effective Encapsulation of the Triple-Cation Perovskite Solar Cells
Ercan, B. T.; Mutlu, A.; Gültekin, S. S.; Gültekin, B.; Dincalp, H.; Zafer, C.

New Copper and Cobalt Complexes Based on a Fluorinated Pyrazole Derivative: Synthesis, Characterization and Antibacterial Activity
Amin, M. A.; Diker, H.; Şahin, O.; Varlıklı, C.; Soliman, A. A.

Techno-Economic Approach of Biogas in Konya, Türkiye
Eryasar, A.

Effect of Process Parameters and Biomass Type on Properties of Carbon Produced by Pyrolysis
Chakraborty, S.; Aktay, N.; Alptekin, F. M.; Çeliktaş, M. S.; Dunford, N. T.

Projections of Global Energy Transition Models in the Wake of Industrial Revolution and Climate Change Policies
Mert, E., Aksu, M., Celiktas, S.

Advancing Hydrogen Production: The Synergy of Pretreatment and Boron Catalysts
Alptekin, F. M.; Taç, G. D.; Yanık, J.; Olgun, H.; Çeliktaş, M. S.

Enhancing Phosphorus Recovery from Poultry Litter Ash Through Microwave-Assisted Thermochemical Treatment for Improving Its Solubility
Fahimi, A.; Massa, M.; Mousa, E.; Ye, G. Z.; Predeanu, G.; Olgun, H.; Mousavinezhad, S.; Vahidi, E.; Valentim, B.; Bialecka, B.; Bontempi, E.

Synthesis, Characterization, Crystal Structure, Electrochemical and Photoluminescence Properties, DFT and Molecular Docking Studies, and Antimicrobial Activities of Two Mononuclear Nickel(II) Complexes with Pyrazole-Derived Ligands
Amin, M. A.; Diker, H.; Şahin, O.; Varlıklı, C.; Soliman, A. A.

Self-Assembly Monolayer Impact on Schottky Diode Electrical Properties
Mutlu, A.; Can, M.; Tozlu, C.

A Novel Enzymatic Delamination Method for Sustainable Recycling of Crystal Silicon (c-Si) PV Modules
Karagöz, S. C.; Gündoğdu, T. K.; Sarıaltın, H.; Çeliktaş, M. S.

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ENERGY TECHNOLOGY DEPARTMENT

Bismuth-Iodide-Assisted Crystallization and Stability in Cs-Containing and Cs-Free Hybrid Perovskites
Mutlu, A.; Zafer, C.

Charge Transfer and Surface Morphology Analysis of Heteroatom-Doped Activated Carbon for Dye-Sensitized Solar Cells
Tuna, N. A.; Mutlu, A.; İnal, I. İ. G.; Yıldız, E.

Torrefaction of Hazelnut Shells: The Effects of Temperature and Retention Time on Energy Yield and Fuel Characteristics
Devekıran, G.; Sarptaş, H

Comprehensive Techno-Economic Assessment and Process Simulation of Bioethanol Production from Rice Straw via Subcritical Water Pretreatment and Enzymatic Hydrolysis
Mustafa, A.; Nassar, H. N.; Sadek, M. S.; Ismail, A. R.; Kutlu, O.; Tonova, K.; Mussagy, C. U.; Ali, B. A.; Elshamakh, Y.

Experimental Investigation on Energy and Exergy Analyses of an Industrial Biomass Power Generation Plant
Badem, A.; Olgun, H.; Hepbaşlı, A.

Utilization of Biomass-Derived Activated Carbon from Miscanthus for Dual Energy Storage: Enhanced Performance in Phase Change Material and Supercapacitor Applications
Alptekin, F. M.; Siyahjani-Gültekin, S.; Şahin, D.; Gültekin, B.; Çeliktaş, M. S.

Characterization of the Ash Samples Before and After Thermal Processing Aiming Phosphorus Extraction and Residues Valorization
Predeanu, G.; Valentim, B.; Popescu, L. G.; Abagiu, A. T.; Anghelescu, L.; Bălănescu, M. N.; Białecka, B.; Bontempi, E.; Cempa, M.; Drăgoescu, M. F.; Guedes, A.; Kutlu, Ö.; Massa, M.; Mousa, E.; Nicoară, A. I.; Olgun, H.; Slăvescu, V.; Vasile, B. S.; Ye, G.

A Literature Review: Effects of Ohmic Heating on Inactivation of Specific Bacterial Spores in Various Matrices
Siki, R.; Eryaşar, A.

Impact of Li Passivation on Recombination and Charge Transfer at the TiO_2/Perovskite Interface
Erdinç, A. K.; Mutlu, A.; Gültekin, B.; Zafer, C.

LIST OF PUBLICATIONS

2025 Publications

ENERGY DEPARTMENT

Boosting Organic Solar Cell Performance via Light-Assisted Crystallization of P3HT:PCBM Blend
Kara, D. A.; Turgut, S. B.; Gültekin, B.

Device Performance of Emerging Photovoltaic Materials (Version 5)
Almora, O.; Bazan, G. C.; Cabrera, C. I.; Castriotta, L. A.; Erten-Ela, S.; Forberich, K.; Fukuda, K.; Guo, F.; Hauch, J.; Ho-Baillie, A. W. Y.; Jacobsson, T. J.; Janssen, R. A. J.; Kirchartz, T.; Lunt, R. R.; Mathew, X.; Mitzi, D. B.; Nazeeruddin, M. K.; Nelson, J.; Nogueira, A. F.; Paetzold, U. W.; Rand, B. P.; Rau, U.; Someya, T.; Sprau, C.; Vaillant-Roca, L.; Brabec, C. J.

Device Performance of Emerging Photovoltaic Materials (Version 6)
Almora, O.; Bazan, G. C.; Cabrera, C. I.; Castriotta, L. A.; Erten-Ela, S.; Forberich, K.; Fukuda, K.; Guo, F.; Hauch, J.; Ho-Baillie, A. W. Y.; Jacobsson, T. J.; Janssen, R. A. J.; Kirchartz, T.; Lunt, R. R.; Mathew, X.; Mitzi, D. B.; Nazeeruddin, M. K.; Nelson, J.; Nogueira, A. F.; Paetzold, U. W.; Rand, B. P.; Rau, U.; Someya, T.; Sprau, C.; Vaillant-Roca, L.; Brabec, C. J.

Utilization of a One-Pot Prepared Cobalt Selenide Embedded Carbon Matrix Electrode from ZIF-12 for High-Performance Asymmetric Supercapacitors
Gültekin, S. S.; Buğday, N.; Şahin, D.; Ocakoğlu, K.; Gültekin, B.; Yaşar, S.

Cutting-Edge Dyes for p-Type Dye-Sensitized Solar Cells: A Theoretical Study of 1,8-Naphthalene Imide Derivatives
Yurdakul, E. B.; Yıldız, A.; Ela, S. E.; Erdoğdu, Y.

The Effect of Carbon Quantum Dots on the Microhardness and Morphological Characteristics of Human Dental Enamel: An In Vitro Study
Alateya, I. S. M.; Mohammed, A. T.; Ali, A. K.; Erten-Ela, S. E.

