

Assoc. Prof. BERNA TOPUZ

Personal Information

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International Researcher IDs

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Education Information

Doctorate, Izmir Institute Of Technology, Institute Of Engineering And Natural Sciences, Kimya Mühendisliği (Dr) (İngilizce), Turkey 2002 - 2009

Postgraduate, Izmir Institute Of Technology, Institute Of Engineering And Natural Sciences, Malzeme Bilimi Ve Mühendisliği (YI) (Tezli) (İngilizce), Turkey 1999 - 2002

Undergraduate, Ege University, Faculty Of Engineering, Kimya Mühendisliği Bölümü, Turkey 1994 - 1999

Foreign Languages

English, C1 Advanced

Dissertations

Doctorate, Gas permeation through sol-gel derived alumina and silica based membranes, Izmir Institute Of Technology, Mühendislik Ve Fen Bilimleri Enstitüsü, Kimya Mühendisliği (Dr) (İngilizce), 2009

Postgraduate, The use and characterization of composite alumina-titania-zirconia-silica ceramic membranes for gas separation, Izmir Institute Of Technology, Mühendislik Ve Fen Bilimleri Enstitüsü, Malzeme Bilimi Ve Mühendisliği (YI) (Tezli) (İngilizce), 2002

Research Areas

Engineering and Technology

Academic Titles / Tasks

Associate Professor, Johns Hopkins University, Whiting School of Engineering, NanoBio Technology , 2023 - Continues

Associate Professor, Ankara University, Mühendislik Fakültesi, Kimya Mühendisliği Bölümü, 2018 - Continues

Assistant Professor, Ankara University, Mühendislik Fakültesi, Kimya Mühendisliği Bölümü, 2014 - 2018

Researcher, University of Minnesota, Engineering Faculty, Chemical Engineering and Materials Science, 2012 - 2014

Researcher, Middle East Technical University, Faculty Of Engineering, Department Of Chemical Engineering, 2010 - 2011

Research Assistant, Izmir Institute Of Technology, Institute Of Engineering And Natural Sciences, Kimya Mühendisliği (YI) (Tezli) (İngilizce), 2002 - 2009

Research Assistant, Izmir Institute Of Technology, Institute Of Engineering And Natural Sciences, Malzeme Bilimi Ve Mühendisliği (YL) (Tezli) (İngilizce), 1999 - 2002

Academic and Administrative Experience

Vice Dean, Ankara University, Mühendislik Fakültesi, 2021 - 2022

Assistant Director of the Institute, Ankara University, Su Yönetimi Enstitüsü, 2016 - 2021

Courses

Advanced Chemical Reaction Engineering in Practice, Postgraduate, 2023 - 2024

Kimya Mühendisliği Matematiği, Postgraduate, 2022 - 2023, 2017 - 2018, 2016 - 2017, 2015 - 2016

Materials Science, Undergraduate, 2022 - 2023, 2021 - 2022, 2016 - 2017, 2015 - 2016, 2014 - 2015, 2013 - 2014

Kimya Mühendisliği Lab III, Undergraduate, 2022 - 2023, 2016 - 2017

Mass Transfer, Undergraduate, 2022 - 2023, 2021 - 2022, 2020 - 2021

Mass and Energy Balances, Undergraduate, 2017 - 2018, 2016 - 2017, 2015 - 2016, 2014 - 2015

Kimya Mühendisliği Lab II, Undergraduate, 2017 - 2018

Araştırma Teknikleri, Undergraduate, 2017 - 2018, 2016 - 2017, 2015 - 2016, 2013 - 2014

Kimya Muh. Lab II, Undergraduate, 2016 - 2017

Kimya Muh. Lab.II, Undergraduate, 2015 - 2016, 2014 - 2015

Kimya Muh. Lab III, Undergraduate, 2015 - 2016

Fluid Mechanics, Undergraduate, 2014 - 2015

Kimya Müh. Lab. III, Undergraduate, 2014 - 2015, 2013 - 2014

Advising Theses

Karakeçili A., Topuz B., ANTİBAKTERİYAL METAL ORGANİK KAFES YAPILARI İÇEREN KİTOSAN DOKU İSKELELERİNİN ÜRETİMİ VE KARAKTERİZASYONU, Postgraduate, F.Şevval(Student), 2022

