

FATMA KARACA ALBAYRAK

PROF.

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Address : Marmara Üniversitesi, Mühendislik Fakültesi, Kimya Mühendisliği Bölümü, Göztepe Kampüsü, Kadıköy, İSTANBUL

International Researcher IDs

ScholarID: F4vLKgIAAAAJ

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Publons / Web Of Science ResearcherID: Z-5769-2019

ScopusID: 6701441670

Yoksis Researcher ID: 172810

Biography

Prof. Dr. Fatma Karaca Albayrak 1990 yılında Yıldız Teknik Üniversitesi, Kimya Mühendisliği Bölümü'nde lisans eğitimini tamamlamıştır. Yüksek lisans ve Doktora çalışmalarını aynı üniversitede Kimya Mühendisliği Bilim alanında tamamlayarak 2000 yılında Dr. ünvanını almıştır. 2002-2003 tarihleri arasında İngiltere'de Imperial College, Kimya Mühendisliği Bölümü'nde Post Doktora çalışmalarını sürdürmüştür. 2014 yılında Yıldız Teknik Üniversitesi, Kimya Mühendisliği Bölümünde Yardımcı Doçent olarak görev'e başlamıştır. 2006-2007 tarihleri arasında Imperial College, Kimya Mühendisliği Bölümü'nde araştırma çalışmalarına devam etmiştir. 2007 yılında Doçentlik Ünvanını, 2013 yılında ise Profesör unvanını almıştır. Enerji, fosil yakıtlar, biyokütle, ağır hidrokarbonların karakterizasyonu gibi alanlarda araştırma çalışmalarını sürdürmektedir. Halen Marmara üniversitesi Kimya Mühendisliği Bölümü'nde görev yapmaktadır.

Learning Knowledge

Doctorate 1993 - 2000	Yıldız Technical University, Graduate School Of Natural And Applied Sciences, Kimya Mühendisliği (Dr), Turkey
Postgraduate 1990 - 1992	Yıldız Technical University, Faculty Of Chemical And Metallurgical Engineering, Kimya Mühendisliği Bölümü, Turkey
Undergraduate 1986 - 1990	Yıldız Technical University, Faculty Of Chemical And Metallurgical Engineering, Kimya Mühendisliği Bölümü, Turkey

Dissertations

Doctorate, Soma linyitinin biyokütlesel bir atıkla ortak işlenmesi ve sivilaştırma verimlerinin incelenmesi, Yıldız Teknik Üniversitesi, Fen Bilimleri Enstitüsü, Kimya Mühendisliği (Dr), 2000

Postgraduate, Defne yapraklarından süperkritik ekstraksiyon ile esansiyel yağ eldesi, Yıldız Teknik Üniversitesi, Kimya-Metalurji Fakültesi, Kimya Mühendisliği Bölümü, 1992

Academic Titles / Tasks

Professor
2013 - Continues

Marmara University, Faculty of Engineering, Chemical Engineering

Associate Professor
2007 - 2013

Marmara University, Faculty of Engineering, Chemical Engineering

Assistant Professor
2004 - 2007

Yildiz Technical University, Faculty Of Chemical And Metallurgical Engineering,
Kimya Mühendisliği Bölümü

Research Assistant
1991 - 2004

Yildiz Technical University, Faculty Of Chemical And Metallurgical Engineering,
Kimya Mühendisliği Bölümü

Supported Projects

1. Koca A., Özkaya A. R., Karaca Albayrak F., Sarıoğlu C., TUBITAK Project, Fotoelektrokimyasal-Fotokatalitik Hidrojen Üretim Reaksiyonları (PEPCHER) ile Saf Hidrojen Üretimi, 2017 - 2019
2. Karaca Albayrak F., Koca A., TUBITAK Project, FOTOKATALİTİK, ELEKTROKATALİTİK İKİLİ HİDROJEN ÜRETİM SİSTEMİ, 2014 - 2016
3. Karaca Albayrak F., Project Supported by Higher Education Institutions, Kayısı Çekirdeği Kabuklarının Pirolizi ve Ürünlerinin Karakterizasyonu , 2012 - 2013
4. Karaca Albayrak F., Project Supported by Higher Education Institutions, Farklı Katkı Maddelerinin Baz Yağlar Üzerindeki Etkilerinin İncelenmesi , 2012 - 2013
5. Karaca Albayrak F., Project Supported by Higher Education Institutions, Çeşitli Biyokütle Atıkların Pirolizi ve Elde Edilen Ürünlerin Karakterizasyonu , 2009 - 2012