Improving the Stability of Perovskite Precursor Solution by Using Additives
Çırak, D.; Gültekin, B.

LIST OF PUBLICATIONS

2025 Publications

ENERGY DEPARTMENT

Fabrication of High-Performance Asymmetric Supercapacitors Based on Metal-Organic Framework-Derived Bi-Metallic Telluride / Reduced Graphene Oxide Composites
Nasiri, F.; Fotouhi, L.; Shahrokhian, S.; Zirak, M.; Gültekin, B.; Gültekin, S. S.

A Comparative Study on Hydroxyl and Ether Functionalized Ionic Liquid Additives for Defect Passivation and Stability in Perovskite Solar Cells
Siyahjani-Gültekin, S.; Turgut, S. B.; Özdemir, S.; Gültekin, B.; Varlıklı, C.

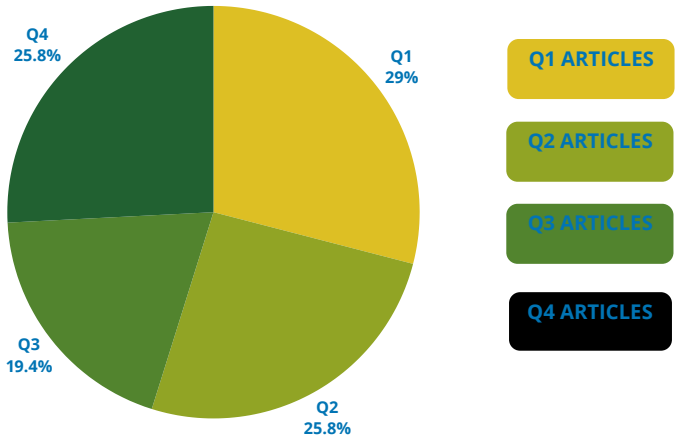
A First Process-Oriented Characterization of Eriolobus trilobatus Bark from Turkey: Chemical, Morphological and Energy Properties
Şen, U.; Yücedağ, C.; Balcı, B.; Arıcı, Ş.; Koçar, G.; Şat, B.; Viegas, C.; Gonçalves, M.; Miranda, I.; Pereira, H.

Chemical Composition and Reactivity of Quercus pubescens Bark and Bark Fractions for Thermochemical Biorefinery Applications
Şen, U.; Balcı, B.; Arıcı, Ş.; Şat, B.; Miranda, I.; Pereira, H.

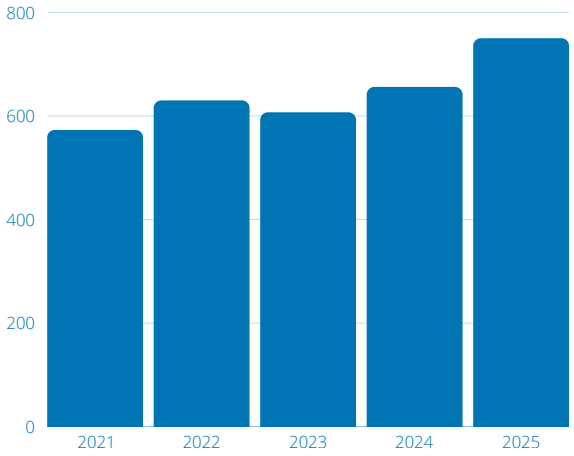
Transient Charging of Mixed Ionic-Electronic Conductors by Anomalous Diffusion
Zhang H., Rivera-Sierra G., Siahjani-Gultekin S., Rubio-Magnieto J., Allagui A., Sanjuán I., Franco D., Guerrero A., Balaguera E.H., Bisquert J.

PUBLICATIONS & CITATIONS

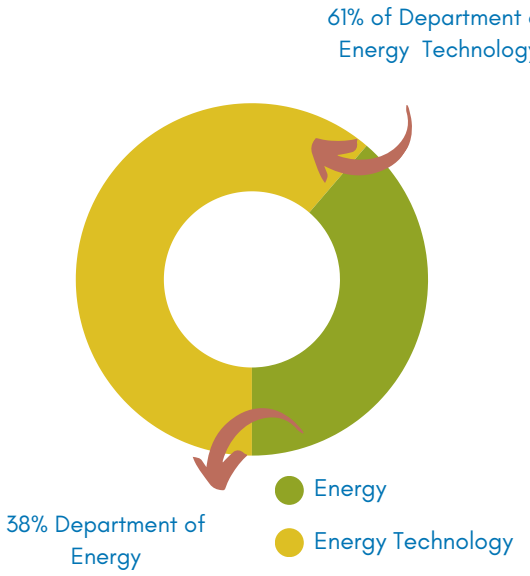
More than the quantity in numbers, quality parameters of research articles are also valuable for us. Our development vision encourages researchers to be involved in high impact factor journals. In the year 2025, a total of 31 articles were published, including 9 in Q1 journals, 8 in Q2 journals, 6 in Q3 journals, and 8 in Q4 journals indexed in the Science Citation Index.



2025 articles by Q category



The distribution of the citations from publications that made by our institute in last 5 years