Karakeçili A., Topuz B., Antibiyotik yüklü metal organik kafes yapıların sentezi ve karakterizasyonu, Postgraduate, T.ŞAHİN(Student), 2022

Topuz B., Sol-jel yöntemi ile monolit mof nanokompozitlerinin üretimi: UiO-66/ZIF-8, Postgraduate, P.KAYA(Student), 2021

TOPUZ B., Nanotabaka bazlı Mfi membranların hazırlanması ve karakterizasyonu, Postgraduate, A.SEMİH(Student), 2021

TOPUZ B., Preparation and characterization of ZIF based MOF membranes for H2 separation, Postgraduate, E.ŞİMAL(Student), 2020

TOPUZ B., Preparation and characterization of organic-inorganic hybrid silica membranes, Postgraduate, T.KURT(Student), 2019

Kalpçılar H., Topuz B., Vapor separation by mixed matrix polymeric membranes, Doctorate, F.ŞAHİN(Student), 2018

Jury Memberships

Doctoral Examination, Doctoral Examination, Ankara Üniversitesi, February, 2023

Post Graduate, Post Graduate, Orta Doğu Teknik Üniversitesi, September, 2022

Post Graduate, Post Graduate, Orta Doğu Teknik Üniversitesi, February, 2022

Published journal articles indexed by SCI, SSCI, and AHCI

- I. **Ti-substituted organosilica membranes for H₂ sieving: Sol-gel and DFT insights**
KAYI H., Kaya P., Kurt T., Mirza E. S., TOPUZ B.
INTERNATIONAL JOURNAL OF HYDROGEN ENERGY, vol.65, pp.496-504, 2024 (SCI-Expanded)
- II. **Design of a Zr-based metal-organic framework as an efficient fosfomycin carrier: a combined experimental and DFT study**
Topuz B., Kayı H., Şahin T., Ersoy F. Ş., Günyaktı A., Karakeçili A.
NEW JOURNAL OF CHEMISTRY, vol.47, no.3, pp.1278-1290, 2023 (SCI-Expanded)
- III. **UiO-66 metal-organic framework as a double actor in chitosan scaffolds: Antibiotic carrier and osteogenesis promoter**
Karakeçili A., Topuz B., Ersoy F. S., Sahin T., Gunyaktı A., Demirtaş T. T.
BIOMATERIALS ADVANCES, vol.136, 2022 (SCI-Expanded)
- IV. **Nanoscale tailoring on thin bimetallic organo-oxide membranes for H₂/CO₂ separation**
Mirza E. S., TOPUZ B.
SEPARATION AND PURIFICATION TECHNOLOGY, vol.280, 2022 (SCI-Expanded)
- V. **Sol-gel control on mixed network silica membranes for gas separation**
Kurt T., TOPUZ B.
SEPARATION AND PURIFICATION TECHNOLOGY, vol.255, 2021 (SCI-Expanded)
- VI. **BMP-6 carrying metal organic framework-embedded in bioresorbable electrospun fibers for enhanced bone regeneration**
Toprak O., TOPUZ B., Abou Monsef Y., OTO Ç., ORHAN K., KARAKEÇİLİ A.
MATERIALS SCIENCE & ENGINEERING C-MATERIALS FOR BIOLOGICAL APPLICATIONS, vol.120, 2021 (SCI-Expanded)
- VII. **ZIF filled PDMS mixed matrix membranes for separation of solvent vapors from nitrogen**
Sahin F., TOPUZ B., KALIPÇILAR H.
JOURNAL OF MEMBRANE SCIENCE, vol.598, 2020 (SCI-Expanded)
- VIII. **Metal-organic frameworks for on-demand pH controlled delivery of vancomycin from chitosan scaffolds**
Karakeçili A., TOPUZ B., Korpayev S., Erdek M.
MATERIALS SCIENCE AND ENGINEERING C-MATERIALS FOR BIOLOGICAL APPLICATIONS, vol.105, 2019 (SCI-Expanded)
- IX. **Preparation and characterization of supported PES membranes**
TOPUZ B., YILMAZ L., KALIPÇILAR H.
JOURNAL OF THE FACULTY OF ENGINEERING AND ARCHITECTURE OF GAZI UNIVERSITY, vol.34, no.1, pp.155-164, 2019 (SCI-Expanded)
- X. **Synthesis of ZIF-7, ZIF-8, ZIF-67, and ZIF-L from recycled mother liquors**
ŞAHİN F. N., TOPUZ B., KALIPÇILAR H.
MICROPOROUS AND MESOPOROUS MATERIALS, vol.261, pp.259-267, 2018 (SCI-Expanded)
- XI. **Nanoscale Control of Homoepitaxial Growth on a Two-Dimensional Zeolite**
Shete M., Kumar M., Kim D., Rangnekar N., Xu D., TOPUZ B., Agrawal K. V., Karapetrova E., Stottrup B., Al-Thabaiti S., et al.
ANGEWANDTE CHEMIE-INTERNATIONAL EDITION, vol.56, no.2, pp.535-539, 2017 (SCI-Expanded)
- XII. **Synthesis of ZSM-5 and SAPO-34 membranes in a high temperature-pressure recirculating-flow system**
TOPUZ B., Onder A., Bowen T. C., KALIPÇILAR H.
CHEMICAL ENGINEERING RESEARCH & DESIGN, vol.117, pp.746-755, 2017 (SCI-Expanded)
- XIII. **Open-Pore Two-Dimensional MFI Zeolite Nanosheets for the Fabrication of Hydrocarbon-Isomer-Selective Membranes on Porous Polymer Supports**
Zhang H., Xiao Q., Guo X., Li N., Kumar P., Rangnekar N., Jeon M. Y., Al-Thabaiti S., Narasimharao K., Basahel S. N., et al.
ANGEWANDTE CHEMIE-INTERNATIONAL EDITION, vol.55, no.25, pp.7184-7187, 2016 (SCI-Expanded)
- XIV. **Oriented MFI Membranes by Gel-Less Secondary Growth of Sub-100 nm MFI-Nanosheet Seed Layers**