Jury Memberships

Appointment to Academic Staff-Assistant Professorship, Appointment Academic Staff, Gebze Teknik Üniversitesi, May, 2020

Associate Professor Exam, Associate Professor Exam, Atatürk Üniversitesi, February, 2020

Published journal articles indexed by SCI, SSCI, and AHCI

1. **Design of novel metal chalcogenide photoanodes supported with reduced graphene oxide for improvement of photoelectrochemical hydrogen evolution**
Neli Ö., BUDAK Ö., KARACA ALBAYRAK F., KESKİN B., ÖZKAYA A. R., KOCA A.
Journal of Photochemistry and Photobiology A: Chemistry, vol.440, 2023 (SCI-Expanded)
2. **Development of hyaluronic acid-based electroconductive hydrogel as a sensitive non-enzymatic glucose sensor**
AYCAN D., KARACA ALBAYRAK F., Alemdar N.
Materials Today Communications, vol.35, 2023 (SCI-Expanded)
3. **Electro-stimulated drug release by methacrylated hyaluronic acid-based conductive hydrogel with enhanced mechanical properties**
AYCAN D., KARACA ALBAYRAK F., KOCA A., Alemdar N.
International Journal of Biological Macromolecules, vol.231, 2023 (SCI-Expanded)

4. **Solar-hydrogen production with reduced graphene oxide supported Cd_xZn_{1-x}S photocatalysts**
Tanişik İ., UĞUZ Ö., Akyüz D., Zunain Ayaz R. M., SARIOĞLU C., Karaca F., ÖZKAYA A. R., KOCA A.
International Journal of Hydrogen Energy, vol.45, no.60, pp.34845-34856, 2020 (SCI-Expanded)
5. **Photoelectrochemical performance of thermally sulfurized Cd_xZn_{1-x}S photoanode: Enhancement with reduced graphene oxide support**
Zunain Ayaz R., Akyüz D., UĞUZ Ö., Tanışik İ., SARIOĞLU C., Karaca F., ÖZKAYA A. R., KOCA A.
RENEWABLE ENERGY, vol.162, pp.182-195, 2020 (SCI-Expanded)
6. **Metal chalcogenide based photocatalysts decorated with heteroatom doped reduced graphene oxide for photocatalytic and photoelectrochemical hydrogen production**
Akyüz D., Zunain Ayaz R. M., Yilmaz S., UĞUZ Ö., SARIOĞLU C., Karaca F., ÖZKAYA A. R., KOCA A.
INTERNATIONAL JOURNAL OF HYDROGEN ENERGY, vol.44, no.34, pp.18836-18847, 2019 (SCI-Expanded)
7. **A new sulfur source for the preparation of efficient Cd(1-x)ZnxS photocatalyst for hydrogen evolution reaction**
Agopcan B., Akyuz D., Karaca F., SARIOĞLU C., KOCA A.
INTERNATIONAL JOURNAL OF HYDROGEN ENERGY, vol.43, no.17, pp.8206-8220, 2018 (SCI-Expanded)
8. **Fixed-bed pyrolysis of walnut shell: Parameter effects on yields and characterization of products**
AÇIKALIN K., Karaca F.
JOURNAL OF ANALYTICAL AND APPLIED PYROLYSIS, vol.125, pp.234-242, 2017 (SCI-Expanded)
9. **Direct liquefaction of pistachio nut shells-Effects of parameters on product yields**
Karaca F., Bektas I.
ENERGY SOURCES PART A-RECOVERY UTILIZATION AND ENVIRONMENTAL EFFECTS, vol.39, no.4, pp.361-368, 2017 (SCI-Expanded)
10. **Photocatalytic-electrocatalytic dual hydrogen production system**
Aydemir M., Akyuz D., Agopcan B., Sener M. K., KARACA ALBAYRAK F., Sarzoglu C., KOCA A.
INTERNATIONAL JOURNAL OF HYDROGEN ENERGY, vol.41, no.19, pp.8209-8220, 2016 (SCI-Expanded)
11. **Multiple Regression Analysis of Catalytic Dehydrogenation of Isopropanol in a Chemical Heat Pump System**
MERT M. S., SALT İ., Karaca F., Mert H. H., Bolat E.
CHEMICAL ENGINEERING & TECHNOLOGY, vol.38, no.3, pp.399-408, 2015 (SCI-Expanded)
12. **The Liquefaction of Sunflower Seed Hulls**
Acikalin K., Ozyurt I., Karaca F., Bolat E.
ENERGY SOURCES PART A-RECOVERY UTILIZATION AND ENVIRONMENTAL EFFECTS, vol.36, no.1, pp.112-120, 2014 (SCI-Expanded)
13. **Chemical exergy calculations for petroleum and petroleum-derived liquid fractions**
Karaca F.
INTERNATIONAL JOURNAL OF EXERGY, vol.12, no.4, pp.451-462, 2013 (SCI-Expanded)
14. **Characterization of Tars from the Thermal Processing of Baganuur and Tavan Tolgoi Coals from Mongolia Using SEC UV F IR and Mass Spectrometry**
Purevsuren B., Davaajav Y., Batbilibig S., Namkhainorov J., KARACA F., Morgan T. J., Rodriguez P. A., Tay F. H., Kazarian S., Herod A. A., et al.
Advances in Chemical Engineering and Science, vol.3, pp.130-144, 2013 (SCI-Expanded)
15. **Exergoeconomic analysis of a cogeneration plant in an iron and steel factory**
MERT M. S., DİLMAÇ Ö. F., Ozkan S., Karaca F., Bolat E.
ENERGY, vol.46, no.1, pp.78-84, 2012 (SCI-Expanded)
16. **Synthesis and characterization of metallo phthalocyanines bearing 7-oxy-3-(4-pyridyl)coumarin substituents and their supramolecular structures with vanadyl bis(acetylacetone)**
Esenpinar A. A., Durmaz E., Karaca F., Bulut M.
POLYHEDRON, vol.38, no.1, pp.267-274, 2012 (SCI-Expanded)
17. **Pyrolysis of pistachio shell: Effects of pyrolysis conditions and analysis of products**
Acikalin K., Karaca F., Bolat E.
FUEL, vol.95, no.1, pp.169-177, 2012 (SCI-Expanded)