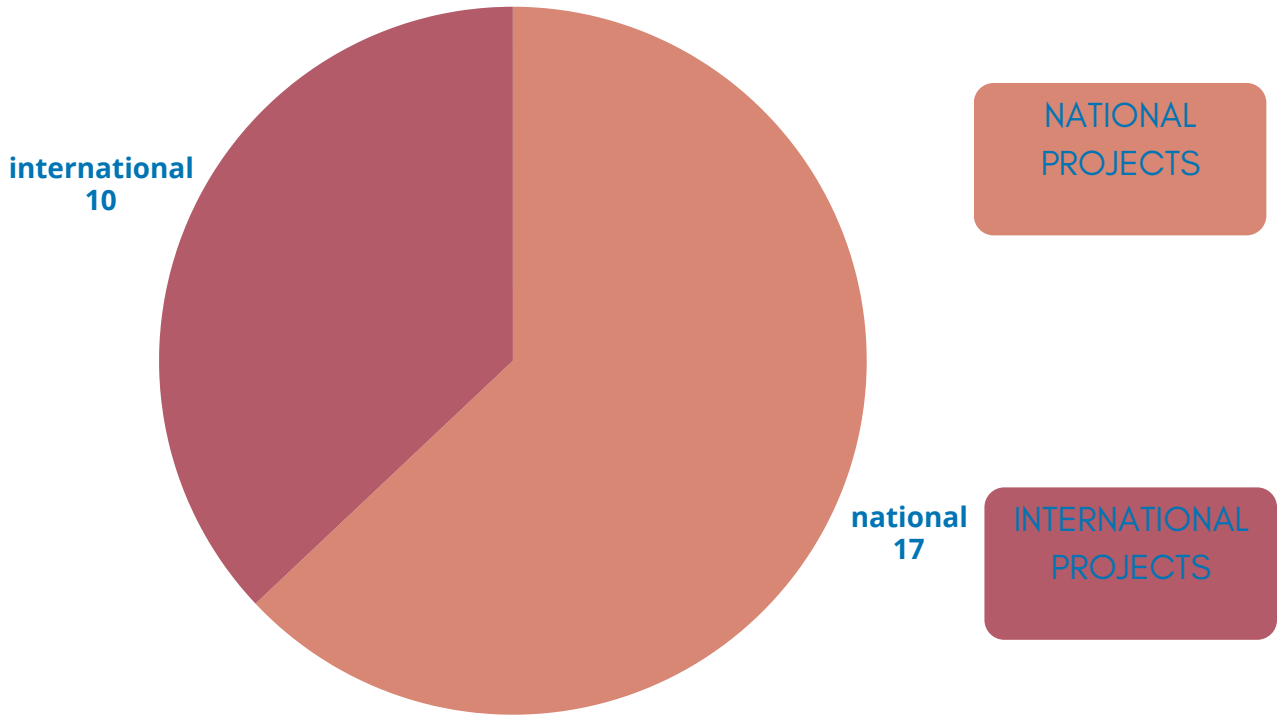


Number of publications in 2025, by departments

PROJECTS

The Solar Energy Institute, committed to playing a leading role in the country's sustainable development agenda, actively promotes graduate student participation in research and innovation projects. In line with this approach, our laboratories and facilities are continuously upgraded and reorganized to respond effectively to new research initiatives, enabling efficient use of resources and maximizing scientific and technological output.

Although a significant share of our project portfolio is supported through national funding instruments, our international engagement has expanded considerably in recent years. Building on this strong momentum, we aim to further increase the number and scale of our international and EU-oriented collaborations in the coming period, leveraging strategic partnerships and competitive funding opportunities.



2025 ongoing projects of EUSOLAR

MILESTONES

LIST OF PROJECTS (INTERNATIONAL)

Project Coordinator: Hayati Olgun
PHIGO/Thermal Processing of P-rich Ashes Aiming for a High-Grade Phosphorus - ERA-NET 3

Resarcher: Prof. Dr. Ceylan Zafer
A Greek-Turkish Solar Energy Excellence Hub to Advance the European Green Deal - AB Horizon 4.1

Project Coordinator: Mete Çubukçu
STEWART: Science-based Environmentally Friendly New Layout For Floating PV - TÜBİTAK-Clean Energy Transition Partnership

Project Coordinator: Mete Çubukçu
GCC-SYNERGY: Digital Solutions for Electricity Decarbonization by Global Climate Community İzmir - EU Horizon Europe-EU NetZeroCities Consortium

Project Coordinator: Neslihan Çolak
Empowering Agri-Food Sustainability: A Data-Driven Approach to Agrivoltaics Management-DIGI-GROW - ICT ERA-NET

Project Coordinator: Şule Erten Ela
Electrochemical Green Hydrogen and Oxygen Production - TUBITAK Bilateral Cooperation Program

Project Coordinator: Özben Kutlu
Sustainable Phosphorus Recovery from Waste through Integrated Energy and Environmental Management in a Clean Production Chain (PREWA) - TÜBİTAK - Bilateral Cooperation Program with the Romanian Ministry of Research, Innovation, and Digitalization (MCID)

Project Coordinator: Fırat Salmanoğlu
AGRECs-BOOST - Boosting Agri-food SMEs through Renewable Energy Communities - SMP-COSME

Project Coordinator: Hayati Olgun
Developing Pelletizing and Pyrolysis Process of Spent Coffee Grounds and Spent Tea Wastes for Solid Fuel and Soil Improver - TÜBİTAK-BMBF "Intensified Cooperation (IntenC) Programme (TUBITAK 2525)

Researcher : Hasan Sarptaş
Upgrading Water Management in the Industry by Sustainable Monitoring, Treatment, and Supportive Governance Mechanisms- Water4All 2024 Pragram

LIST OF PROJECTS (NATIONAL)

Project Coordinator: Ceylan Zafer
Production and Characterization Infastructure Development of Next Generation Photovoltaics - T.C. Ministry of Development

Project Coordinator: Melih Soner Çeliktaş
Advanced Recycling of Photovoltaic Panel Waste into High-Performance Energy Storage Materials within the Scope of the Circular Economy - The Scientific and Technological Research Projects Funding Program (TUBITAK 1001)

Project Coordinator: Melih Soner Çeliktaş
Recycling of Crystalline Silicon Photovoltaic Panels via Life Cycle Analysis - The Scientific and Technological Research Projects Funding Program (TUBITAK 1001)

Project Coordinator: Adem Mutlu
Bismuth-based semiconductors for Next-Generation, Lead-Free High-Performance FETs - The Scientific and Technological Research Projects Funding Program (TUBITAK 1001)

Researcher: Burak Gültekin
Green Technology-Based Design: Utilization of Leather Industry Waste in Energy Storage Systems Using Supercapacitors - The Scientific and Technological Research Projects Funding Program (TUBITAK 1001)

Researcher: Neslihan Çolak
Investigation of the Usability Potentials of Innovative Extraction Methods in the Recovery of Valuable Compounds from Valonia Oak Fruits and Their Contributions to Sustainability - The Scientific and Technological Research Projects Funding Program (TUBITAK 1001)

Researcher: Burak Gültekin
Production of Hybrid Supercapacitors with Organic Single Crystal Nanocomposite Electrodes - Career Development Program (TUBITAK 3501)

Project Coordinator: Burak Gültekin
Development of Large Area Composite Electrode-Based Supercapacitor with High Energy Density - RESEARCH SUPPORT PROGRAM

Project Coordinator: Ceylan Zafer
Synthesis and Characterization of Self-Assembled Organic Monolayer Molecules for Interfacial Defect Passivation in Perovskite Solar Cells - Scientific Research Projects

Project Coordinator: Ceylan Zafer
Synthesis of Core-Shell Structured Perovskite Semiconductor Quantum Dots for Photovoltaic Solar Cells and Investigation of Photoinduced Charge Transfer Mechanisms - Scientific Research Projects

Project Coordinator: Ceylan Zafer
Development and Characterization of Smart Polymer-Based Multifunctional Coatings for Photovoltaic Solar Panels - Scientific Research Projects

LIST OF PROJECTS (NATIONAL)

Project Coordinator: Halide Diker
Synthesis and Characterization of Silicon Nanosheets as Anode Materials for Lithium-Ion Batteries - Scientific Research Projects

Project Coordinator: Burak Gültekin
Development of Alternative Electrodes to ITO for Flexible Perovskite Solar Cells - Scientific Research Projects

Project Coordinator: Burak Gültekin
Preparation of Lead-Free Perovskite Solar Cells Using Low-Toxicity Solvents - Scientific Research Projects

Project Coordinator: Burak Gültekin
Use of Metal-Organic Frameworks to Prevent Lead Leakage in Perovskite Solar Cells - Scientific Research Projects