- Agrawal K. V., Topuz B., Tung Cao Thanh Pham T. C. T. P., Thanh Huu Nguyen T. H. N., Sauer N., Rangnekar N., Zhang H., Narasimharao K., Basahel S. N., Francis L. F., et al.
ADVANCED MATERIALS, vol.27, no.21, pp.3243-3249, 2015 (SCI-Expanded)
- XV. **2D Zeolite Coatings: Langmuir-Schaefer Deposition of 3nm Thick MFI Zeolite Nanosheets**
Rangnekar N., Shete M., Agrawal K. V., Topuz B., Kumar P., Guo Q., Ismail I., Alyoubi A., Basahel S., Narasimharao K., et al.
ANGEWANDTE CHEMIE-INTERNATIONAL EDITION, vol.54, no.22, pp.6571-6575, 2015 (SCI-Expanded)
- XVI. **Preparation of monodisperse silica spheres and determination of their densification behaviour**
TOPUZ B., Simsek D., Ciftcioglu M.
CERAMICS INTERNATIONAL, vol.41, no.1, pp.43-52, 2015 (SCI-Expanded)
- XVII. **Synthesis of ZIF-8 from recycled mother liquors**
Demir N. K., TOPUZ B., YILMAZ L., KALIPÇILAR H.
MICROPOROUS AND MESOPOROUS MATERIALS, vol.198, pp.291-300, 2014 (SCI-Expanded)
- XVIII. **Low temperature synthesis of SAPO-34 in a recirculating-flow system**
TOPUZ B., Oral E. E., KALIPÇILAR H.
JOURNAL OF POROUS MATERIALS, vol.20, no.6, pp.1491-1500, 2013 (SCI-Expanded)
- XIX. **Solution-processable exfoliated zeolite nanosheets purified by density gradient centrifugation**
Agrawal K. V., TOPUZ B., Jiang Z., Nguenkam K., Elyassi B., Francis L. F., Tsapatsis M., Navarro M.
AIChE JOURNAL, vol.59, no.9, pp.3458-3467, 2013 (SCI-Expanded)
- XX. **Development of alumina supported ternary mixed matrix membranes for separation of H-2/light-alkane mixtures**
TOPUZ B., YILMAZ L., KALIPÇILAR H.
JOURNAL OF MEMBRANE SCIENCE, vol.415, pp.725-733, 2012 (SCI-Expanded)
- XXI. **Preparation and characterization of diphasic sol-gel derived unsupported mullite membranes**
TOPUZ B., Ciftcioglu M.
JOURNAL OF SOL-GEL SCIENCE AND TECHNOLOGY, vol.58, no.1, pp.6-11, 2011 (SCI-Expanded)
- XXII. **Sol-gel derived mesoporous and microporous alumina membranes**
TOPUZ B., Ciftcioglu M.
JOURNAL OF SOL-GEL SCIENCE AND TECHNOLOGY, vol.56, no.3, pp.287-299, 2010 (SCI-Expanded)
- XXIII. **Preparation of particulate/polymeric sol-gel derived microporous silica membranes and determination of their gas permeation properties**
TOPUZ B., Ciftcioglu M.
JOURNAL OF MEMBRANE SCIENCE, vol.350, no.1-2, pp.42-52, 2010 (SCI-Expanded)
- XXIV. **Permeation of pure gases through silica membranes with controlled pore structures**
TOPUZ B., Ciftcioglu M.
DESALINATION, vol.200, no.1-3, pp.80-82, 2006 (SCI-Expanded)
- XXV. **Investigation of the permeability of pure gases in sol-gel derived Al₂O₃ membrane**
TOPUZ B., Ciftcioglu M., Ozkan F.
EURO CERAMICS VIII, PTS 1-3, vol.264-268, pp.399-402, 2004 (SCI-Expanded)
- XXVI. **Effects of processing on the properties and permeability of pure gases through sol-gel silica membranes**
TOPUZ B., Ciftcioglu M., Ozkan F.
EURO CERAMICS VIII, PTS 1-3, vol.264-268, pp.2187-2190, 2004 (SCI-Expanded)