18. **Molecular mass ranges of coal tar pitch fractions by mass spectrometry and size-exclusion chromatography**
Karaca F., Morgan T. J., George A., Bull I. D., Herod A. A., Milian M., Kandiyoti R.
RAPID COMMUNICATIONS IN MASS SPECTROMETRY, vol.23, no.13, pp.2087-2098, 2009 (SCI-Expanded)
19. **Pyrolysis of waste polypropylene and characterisation of tar**
Purevsuren B., Davaajav Y., KARACA F., Morgan T., George A., Herod A., Kandiyoti R.
EUROPEAN JOURNAL OF MASS SPECTROMETRY, vol.15, no.1, pp.23-33, 2009 (SCI-Expanded)
20. **Electrocatalytic activity of phthalocyanines bearing thiophenes for hydrogen production from water**
Osmanbas O. A., KOCA A., KANDAZ M., Karaca F.
INTERNATIONAL JOURNAL OF HYDROGEN ENERGY, vol.33, no.13, pp.3281-3288, 2008 (SCI-Expanded)
21. **The pentane- and toluene-soluble fractions of a petroleum residue and three coal tars by size exclusion chromatography and UV-fluorescence spectroscopy**
KARACA F., Millan-Agorio M., Morgan T. J., Bull I. D., Herod A. A., Kandiyoti R.
OIL & GAS SCIENCE AND TECHNOLOGY-REVUE D' IFP ENERGIES NOUVELLES, vol.63, no.1, pp.129-137, 2008 (SCI-Expanded)
22. **Probing size exclusion mechanisms of complex hydrocarbon mixtures: The effect of altering eluent compositions**
Paul-Dauphin S., KARACA F., Morgan T. J., Millan-Agorio M., Herod A. A., Kandiyoti R.
ENERGY & FUELS, vol.21, no.6, pp.3484-3489, 2007 (SCI-Expanded)
23. **Size exclusion chromatography for the unambiguous detection of aliphatics in fractions from petroleum vacuum residues, coal liquids, and standard materials, in the presence of aromatics**
Al-Muhareb E. M., KARACA F., Morgan T. J., Herod A. A., Bull I. D., Kandiyoti R.
ENERGY & FUELS, vol.20, no.3, pp.1165-1174, 2006 (SCI-Expanded)
24. **Molecular mass distribution and structural characterization of liquefaction products of a biomass waste material**
KARACA F.
ENERGY & FUELS, vol.20, no.1, pp.383-387, 2006 (SCI-Expanded)
25. **Central composite rotatable design for liquefaction of pine barks**
ACIKALIN K., KARACA F., Bolat E.
FUEL PROCESSING TECHNOLOGY, vol.87, no.1, pp.17-24, 2005 (SCI-Expanded)
26. **Characterising high mass materials in heavy oil fractions by size exclusion chromatography and MALDI-mass spectrometry**
Millan M., Behrouzi M., KARACA F., Morgan T. J., Herod A. A., Kandiyoti R.
CATALYSIS TODAY, vol.109, pp.154-161, 2005 (SCI-Expanded)
27. **Effect of several salts on the elution behaviour of heavy hydrocarbon liquids during size exclusion chromatography with 1-methyl-2-pyrrolidinone as eluent**
KARACA F., Morgan T. J., Behrouzi M., Herod A. A., Kandiyoti R.
FUEL, vol.84, pp.1805-1811, 2005 (SCI-Expanded)
28. **The size exclusion chromatography calibration of 'Mixed-A' and 'Mixed-D' columns using various polymers and compounds: An application to coal-derived materials**
KARACA F., Millan M., Behrouzi M., Herod A. A., Kandiyoti R.
ANALYTICA CHIMICA ACTA, vol.547, no.1, pp.78-82, 2005 (SCI-Expanded)
29. **Effect of salts on the SEC profiles of heavy hydrocarbon liquids: New approach with salts dissolved in solvents used for planar chromatography**
KARACA F., Behrouzi M., Morgan T. J., Herod A. A., Kandiyoti R.
ENERGY & FUELS, vol.19, no.1, pp.187-199, 2005 (SCI-Expanded)
30. **The high-mass component ($> m/z 10\,000$) of coal tar pitch by matrix-assisted laser desorption/ionisation mass spectrometry and size-exclusion chromatography**
Milian M., Morgan T. J., Behrouzi M., KARACA F., Galmes C., Herod A. A., Kandiyoti R.
RAPID COMMUNICATIONS IN MASS SPECTROMETRY, vol.19, no.13, pp.1867-1873, 2005 (SCI-Expanded)
31. **The calibration of size exclusion chromatography columns: Molecular mass distributions of heavy**