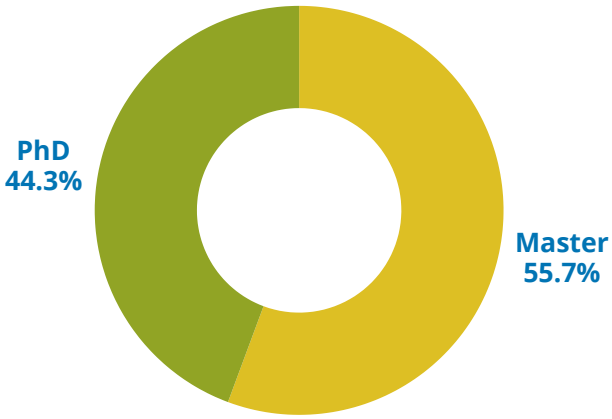
Project Coordinator: Semra Koçyiğit
Perovskite Light-Emitting Diodes with Enhanced Film Morphology Using Perovskite Materials Containing Ammonium Salts - TUBITAK A Short term Support Module (TUBITAK 1002)

Project Coordinator: Gülay Zeynep Günel
Synthesis and Characterization of Triazatruxene-Based Self-Assembled Monolayer Molecules for the Passivation of Interfacial Defects in Perovskite Solar Cells - TUBITAK A Short term Support Module (TUBITAK 1002)

Project Coordinator: Tamer Yeşil
Synthesis, Characterization, and Organic Solar Cell Applications of New Perylene Diimid-Triazatruxene Derivative Dyes - TUBITAK National Postdoctoral Research Fellowship Program (TUBITAK 2218)

Number of Students

Master.....59
PhD.....47

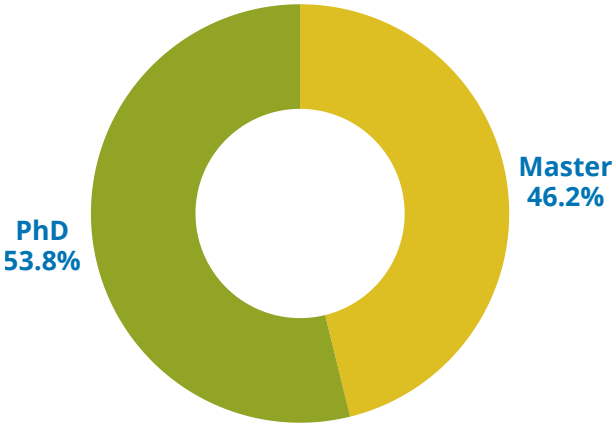


There were:
59 students and
6 alumnis
in Masters Program,

47 students and
7 alumnis
in PhD Program
2025

Number of 2025 Alumni

Master.....6
PhD.....7



INFRASTRUCTURE

Multiscale Glovebox

Class 1000 Clean Room

Characterization Lab

Green Process Technologies Application Field

Geothermal Greenhouse

Experimental Rooftop Photovoltaic System

INFRASTRUCTURE

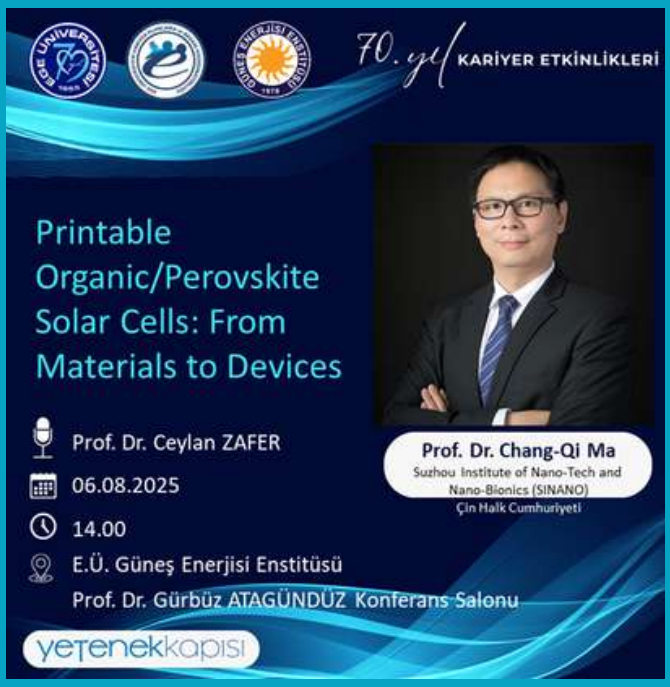
Chemistry Lab

Advanced Smart Biomaterials Lab

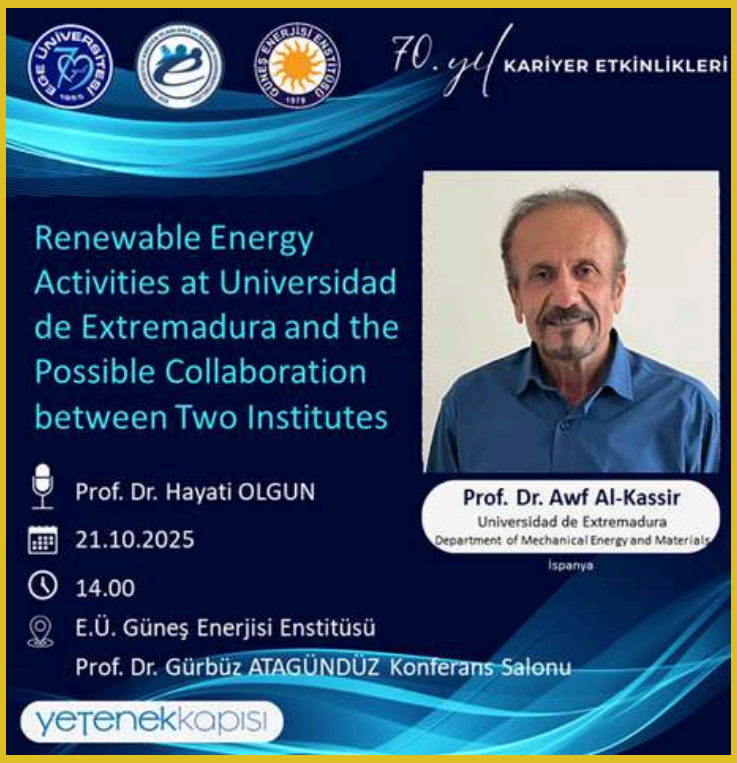
Solar-Powered Drying and Process Heat Lab

The Occupational Health and Safety Training held on January 16, 2025, at 14:00 provided participants with comprehensive information on potential workplace hazards, preventive and protective measures, and relevant legal obligations. The training was delivered by Zuhal KAYIŞ, who serves as an Occupational Safety Specialist at Kubilay Kimya ve Boya San. Tic. Ltd. Şti.. The program particularly emphasized the development of a strong safety culture, risk assessment procedures, and emergency management practices.

The event titled “A Lifetime at the University...,” held on May 30, 2025, at 11:00, was organized as part of the retirement program of Bircan DİNDAR. During the ceremony, the professional experience, scientific contributions, and the lasting impact on university life of Dr. Bircan DİNDAR—who has provided long-standing academic and institutional service within the EÜ Güneş Enerjisi Enstitüsü—were highlighted. The program reflected on her academic career journey, contributions to research culture, and influence on her students, and concluded with expressions of appreciation for her dedicated service to the university community.