Articles Published in Other Journals

- I. **Fabrication of ZIF-8 membranes by direct assembly of nanosheets from bottom-up synthesis growth solution**
Duan X., Kaya P., Chi H., Topuz B., Agrawal K. V.
JOURNAL OF MEMBRANE SCIENCE LETTERS, vol.3, no.1, 2023 (ESCI)

- II. **MFI TİPİ ZEOLİT MEMBRANLARIN YÜKSEK SICAKLIKTA GERİ DÖNGÜLÜ AKIŞ SİSTEMİNDE SENTEZİ**
TOPUZ B., Saka Onder A., KALIPÇILAR H.
DOKUZ EYLÜL UNIVERSITY FACULTY OF ENGINEERING JOURNAL OF SCIENCE AND ENGINEERING, vol.20, no.59, pp.698-710, 2018 (Peer-Reviewed Journal)
- III. **Preparation of γ -Al₂O₃ supports for thin membrane fabrication**
TOPUZ B., Yurttaş A. S., Altunsoy A.
Journal of the Turkish Chemical Society, Section A: Chemistry, vol.5, no.1, pp.191-204, 2018 (Scopus)
- IV. **SENTEZ KOŞULLARININ VE ÇİNKO ÖNCÜLÜNÜN ZIF L MEMBRANLARININ GAZ GEÇİRGENLİK ÖZELLİKLERİNE ETKİSİ**
YURTSEVER H. A., SATIK E., TOPUZ B.
Dokuz Eylül Üniversitesi Mühendislik Fakültesi Fen ve Mühendislik Dergisi, vol.18, no.54, pp.333-349, 2016 (Peer-Reviewed Journal)
- V. **Photocatalytic Activities of Ag Doped ZIF 8 and ZIF L Crystals**
YURTSEVER H. A., AKGUNLU M., KURT T., YURTTAS A. S., TOPUZ B.
Journal of the Turkish Chemical Society, Section A: Chemistry, vol.3, no.3, pp.265-280, 2016 (Peer-Reviewed Journal)