hydrocarbon liquids

KARACA F., Islas C. A., Millan M., Behrouzi M., Morgan T. J., Herod A. A., Kandiyoti R.
ENERGY & FUELS, vol.18, no.3, pp.778-788, 2004 (SCI-Expanded)

32. Economic analysis and comparison of chemical heat pump systems

KARACA F., KINCAY O., Bolat E.
Applied Thermal Engineering, vol.22, pp.1789-1799, 2002 (SCI-Expanded)

33. Coprocessing of a Turkish lignite with a cellulosic waste material 3. A statistical study on product yields and total conversion

KARACA F., Bolat E., Dinçer S.
Fuel Processing Technology, vol.75, pp.117-127, 2002 (SCI-Expanded)

34. Coprocessing of a Turkish lignite with a cellulosic waste material 1

KARACA F., Bolat E.
Fuel Processing Technology, vol.64, pp.47-55, 2000 (SCI-Expanded)

Articles Published in Other Journals

1. investigation of the chemical exergy of torrefied lignosellulosic fuels using artificial neural networks

ÖZVEREN U., DİLMAÇ Ö. F., MERT M. S., KARACA ALBAYRAK F.
journal of the turkish chemical society, section B: chemical engineering, vol.1, pp.69-76, 2018 (Peer-Reviewed Journal)