The seminar titled “Printable Organic/Perovskite Solar Cells: From Materials to Devices,” held on August 6, 2025, at 14:00, featured Chang-Qi Ma (Prof. Dr.) as the invited speaker. Prof. Dr. Ma, who conducts his research at the Suzhou Institute of Nano-Tech and Nano-Bionics (SINANO) in the People’s Republic of China, delivered a comprehensive presentation covering research approaches on printable organic and perovskite solar cells, spanning from material development processes to device performance. The seminar addressed recent scientific advancements related to high efficiency, scalable fabrication techniques, and the commercialization potential of next-generation photovoltaic technologies.



The seminar titled “Renewable Energy Activities at Universidad de Extremadura and the Possible Collaboration between Two Institutes,” held on October 21, 2025, at 14:00, featured Awf Al-Kassir (Prof. Dr.) as the invited speaker. Prof. Dr. Al-Kassir, a faculty member in the Department of Mechanical Energy and Materials at Universidad de Extremadura, provided comprehensive information on the university’s renewable energy activities, research infrastructure, and ongoing projects. The program also addressed potential academic and research collaborations between the two institutes, including joint project opportunities and possibilities for student and faculty exchange.

The event titled “Memories from a career full of energy” held on October 31, 2025, at 14:00, was organized as part of the retirement program of Hayati OLGUN. During the ceremony, the scientific achievements, contributions to the field of renewable energy, and the impact on the students of Prof. Dr. Hayati OLGUN—who served for many years in both academic and administrative roles at the EÜ Güneş Enerjisi Enstitüsü—were highlighted. Throughout the program, his professional experiences, academic journey, and the value he brought to the institute were shared through personal reflections, and he was sincerely thanked for his dedicated service to the university.

The seminar titled “Research in National University of Science and Technology POLITEHNICA Bucharest,” held on November 4, 2025, at 10:00, featured Georgeta Predeanu (Dr.) as the invited speaker. During the seminar, comprehensive information was shared regarding the research activities conducted at the National University of Science and Technology POLITEHNICA Bucharest, including priority research areas and opportunities for international collaboration. The program also included discussions on research infrastructure, interdisciplinary projects, and potential avenues for joint academic cooperation.

The seminar titled “Researches at National Center for Micro and Nanomaterials,” held on November 5, 2025, at 10:00, featured Bogdan Stefan Vasile (Dr.) as the invited speaker. Comprehensive information was presented on the current research activities in the field of micro- and nanomaterials conducted at the National Center for Micro and Nanomaterials, including advanced characterization techniques and potential application areas. The program also included discussions on research infrastructure, interdisciplinary collaborations, and opportunities for international projects.

On February 5, 2025, a group of 40 tenth-grade students from 29 Mayıs Okulları Bornova Kampüsü visited our institute, accompanied by their teacher, Melih Elmas. The visit began with an introductory presentation about the institute. Subsequently, the students toured Materials Research Laboratory I and II, as well as the Next-Generation Photovoltaics and Energy Storage Technologies Laboratory (Clean Room), where ongoing research activities were explained in detail. The visit concluded with an interactive session during which the students' questions about renewable energy technologies were addressed.

On February 12, 2025, a group of 18 tenth-grade students from 29 Mayıs Okulları Bornova Kampüsü visited our institute, accompanied by their teacher, Murat Işıkoğlu. The visit began with an introductory presentation about the institute. This was followed by a tour of Materials Research Laboratory I and II, as well as the Next-Generation Photovoltaics and Energy Storage Technologies Laboratory (Clean Room), where the ongoing research activities were explained in detail. The students' questions regarding renewable energy technologies were also addressed during the visit.

On February 19, 2025, a group of 20 tenth-grade students from 29 Mayıs Okulları Bornova Kampüsü visited our institute, accompanied by their teacher, Murat Işıkoğlu. The visit began with an introductory presentation about the institute. Subsequently, the students toured Materials Research Laboratory I and II, as well as the Next-Generation Photovoltaics and Energy Storage Technologies Laboratory (Clean Room), where the ongoing research activities were explained. The session concluded with a discussion during which the students' questions about renewable energy technologies were answered.

On April 10, 2025, within the scope of the PHOT 444 course titled “Photonics in Nanotechnological Energy Applications,” coordinated by Canan VARLIKLI (Prof. Dr.), we hosted a group of 17 senior students from the Department of Photonics and Materials at İzmir Yüksek Teknoloji Enstitüsü. During the visit, Koray ÜLGEN (Assoc. Prof. Dr.) delivered a presentation on the Fundamentals of Solar Energy and Solar Thermal Systems.

Following the presentation, the students toured Materials Research Laboratory I and II, the Lamination Laboratory, the Next-Generation Photovoltaics and Energy Storage Technologies Laboratory (Clean Room), and the ASBERG Laboratory. Using experimental setups, energy generation from solar and wind sources was demonstrated. The visit concluded with an interactive discussion session, during which students’ questions regarding renewable energy technologies were addressed and detailed information about the institute’s ongoing research activities was provided.

On May 15, 2025, at 10:00, we hosted a group of 21 second-year students from the Chemistry Technology Program of E.Ü. Ege Meslek Yüksekokulu at our institute, under the supervision of Nesibe AVCIBAŞI (Prof. Dr.). The visit began with a presentation introducing the institute's research activities and providing an overview of renewable energy technologies.

Following the presentation, the students toured Materials Research Laboratory I and II, the Solar Irradiation Photochemistry I and Lamination Laboratory, the Next-Generation Photovoltaics and Energy Storage Technologies Laboratory (Clean Room), and the ASBERG Laboratory. Energy generation from solar and wind sources was demonstrated through experimental setups. The visit concluded with an interactive session during which students' questions regarding renewable energy technologies were addressed, and detailed information was shared about the ongoing research conducted at the institute.

On May 15, 2025, at 13:30, we hosted a group of 24 second-year students from the Chemistry Technology Program of E.Ü. Ege Meslek Yüksekokulu at our institute, under the supervision of Nesibe AVCIBAŞI (Prof. Dr.). The visit began with a presentation outlining the institute's research activities and providing an overview of renewable energy technologies.

