

FATMA KARACA ALBAYRAK

PROF.

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

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 yürütmüştür. 2014 yılında Yıldız Teknik Üniversitesi, Kimya Mühendisliği Bölümünde Yardımcı Doçent olarak göreve başlamıştır. 2006-2007 tarihleri arasında Imperial College, Kimya Mühendisliği Bölümü'nde araştırma çalışmalarına devam etmiştir. 2007 yılında Doçentlik Ünvanını, 2013 yılında ise Profesör ünvanını almıştır. Enerji, fosil yakıtlar, biyokütle, ağır hidrokarbonların karakterizasyonu gibi alanlarda araştırma çalışmalarını yürütmektedir. Halen Marmara üniversitesi Kimya Mühendisliği Bölümü'nde görev yapmaktadır.

Learning Knowledge

Doctorate 1993 - 2000	Yıldız Teknik Üniversitesi, Fen Bilimleri Enstitüsü, Kimya Mühendisliği (Dr), Turkey
Postgraduate 1990 - 1992	Yıldız Teknik Üniversitesi, Kimya-Metalurji Fakültesi, Kimya Mühendisliği Bölümü, Turkey
Undergraduate 1986 - 1990	Yıldız Teknik Üniversitesi, Kimya-Metalurji Fakültesi, Kimya Mühendisliği Bölümü, Turkey

Dissertations

Doctorate, Soma linyitinin biyokütlesel bir atıkla ortak işlenmesi ve sıvılaştırma 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

Yıldız Teknik Üniversitesi, Kimya-Metalurji Fakültesi, Kimya Mühendisliği Bölümü

Research Assistant

1991 - 2004

Yıldız Teknik Üniversitesi, Kimya-Metalurji Fakültesi, Kimya Mühendisliği Bölümü

Supported Projects

1. Koca A., Özkaya A. R. , Karaca Albayrak F., Sarıoğlu C., TÜBİTAK Project, Fotoelektrokimyasal-Fotokatalitik Hidrojen Üretim Reaksiyonları (PEPCHER) ile Saf Hidrojen Üretimi, 2017 - 2019
2. Karaca Albayrak F., Koca A., TÜBİTAK Project, FOTOKATALİTİK, ELEKTROKATALİTİK İKİLİ HİDROJEN ÜRETİM SİSTEMİ, 2014 - 2016
3. Karaca Albayrak F., Project Supported by Higher Education Institutions, Kayısı Çekirdeği Kabuklarının Pirolyzi 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 Pirolyzi ve Elde Edilen Ürünlerin Karakterizasyonu , 2009 - 2012

Jury Memberships

Appointment Academic Staff, Appointment Academic Staff, Gebze Teknik Üniversitesi, May, 2020

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

Articles Published in Journals That Entered SCI, SSCI and AHCI Indexes

1. **Solar-hydrogen production with reduced graphene oxide supported CdxZn1-xS photocatalysts**
Tanışık 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 (Journal Indexed in SCI Expanded)
2. **Photoelectrochemical performance of thermally sulfurized CdxZn1-xS photoanode: Enhancement with reduced graphene oxide support**
Zunain Ayaz R., Akyüz D., UĞUZ Ö., Tanışık İ., SARIOĞLU C., Karaca F., ÖZKAYA A. R. , KOCA A.
RENEWABLE ENERGY, vol.162, pp.182-195, 2020 (Journal Indexed in SCI)
3. **Metal chalcogenide based photocatalysts decorated with heteroatom doped reduced graphene oxide for photocatalytic and photoelectrochemical hydrogen production**
Akyüz D., Zunain Ayaz R. M. , Yılmaz 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 (Journal Indexed in SCI)
4. **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 (Journal Indexed in SCI)
5. **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 (Journal Indexed in SCI)

6. **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 (Journal Indexed in SCI)
7. **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 (Journal Indexed in SCI)
8. **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 (Journal Indexed in SCI)
9. **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 (Journal Indexed in SCI)
10. **Chemical exergy calculations for petroleum and petroleum-derived liquid fractions**
Karaca F.
INTERNATIONAL JOURNAL OF EXERGY, vol.12, no.4, pp.451-462, 2013 (Journal Indexed in SCI)
11. **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., Bathilig 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 (Journal Indexed in SCI Expanded)
12. **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 (Journal Indexed in SCI)
13. **Synthesis and characterization of metallo phthalocyanines bearing 7-oxy-3-(4-pyridyl)coumarin substituents and their supramolecular structures with vanadyl bis(acetylacetonate)**
Esenpinar A. A. , Durmaz E., Karaca F., Bulut M.
POLYHEDRON, vol.38, no.1, pp.267-274, 2012 (Journal Indexed in SCI)
14. **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 (Journal Indexed in SCI)
15. **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 (Journal Indexed in SCI)
16. **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 (Journal Indexed in SCI)
17. **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 (Journal Indexed in SCI)
18. **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 (Journal Indexed in SCI)
19. **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 (Journal Indexed in SCI)
20. **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 (Journal Indexed in SCI)
 21. **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 (Journal Indexed in SCI)
 22. **Central composite rotatable design for liquefaction of pine barks**
AÇIKALIN K., KARACA F., Bolat E.
FUEL PROCESSING TECHNOLOGY, vol.87, no.1, pp.17-24, 2005 (Journal Indexed in SCI)
 23. **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 (Journal Indexed in SCI)
 24. **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 (Journal Indexed in SCI)
 25. **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 (Journal Indexed in SCI)
 26. **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 (Journal Indexed in SCI)
 27. **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 (Journal Indexed in SCI)
 28. **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 (Journal Indexed in SCI)
 29. **Economic analysis and comparison of chemical heat pump systems**
KARACA F., KINCA Y O., Bolat E.
Applied Thermal Engineering, vol.22, pp.1789-1799, 2002 (Journal Indexed in SCI)
 30. **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 (Journal Indexed in SCI)
 31. **Coprocessing of a Turkish lignite with a cellulosic waste material 1**
KARACA F., Bolat E.
Fuel Processing Technology, vol.64, pp.47-55, 2000 (Journal Indexed in SCI)

Articles Published in Other Journals

1. **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, pp.69-76, 2018 (Other Refereed National Journals)

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 (Other Refereed National Journals)

Refereed Congress / Symposium Publications in Proceedings

1. **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

2. **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

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

UĞUZ Ö., AKYÜZ ÇUBUKÇU D., AYAZ R. M. Z. , YILMAZ S., 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., Koca A., Karaca Albayrak F., Sarioğlu C., Akyüz D., Ayaz R. M. Z. , Davulcu S.

4th International Hydrogen Technologies Congress, Edirne, Turkey, 20 June 2019, pp.275-278

5. **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, 19 - 20 June 2019

6. **Energy and Exergy Analysis of Air Gasification for Pine Cone in Downdraft Gasifier by Using Cycle Tempo**

TUMURBAT T., KARACA ALBAYRAK F., ÖZVEREN U.

5th International Conference on Sustainable Development, 17 - 21 April 2019

7. **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

8. **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

9. **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

10. **Photoelectrochemical Hydrogen Production Using Cd(1-x)Zn_xS 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

11. **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
12. **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
13. **Electrode modifications, 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

Citations

Total Citations (WOS):545

h-index (WOS):14

Research Areas

Chemical Engineering and Technology