2. Investigation of the Chemical Exergy of Torrefied Lignocellulosic Fuels using Artificial Neural Networks

ÖZVEREN U., DİLMAÇ Ö. F., MERT M. S., KARACA ALBAYRAK F.
Journal of the Turkish Chemical Society, Section B: Chemical Engineering, vol.1, no.1, pp.69-76, 2017 (Peer-Reviewed Journal)

Refereed Congress / Symposium Publications in Proceedings

1. Development of curcumin loaded reduced graphene oxide based polymeric films for wound dressing applications

AYCAN D., KARACA ALBAYRAK F., ALEMDAR YAYLA N.
13th European Congress of Chemical Engineering, Germany, 20 - 23 September 2021

2. Determination of Optimum Reduced Graphene Oxide Synthesis Method for Conductive Sensing Material Production

AYCAN D., KARACA ALBAYRAK F., ALEMDAR YAYLA N.
European Biotechnology Congress 2020, Prag, Czech Republic, 24 - 26 September 2020

3. Enhanced Photoelectrochemical activity of Reduced Graphene Oxide decorated Cd_xZn_{1-x}S photocatalyst for Hydrogen Production

AYAZ R. M. Z., AKYÜZ ÇUBUKÇU D., UĞUZ Ö., TANIŞIK İ., SARIOĞLU C., KARACA ALBAYRAK F., ÖZKAYA A. R., KOCA A.

4th International Hydrogen Technologies Congress, IHTEC, 20 - 23 June 2019

4. Photoelectrochemical-Photocatalytic Dual Hydrogen Production System

UĞUZ Ö., AKYÜZ D., AYAZ R. M. Z., YILMAZ S., SARİOĞLU C., KARACA ALBAYRAK F., ÖZKAYA A. R., KOCA A.
4th International Hydrogen Technologies Congress, 20 - 23 June 2019

5. Photoelectrochemical-Photocatalytic Dual Hydrogen Production of RGO-Cd_{1-x}Zn_xS

UĞUZ Ö., AKYÜZ ÇUBUKÇU D., AYAZ R. M. Z., YILMAZ S., SARİOĞLU C., KARACA ALBAYRAK F., ÖZKAYA A. R., KOCA A.

4th International Hydrogen Technologies Congress, IHTEC, 20 - 23 June 2019

6. Simulation of Pine Cone Gasification In Fluidized Bed Gasifier By Using ASPEN PLUS

Tumurbat T., Kartal F., Karaca Albayrak F., Özveren U.

International Conference on Energy and Sustainable Built Environment (ICESBE 2019), İstanbul, Turkey, 19 - 20 June 2019