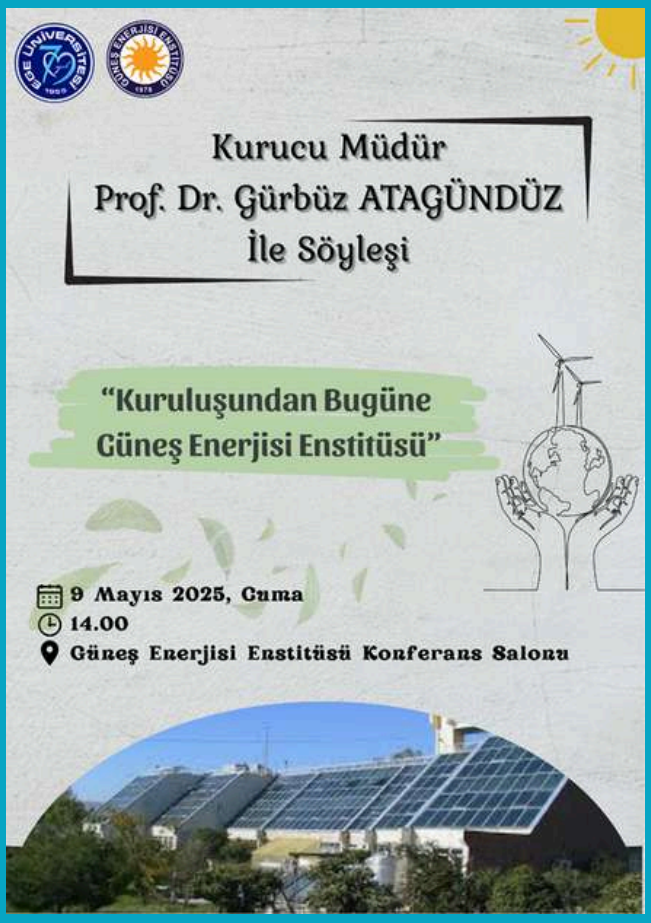
Following the presentation, the students toured Materials Research Laboratory I and II, the Solar Irradiation Photochemistry I and Lamination Laboratory, the Next-Generation Photovoltaics and Energy Storage Technologies Laboratory (Clean Room), and the ASBERG Laboratory. Energy generation from solar and wind sources was demonstrated through experimental setups. The session concluded with an interactive discussion during which students' questions regarding renewable energy technologies were answered, and detailed information was shared about the ongoing research conducted at the institute.

On November 19, 2025, at 10:00, we hosted a group of 31 fifth-, seventh-, and eighth-grade students from TOKİ Ortaokulu at our institute, under the supervision of their teacher, Adil Us. The visit began with a presentation introducing the institute's research activities and providing an overview of renewable energy technologies.

Following the presentation, the students toured Materials Research Laboratory I and II, the Solar Irradiation Photochemistry I and Lamination Laboratory, and the Next-Generation Photovoltaics and Energy Storage Technologies Laboratory (Clean Room). The session concluded with an interactive discussion during which students' questions about renewable energy technologies were answered, and further information was shared about the ongoing research conducted at the institute.

The seminar titled "Carbon Nanoforms in Perovskite Solar Cell: From Fullerenes to Carbon Nanohorns," held on August 20, 2025, at 14:00, featured Juan Luis Delgado (Prof. Dr.) as the invited speaker. Prof. Dr. Delgado, from the Polymat research center at the University of the Basque Country, delivered a comprehensive presentation on the role of carbon nanoforms used in perovskite solar cells—from fullerenes to carbon nanohorns—focusing on their effects on electron transport, interface engineering, and device stability. The seminar also evaluated the potential of carbon-based materials for enhancing efficiency and improving long-term performance, in light of recent findings reported in the scientific literature.

The talk titled "The Teacher in Republican Education," held on November 4, 2025, at 14:00, was organized at our institute within the scope of Ege Üniversitesi "Republic and Atatürk Days" events by our retired faculty member, Bircan Dindar (Dr.). The guest speaker of the event was the writer, poet, and educator Hidayet Karakuş. Mr. Karakuş shared insightful reflections on the remarkable educational reforms initiated during the early years of the Republic. Additionally, Ali Türcan, who had previously been a speaker at one of our events, joined us and enriched the program by sharing his memories of the Village Institutes.



As part of the 70th anniversary celebrations of Ege Üniversitesi, we hosted our esteemed Founding Director, Gürbüz ATAGÜNDÜZ (Prof. Dr.), together with his wife, on May 9, 2025, in the conference hall named in his honor. The commemorative event began with an opening speech by our Institute Director, Ceylan ZAFER (Prof. Dr.). This was followed by a presentation by Mete ÇUBUKÇU (Assoc. Prof. Dr.), who summarized the brief history of the institute. Koray ÜLGEN (Assoc. Prof. Dr.) then shared personal anecdotes from his student years with Prof. Dr. Atagündüz.

Taking the floor, Prof. Dr. Atagündüz recounted in detail the founding story of the institute—a challenging journey from vision to reality. After spending more than a decade abroad in academia, he stepped out of his comfort zone and, like many devoted citizens of his time, returned to serve his country. Despite the difficulties faced during the military coup period, he persevered and ultimately established an institute that has since graduated hundreds of students. The audience experienced moments of both laughter and reflection. Following his speech, nearly fifty years later, our current director presented flowers and a commemorative plaque to the founding director. The event concluded with an informal gathering in the institute garden, where we continued our conversations with our esteemed professor, his wife, and members of the institute staff.

As part of the Ege Üniversitesi 44th Culture, Art and Sports Festival, our talk titled “Journey to a Green Future: Sustainable Tomorrows with Renewable Energy” was held on May 22, 2025, at 10:00 at the EÜ Araştırma Odaklı Öğrenci Merkezi.

We had the opportunity to connect with renewable energy enthusiasts through our exhibition stands at the WEnergy Expo 2025 3. Uluslararası Temiz Enerji Teknolojileri Fuarı (May 22-24, 2025) and during the 70th Anniversary Career Days and Science Festival (May 26-28, 2025).


GÜNEŞ ENERJİSİ ENSTİTÜSÜ
1978
HOŞ GELDİNİZ
WELCOME
Son 25 Yılda Verilen
Mezunların Çalıştığı
Sektörlerin Dağılımı

On May 12, 2025, our Rector, Necdet BUDAK (Prof. Dr.), visited our institute. During the visit, our Institute Director, Ceylan ZAFER (Prof. Dr.), provided detailed information on the ongoing projects, research infrastructure, publications, and other academic activities conducted at the institute, as well as our future strategic objectives. The Rector expressed his support for our work and listened to our requests and expectations regarding further institutional development.

SOCIAL MEDIA

FOLLOW US..

At present, number of followers of the social media accounts are Facebook 1568, Linkedin 1361, Instagram 164 and X 95 respectively. The questions from the followers were used as a feedback for the improvement of the Institute.

In 2025, the institute actively utilized its social media platforms (excluding YouTube) to disseminate announcements regarding seminars and webinars, application deadlines for various education and training programs, campus social activities, events organized by the Ege University Career Planning Center, and general institutional updates from the university.

In the coming years, it is planned to expand the scope of the institute's social media presence to include updates on ongoing projects, announcements of scientific and social events organized by the institute, and information on visits to and collaborations with national and international institutions. The launch of YouTube broadcasting is also under consideration. These efforts aim to strengthen engagement with alumni and enhance the institute's visibility within the renewable energy community.