Refereed Congress / Symposium Publications in Proceedings

- I. **UiO-66@ZIF-8 Monoliths with Increased Water Stability**
Kaya P., Topuz B.
7th International Conference on Multifunctional, Hybrid and Nanomaterials, Genoa, Italy, 19 - 22 October 2022, pp.1-2
- II. **TiO₂-doped BTESE Organosilica Membranes**
Kurt T., Topuz B.
PERMEA, Budapest, Hungary, 26 - 29 August 2019
- III. **Fabrication of TiO₂ Doped BTESM Organosilica Membranes**
Mirza Ş., Topuz B.
Engineering with Membranes, Halmstad, Sweden, 7 - 10 April 2019
- IV. **ZIF Based PDMS MMMs for Separation Ethanol and IPA from Nitrogen**
ŞAHİN F., TOPUZ B., KALIPÇILAR H.
Euromembrane, 9 - 13 July 2018
- V. **Oriented ZIF-L/PEBAX MMMs for CO₂/N₂ Separation**
ŞAHİN F., TOPUZ B., KALIPÇILAR H.
Euromembrane 2018, 9 - 13 July 2018
- VI. **Preparation and Characterization of TiO₂-doped Hydrothermally Stable Organosilica Membranes**
Kurt T., Yurttaş A. S., TOPUZ B.
ICIM, 18 - 22 June 2018
- VII. **Nanoscale Control of Homoepitaxial Growth on a Two-Dimensional Zeolite**
Sheete M., Kumar M., Kim D., Rangnekar N., Xu D., TOPUZ B., Varoon Agrawal K., Karapetrova E., Stottrup B., Al Thabaiti S., et al.
AIChE Meeting, 29 October - 03 November 2017
- VIII. **Preparation Of Organically-linked Silica Membranes**
Kurt T., TOPUZ B.
International Congress On Chemistry And Materials 2017, 5 - 07 October 2017
- IX. **Ethanol ve IPA'nın Azot İçerisinden PDMS Bazlı Membran Kullanılarak Ayrılması**
ŞAHİN F., TOPUZ B., KALIPÇILAR H.
5.Ulusal Membran Teknolojileri ve Uygulamaları Sempozyumu, İstanbul, Turkey, 21 - 23 September 2017
- X. **ZIF-L/ PDMS mixed matrix membranes for separation of ethyl alcohol and isopropyl alcohol from nitrogen**

ŞAHİN F., TOPUZ B., KALIPÇILAR H.

11th International Congress on Membranes and Membrane Processes, San-Francisco, Costa Rica, 29 July - 04 August 2017, pp.81

- XI. **Preparation of Alumina Supports for the Fabrication of High Flux Thin Membranes**
Semih Y., YURTSEVER H. A., Altunsoy A., TOPUZ B.
ECERS, 9 - 13 July 2017
- XII. **Fabrication of High Performance Zif 8 Membranes for Gas Separation**
TOPUZ B., TSAPATSIS M.
International Membrane Science and Technology Conference, Australia, 5 - 08 December 2016
- XIII. **Polimerik membranlar ile UOB Azot Karışımlarının Ayrılması**
Şahin F., TOPUZ B., KALIPÇILAR H.
Ulusal Kimya Mühendisliği Kongresi, Turkey, 23 - 26 August 2016
- XIV. **Hidrofobik Organosilika Membranların Hazırlanması**
Sarıkaya H., Yurttaş A. S., TOPUZ B.
12. Ulusal Kimya Mühendisliği Kongresi, Turkey, 23 - 26 August 2016
- XV. **Photocatalytic activities of doped Zif 8 nanocrystals**
YURTSEVER H. A., Akgünlü M., TOPUZ B.
28. Ulusal Kimya Kongresi, Turkey, 15 - 21 August 2016
- XVI. **Oriented MFI Membranes By Gel Less Secondary Growth of Sub 100nm MFI Nanosheet Seed Layers**
Rangnekar N., Agrawal K., TOPUZ B., Pham T., Nguen T., Sauer N., Zhang H., Katabathini N., Basahel S., Francis L., et al.
AIChE, 8 - 13 November 2015
- XVII. **Solvent Recovery by PDMS ZIFs Mixed Matrix Membrane**
Sahin F., TOPUZ B., KALIPÇILAR H.
Euromembrane, 6 - 10 September 2015
- XVIII. **Purification of MFI Nanosheets by Density Gradient Centrifugation and Their Application as Ultrathin Zeolite Membranes**
Tsapatsis M., Agrawal K. V., TOPUZ B., Francis L.
17th INTERNATIONAL ZEOLITE CONFERENCE, 7 - 12 December 2013
- XIX. **Zeolite Membranes Supported by Porous Supports with MFI Nanosheets Purified by Density Gradient Centrifugation**
Zhang H., Agrawal K. V., Jeon M. Y., TOPUZ B., Macosko C., Francis L., Tsapatsis M.
6th International Zeolite Membrane Meeting, 15 - 19 June 2013
- XX. **Solution Processable Exfoliated Zeolite Nanosheets Purified by Density Gradient Centrifugation**
Agrawal K. V., TOPUZ B., Rojas M., Jiang Z., Nguenkam K., Francis L., Tsapatsis M.
6th Zeolite Membrane Meeting, 15 - 19 June 2013
- XXI. **Synthesis of MFI Membranes through Recirculated Flow at Elevated Temperatures**
TOPUZ B., KALIPÇILAR H., Önder A., YILMAZ L.
ICOM, 23 - 29 July 2011
- XXII. **Preparation and Characterization of Alumina Silica Membranes**
TOPUZ B., ÇİFTÇİOĞLU M.
5th International Zeolite Membrane Meeting, 23 - 26 May 2010
- XXIII. **Determination of Gas Permeation Properties of Microporous Silica Membranes with Controllable Pore Structure through 2 structural Sol gel Processing**
TOPUZ B., ÇİFTÇİOĞLU M.
Euromembrane 2009, 6 - 09 October 2009
- XXIV. **Kontrol Edilebilen Gözenek Yapısına Sahip Silika Membranların Hazırlanması**
TOPUZ B., ÇİFTÇİOĞLU M.
8. Ulusal Kimya Mühendisliği Kongresi, Turkey, 26 - 29 August 2008
- XXV. **Permeation of Pure Gases through Silica Membranes with Controlled Pore Structures**
TOPUZ B., ÇİFTÇİOĞLU M.