7. **The Effect of Co-Catalyst and Novel Heterogeneous Active Photocatalysts for Hydrogen Evolution Under Solar Energy**
AKYÜZ D., UĞUZ Ö., TANIŞIK İ., AYAZ R. M. Z., SARIOĞLU C., KARACA ALBAYRAK F., ÖZKAYA A. R., KOCA A.
3rd International Hydrogen Technologies Congress, 15 - 18 March 2018
8. **Active Photocatalysts Designed by Sulphurization Method for Hydrogen Production**
TANIŞIK İ., AKYÜZ D., AYAZ R. M. Z., UĞUZ Ö., SARIOĞLU C., KARACA ALBAYRAK F., ÖZKAYA A. R., KOCA A.
3rd International Hydrogen Technologies Congress, 15 - 18 March 2018
9. **Photoelectrochemical Hydrogen Production Using Cd(1-x)ZnxS and Its Modifications with Graphene Derivatives**
UĞUZ Ö., AKYÜZ D., AYAZ R. M. Z., TANIŞIK İ., SARIOĞLU C., KARACA ALBAYRAK F., ÖZKAYA A. R., KOCA A.
3rd International Hydrogen Technologies Congress, 15 - 18 March 2018
10. **Hydrogen Production from Water as Photoelectrochemical by using Solar Light Irradiation**
AYAZ R. M. Z., AKYÜZ D., UĞUZ Ö., TANIŞIK İ., SARIOĞLU C., KARACA ALBAYRAK F., ÖZKAYA A. R., KOCA A.
3rd International Hydrogen Technologies Congress, 15 - 18 March 2018
11. **Electrode Modifications, Characterizations And Electrochemical Applications Of Metallophthalocyanines**
KOCA A., AKYÜZ D., ALEMDER N., KARACA ALBAYRAK F.
The 2nd International Conference On Applications In Chemistry And Chemical Engineering (icacche), 11 - 15 October 2017
12. **Photocatalytic Hydrogen Production From Water Under Sun Light**
AKYÜZ D., ALEMDER N., KARACA ALBAYRAK F., KOCA A.
The 2nd International Conference On Applications In Chemistry And Chemical Engineering (icacche), 11 - 15 October 2017
13. **Elecrode modificaltions, characterizations and electrochemical applications of metallophthalocyanines**
KOCA A., akyüz d., ALEMDAR N., KARACA ALBAYRAK F.
International Conference on Applications in Chemistry and Chemical Engineering, Sarajevo, 11 - 15 October 2017
14. **Solid State Electropolymerization of Manganese Phthalocyanine coated with Langmuir-Blodgett and Click Electrochemistry**
KOCA A., AKYÜZ ÇUBUKÇU D., KARACA ALBAYRAK F., ÖZKAYA A. R.
68th Annual Meeting of the International Society of Electrochemistry, 27 August - 01 September 2017
15. **TÜRK KÖMÜRLERİNİN KİMYASAL EKSERJİLERİNİN HESAPLANMASI İÇİN YENİ BİR MODEL GELİŞTİRİLMESİ**
Yaman M., PESEN E. B., ÖZVEREN U., KARACA ALBAYRAK F.
8. Ulusal Kimya Öğrenci Kongresi, Turkey, 16 - 18 May 2017
16. **Investigation of the Chemical Exergy of Torrefied Lignocellulosic Fuels using Artificial Neural Networks**
ÖZVEREN U., DİLMAÇ Ö. F., MERT M. S., KARACA ALBAYRAK F.
International Conference on Advances and Innovations in Engineering, 10 - 12 May 2017
17. **Estimating the Chemical Exergy of Coal Using Nonlinear Model**
ÖZVEREN U., KARACA ALBAYRAK F.
International Conference on Advances and Innovations in Engineering, 10 - 12 May 2017
18. **Analysis of the effects of different additives on base oils**
BÜYÜKNİSAN P. A., ALTIN Z. G., KARACA ALBAYRAK F.
28. Ulusal Kimya Kongresi, 15 - 21 August 2016

Academic and Administrative Experience

2015 - Continues	Head of Department	Marmara University, Faculty of Engineering, Chemical Engineering
2014 - 2017	Vice Dean	Marmara University, Faculty of Engineering

Courses

Final Project II, Undergraduate, 2019 - 2020
Process Design in Chemical Engineering, Undergraduate, 2019 - 2020
Renewable energy sources , Undergraduate, 2019 - 2020
Acil Durumlar ve İlk Yardım, Postgraduate, 2019 - 2020
Mass and Energy Balances, Undergraduate, 2019 - 2020
Bitirme Projesi I, Undergraduate, 2019 - 2020
Coal Utilization & Technology , Doctorate, 2019 - 2020
Renewable Energy Systems , Postgraduate, 2019 - 2020

Advising Theses

Karaca Albayrak F., Energy and exergy analysis of biomass gasification in adowndraft gasifier, Postgraduate, T.OCHIR(Student), 2019
KARACA ALBAYRAK F., Analysis of the effects of different additives on base oils, Postgraduate, P.AY(Student), 2013
KARACA ALBAYRAK F., Pyrolysis of apricot kernel as a biomass waste and analysis of products, Postgraduate, B.TUNÇOK(Student), 2013

Activities in Scientific Journals

International journal of advances in engineering and pure sciences (Online), Committee Member, 2019 - Continues

Memberships / Tasks in Scientific Organizations

Kimya Mühendisleri Odası , Member, 1990 - Continues, Turkey

Metrics

Publication: 56
Citation (WoS): 694
Citation (Scopus): 745
H-Index (WoS): 16
H-Index (Scopus): 16

Research Areas

Chemical Engineering and Technology