SOCIAL MEDIA

THESIS 2025

MASTER THESIS

Writer: Yağmur OLGUN
Investigation of activation and CO2 adsorption capacity of biochar derived from poultry manure and waste mushroom compost
Supervisor: Assist. Prof. Dr. Özben KUTLU

Writer: Tolga YÜKSEL
Development of an offshore wind farm and comparison of its wake effects: A case study
Supervisor: Assoc. Prof. Dr. Ahmet YILANCI

Writer: Özkan NUHOĞLU
Energy efficiency analysis of carbon dioxide as working fluid in a geothermal cogeneration power cycle
Supervisor: Prof. Dr. Ceylan ZAFER

Writer: Ayhan ŞİŞMAN
Examination of problems on boiler surfaces in biomass power plants
Supervisor: Prof. Dr. Hayati OLGUN

Writer: Helin Su ACAR
Sustainable valorization of plastic wastes: life cycleassessment of carbon dot synthesis process from petwastes
Supervisor: Assist. Prof. Dr. Halide DİKER

Writer: Hekmatullah MOHAMMADI
Investigation of the Potential of ZnO-Based Photocatalytic Treatment Method to Improve Water Quality in Amik Plain
Supervisor: Assist. Prof. Dr. Bircan DİNDAR

PHD THESIS

Writer: Rengin SIKI
High quality,sanitary organic fertilizer acquisition via advanced processing of biogas digestate
Supervisor: Assist. Prof. Dr. Ahmet ERYAŞAR

Writer: Barış Onur ÖRS
Sustainable energy applications in ecological settlements: A case study of Ibrim Valley
Supervisor: Assist. Prof. Dr. Ahmet ERYAŞAR

Writer: Aslı BİRTÜRK
Up-and-coming contribution to critical mineral requirements: developing an environmentally conscious process in photovoltaic module recycling
Supervisor:Prof. Dr. Melih Soner ÇELİKTAŞ

Writer: Şefik ARICI
Investigation of the effect of pretreatments and other alternative methods on yield for inoculum which is used in dark fermentative hydrogen production
Supervisor: Prof. Dr. Günnur KOÇAR

Writer: Alper EKİCİ
Investigation of film formation processes for large area perovskite photovoltaic module produced by printing methods
Supervisor: Prof. Dr. Ceylan ZAFER

Writer: MOHAMMED M MOHAMMEDSHAKIR ALDABBAGH
Assessment of a biogas-solar hybrid powered absorption cooling system's applicability for a greenhouse
Supervisor: Assist. Prof. Dr. Ahmet ERYAŞAR

THESIS 2025

MASTER SEMINARS

Speaker: Derşan Nermiş
Supervisor: Assoc. Prof. Dr. Numan Sabit Çetin
Meeting Base Load with Multi-Source Renewable Energy Power Plants

Speaker: Engin Deniz
Supervisor: Prof. Dr. Melih Soner Çeliktaş
The Role of Circular Economy and Sustainability in Solar PV Systems

Speaker: Dilay Naz Özkan
Supervisor: Prof.Dr. Engin Karatepe
Signal Stability in Electricity Grids and Wind Energy

Speaker: İbrahim Nurettin Erdenk
Supervisor: Prof.Dr. Engin Karatepe
Oscillations in Electric Power Systems and the Effects of Wind Turbines on Inter-Field Oscillations

Speaker: Kemal Onur Özcan
Supervisor: Prof.Dr. Engin Karatepe
Electricity Grid Codes for Wind Power Plants

Speaker: Mustafa Erkan Gönül
Supervisor: Prof.Dr. Engin Karatepe
The Effects of Solar Power Plants on Voltage in Electricity Distribution Networks

Speaker: İsmail Eren Döğücü
Supervisor: Prof.Dr. Engin Karatepe
Probabilistic Analyses in the Interaction of Electric Vehicles - Solar Power Plants - Grid

Speaker: Kağan Berk Tuna
Supervisor: Prof.Dr. Engin Karatepe
Uncertainty-Focused Sizing Approaches in PV-Battery Systems

Speaker: Destan Toksöz
Supervisor: Assist. Prof. Dr. Halide Diker
Synthesis and Characterization of Mesoporous Silicas for Obtaining 2D Silicon Nanolayers

MASTER SEMINARS

Speaker: Görkem Şükran Soysal
Supervisor: Assist. Prof. Dr. Özben Kutlu
Sustainable Energy Solutions in Mushroom Cultivation: Climate Control and Energy Management

Speaker: Özgür Kurt
Supervisor: Assist. Prof. Dr. Özben Kutlu
Alternative Energy Solutions for Energy Efficiency in Natural Gas Distribution Lines

Speaker: Ayşe Yörük
Supervisor: Prof.Dr. Önder Özgener
Investigation of Energy Efficiency in Autoclaves

Speaker: Sıla Eylül Karadaş
Supervisor: Prof.Dr. Önder Özgener
Behavioral Energy Efficiency: The Role of the Human Factor

Speaker: Ezo Ferah Kaplanseren
Supervisor: Prof.Dr. Günnur Koçar
Enzymes Involved in Biogas and Bioethanol Production and Their Commercial Application Potential

Speaker: Yusuf Ziya Turgut
Supervisor: Prof.Dr. Günnur Koçar
Evaluation of Fermented Fertilizer Use from the Perspective of Sustainable Agriculture

Speaker: Hasan Alperen Gücin
Supervisor: Prof.Dr. Günnur Koçar
The Effects of Renewable Energy Sources on Electricity Grids

Speaker: Simge Kiraz
Supervisor: Prof.Dr. Günnur Koçar
Evaluation of Different Microalgae Species in Terms of Sustainable Aviation Fuel (SAF) Production Technologies

Speaker: Mehmet Sarı
Supervisor: Assist. Prof. Dr. Ahmet Eryaşar
The Importance of Small-Scale Biogas Plants and Their Current Status Worldwide

Speaker: Oğuzhan Kaplan
Supervisor: Assoc. Prof. Dr. Mete Çubukçu
Determining and Preventing Energy Production Losses in Photovoltaic Power Plants Through Real-Time Data Analysis

SEMINARS 2025

SEMINARS 2025

PHD SEMINARS

Speaker: Kadriye Avcü
Supervisor: Assoc. Prof. Dr. Mete Çubukçu
Integrated Energy Management and Efficiency Approach for Carbon-Neutral Cities

Speaker: Hüseyin Gürtekin
Supervisor: Prof. Dr. Mustafa Güneş
ERP and Solar Power Plant Project Management

Speaker: Oğuzalp Aktuğ
Supervisor: Prof. Dr. Mustafa Güneş
An Overview of the Border Carbon Adjustment Mechanism

Speaker: Hande Demiröz
Supervisor: Assoc. Prof. Dr. Koray Ülgen
The Importance of Battery Management Systems

Speaker: Semra Koçyiğit
Supervisor: Assoc. Prof. Dr. Burak Gültekin
Light Emitting Diode Applications with Perovskite Materials Containing Fluorinated Ligands

Speaker: Benginur Baştabak
Supervisor: Assist. Prof. Dr. Hasan Sarptaş
Ecosystem Restoration in Abandoned Mining Sites: Energy Crops and Sustainable Approaches

Speaker: Mert Biter
Supervisor: Assist. Prof. Dr. Hasan Sarptaş
Vulnerability Assessment in Urban Climate Adaptation Plans in Turkey: IPCC Framework and SECAP Applications