Euromembrane 2006, 24 - 28 September 2006

XXVI. Effects of Processing on the Properties and Permeability of Pure Gases through Sol gel Derived Ceramic Membranes

TOPUZ B., ÇİFTÇİOĞLU M.

ANVOC, 30 May - 01 June 2005

XXVII. Effects of processing on the properties and permeability of pure gases through sol-gel silica membranes

TOPUZ B., Çiftçioğlu M., Özkan F.

Proceedings of the 8th Conference and Exhibition of the European Ceramic Society, İstanbul, Turkey, 29 June - 03 July 2003, vol.264-268, pp.2187-2190

Supported Projects

Topuz B., Karakeçili A., TUBITAK Project, Antibiyotik Yüklü Kitosan/MOF Kompozit Doku İskeleleri: Sentez, Karakterizasyon, Osteomiyelit Tedavisinde Kullanım Potansiyelinin Araştırılması, 2018 - 2021

Topuz B., Karakeçili A., TUBITAK Project, BMP-6/MOF Yüklü Polikaprolaktan Fibröz Membranlar: Sentez, Karakterizasyon ve Osteojenik Farklılaşmanın İncelenmesi, 2018 - 2020

Topuz B., TUBITAK Project, Hidrotermal Kararlılığa Sahip Titanya Katkılı Organosilika Membranların Hazırlanması, 2018 - 2019

Kalıpçılar H., Topuz B., TUBITAK Project, Uçucu Organik Bileşiklerin Geri Kazanımı için ZIF Dolgulu PDMS Karışık Matrisli Membranların Hazırlanması ve Karakterizasyonu, 2017 - 2019

Topuz B., Project Supported by Higher Education Institutions, Organik İnorganik Hibrit Silika Membranların Hazırlanması ve Karakterizasyonu, 2017 - 2019

Topuz B., TUBITAK Project, İnce Nanotabaka Bazlı Hidrofobik MFI Membranların Geliştirilmesi, 2015 - 2018

TOPUZ B., Project Supported by Higher Education Institutions, Yüksek Performanslı ZIF 8 Pervaporasyon Membranlarının Hazırlanması, 2015 - 2017

TOPUZ B., TUBITAK Project, Yüksek Performanslı Gaz Ayırım ZIF 8 Membranlarının Geliştirilmesi, 2014 - 2017

Topuz B., Tsapatsis M., Other International Funding Programs, p-xylene Enrichment using Membranes, 2013 - 2014

Metrics

Publication: 58

Citation (WoS): 824

Citation (Scopus): 909

H-Index (WoS): 14

H-Index (Scopus): 14