Speaker: Kadriye Avcü
Supervisor: Assoc. Prof. Dr. Mete Çubukçu
Digitalization and Energy Management in Industry: The Case of İzmir KOSBİ

Speaker: Sertaç Aldı
Supervisor: Prof. Dr. Mustafa Güneş
An Overview of Web-Based Solar Energy Calculators

SEMINARS 2025

PHD SEMINARS

Speaker: Ali Sarı
Supervisor: Assist. Prof. Dr. Bircan Dindar
Fabrication and Characterization of ZnO-Based Piezoelectric Sensors

Speaker: Gökhan Devekıran
Supervisor: Prof. Dr. Hayati Olgun
Historical Development of District Heating Systems and Their Integration with Renewable Energy

Speaker: Şeyda Tüzüner
Supervisor: Prof. Dr. Şule Erten Ela
Climate Change and the Importance of Local Consumption

Speaker: Othman Haji Mahmood
Supervisor: Prof. Dr. Şule Erten Ela
Semiconductor Materials in Photocatalysis

Speaker: Mücahid Can
Supervisor: Prof. Dr. Şule Erten Ela
Photocatalytic Reactor Design: Existing Systems and Emerging Technological Approaches

Speaker: Alper Ekici
Supervisor: Prof. Dr. Ceylan Zafer
Ink Formulation for Large Area Perovskite Photovoltaic Modules Produced Entirely by Printing Methods

Speaker: Damla Şahin
Supervisor: Assoc. Prof. Dr. Burak Gültekin
The Use of Cobalt Selenide Embedded Carbon Matrix Electrodes for High-Performance Asymmetric Supercapacitors

COURSES

Spring Term Master Courses

ENERGY TECHNOLOGIES

- Wind Energy Applications
- Applied Numerical Methods
- Numerical Data Acquisition Systems and Data Analysis
- Automatic Control in Solar Energy Systems
- Use of Renewable Energy Sources in Agriculture
- Solar Power Plants
- Energy Management in Industry II
- Performance Analysis of Photovoltaic Power Systems
- Electrical Machines Used in Wind Energy Conversion Systems II
- Exergy Analysis of Renewable Energy Systems II
- Structural Characterization by Spectroscopic Methods II
- Functional Thin Film Technologies
- Fundamentals of Energy Systems
- Smart System Applications in Energy Systems
- Solar Electricity II
- Wind-Photovoltaic Hybrid Power Systems
- Technology Foresight
- Energy Recovery from Municipal Solid Waste
- Process Integration in Renewable Energy Systems
- Solar Cell Physics II

ENERGY

- Design Principles of Solar Thermal Systems II
- Sustainable Production in Industry II
- Solar Radiation-Driven Chemical Production
- Hydrogen Energy and Technologies
- Life Cycle Assessment of Renewable Energy Systems
- Fullerenes, Carbon Nanotubes and Their Applications
- Solar Cooling
- Applications of Inorganic Nanoparticles in Photovoltaic Systems
- Introduction to Solar Radiation Photophysics and Photochemistry (Laboratory Practice)
- Life Cycle Assessment of Renewable Energy Systems

ENERGY TECHNOLOGIES

- Organic Semiconductor-Based Photovoltaic Systems
- Heat Pumps and Their Applications
- Geothermal Energy Applications
- Design of Thermal Systems
- Bioenergy Production and Applications
- Energy-Environment Relationship, Energy Efficiency and Planning
- Biofuels
- Energy Economics
- Daylighting Systems
- Biogas Production Technologies II
- Wind Energy Conversion Systems II
- Underground Heat Exchangers and Their Applications
- Economics of Innovation
- Quality Management in Renewable Energy Systems
- Solar Architecture
- Techniques for Preparing Sustainable Energy and Climate Action Plans
- Energy Generation and Storage Technologies for Electric Vehicles
- Planning and Evaluation in Education
- Development and Learning

- Liquid Crystalline Organic Materials
- Energy-Environment Relationship, Energy Efficiency and Planning
- Photodegradation Mechanisms of Organic Compounds - II
- Organic Optoelectronic Materials - II
- Electrochemistry of Organic Compounds
- Organic Materials in Photoelectronic Technologies
- Renewable Energy Applications
- Organic Light-Emitting Devices (OLEDs)
- Computational Heat Transfer - II
- Solar Architecture
- Nanotechnology and Sustainability: Energy Conversion and Storage
- Sustainable Energy and Climate Action Plan Preparation Techniques
- Planning and Evaluation in Education
- Development and Learning

COURSES

Spring Term Phd Courses

COURSES

Fall Term Master Courses

ENERGY TECHNOLOGIES

- Fundamentals of Solar Energy
- The Role of Renewable Energy Sources in Sustainable Development
- Wind Turbine Aerodynamics
- Fundamentals of Geothermal Energy
- Energy Management in Industry I
- Biomass Energy
- R&D-Based Energy Investments
- Fundamentals of Wind Energy
- Solar Energy Collectors
- Fundamentals of Lighting
- Electrical Machines Used in Wind Energy Conversion Systems I
- Exergy Analysis of Renewable Energy Systems I
- Fundamentals of Heat and Fluid Science
- Renewable Energy Applications of Geographic Information Systems
- Reliability of Photovoltaic Power Systems
- Optimization of Electrical Energy Systems
- Solar Electricity I
- Development Economics
- Design of Underground Heat Exchangers
- Photovoltaic Systems
- Development of Project Skills
- Pioneers of Energy Technology
- Production Processes of Carbon-Based Value-Added Biochemicals and Biomaterials
- Solar Cell Physics I
- Conceptualization and Simulation of Energy Systems

ENERGY

- Solar Radiation Photochemistry and Technologies
- Electrochemical Energy Storage Systems
- Chemistry of Semiconductors
- Macromolecules for Nanoscience and Nanotechnology
- Organic Optoelectronic Materials - I
- Field-Effect Transistors (FETs, MOSFETs, OFETs, photOFETs)
- Solar Radiation Photochemistry
- Semiconductors and Optoelectronic Applications
- Computational Heat Transfer - I

ENERGY TECHNOLOGIES

- Applied Thermodynamics
- Electrochemical Energy Storage Devices
- Functional Nanomaterials in Next-Generation Battery Technologies
- Active Solar Heating Systems
- Energy Efficiency in Buildings
- Energy Conservation in Buildings
- Fundamentals of Thermal Energy Storage
- Biogas Production Technologies I
- Wind Energy Conversion Systems I
- Exergy Applications in Major Thermal and Chemical Processes
- Next-Generation Photovoltaic Technologies
- Electrical Energy Storage Systems
- Smart Solar Cities

ENERGY

- Computational Heat Transfer - I
- Conjugated Polymers
- Field Effect Transistors (FETs, MOSFETs, OFETs, photOFETs)
- Chemistry of Semiconductors
- Macromolecules for Nanoscience-Nanotechnology
- Solar Radiation Photochemistry and Technologies
- Renewable Energy Project Preparation Techniques

COURSES

Fall Term Phd Courses