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### EDUCATION

Ph.D, Chemical Engineering Department, İzmir Institute of Technology, Urla, İzmir, Turkey, 2009

Advisor: Prof. Dr. Muhsin Çiftçioğlu

Thesis: Gas Permeation through Sol-gel Derived Alumina and Silica Based Membranes

M.Sc., Interdisciplinary Materials Science and Engineering Programme, İzmir Institute of Technology, İzmir, Turkey, 2002

Advisor: Prof. Dr. Muhsin Çiftçioğlu

Thesis: The Use and Characterization of Composite Alumina, Silica, Titania Ceramic Membranes in Gas Separation

B.S., Chemical Engineering Department, EGE University, İzmir, Turkey, 1999

### PROFESSIONAL EXPERIENCE

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Assistant Professor, 2014-present  
Chemical Engineering Department, Ankara University, Ankara, Turkey

Post-doctoral Associate, 2012-2014  
Chemical Engineering and Material Science, University of Minnesota, Minneapolis, USA,  
Advisor: Prof. Michael Tsapatsis  
Research: Nanosheet based zeolite films

Post-doctoral Fellow 2010-2012  
Department of Chemical Engineering, Middle East Technical University, Ankara, Turkey  
Advisors: Prof. Dr. Halil Kalıpçılar and Prof. Dr. Levent Yılmaz  
Research: Preparation and Characterization of Supported Mixed Matrix Membranes

Research Assistant 2002-2009  
Department of Chemical Engineering, İzmir Institute of Technology, İzmir, Turkey

Research Assistant 1999-2002  
Interdisciplinary Materials Science and Engineering Programme, İzmir Institute of Technology, İzmir, Turkey

## PUBLICATIONS

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### Journal Articles Covered by Science Citation Index:

1. Şahin F., Topuz B., Kalıpçılar H., “Synthesis of ZIF-7, ZIF-8, ZIF-67 and ZIF-L from Recycled Mother Liquors”, *Microporous and Mesoporous Materials*, 261 (2018), 259-267. Impact Factor: 3.66
2. Topuz B., Önder A., Bowen T., Kalıpçılar H., “Synthesis of ZSM-5 and SAPO-34 Membranes in a High Temperature-Pressure Recirculating Flow System”, accepted, *Chemical Engineering Research and Design*. 117, (2017), 746-755, Impact Factor: 2.52
3. Shete M., Kumar M., Kim D., Rangnekar N., Xu D., Topuz B., Agrawal KV., Karapetrova E., Stottrup B., Al-Thabaiti S., Basahel S., Narasimharao K, Rimer JD., Tsapatsis M.\* ”Nanoscale Control of Homoepitaxial Growth on a 2-Dimensional Zeolite” *Angew. Chem. Int. Ed.*, 56, 2, (2017), 535-539 (**evaluated as very important paper, cover article**). Impact Factor: 11.26
4. Zhang H., Xiao Q., Guo X., Li N., Kumar P., Rangnekar N., Jeon MY., Al-Thabaiti S., Narasimharao K., Topuz B., Onorato FJ., Macosko CW., Mkhoyan KA., Tsapatsis M.\* “Open-pore 2-dimensional Zeolite MFI Nanosheets and Their Use for the Fabrication of Hydrocarbon Isomer-selective Membranes on Porous Polymer Supports” *Angew. Chem. Int. Ed.*, 55, (2016), 7184-7187 (**cover article**). Impact Factor: 11.26
5. Agrawal K.V<sup>+</sup>, Topuz B<sup>+</sup>, Pham T.C.T., Sauer N., Rangnekar N., Zhang H., Narasimharao K., Basahel S., Francis L.F., Macosko C. W., Al-Thabaiti S., Tsapatsis M.\*, Yoon K.B.\*, “Oriented MFI Membranes by Gel-less Secondary Growth of sub-100 nm MFI-nanosheet Seed Layers”, *Advanced Materials*, 27 (2015), 3243-3249 ( <sup>+</sup> **co-first author, inside back cover article**). Impact Factor: 15.409
6. Rangnekar N., Shete M., Agrawal K.V., Topuz B., Kumar P., Guo Q., Ismail I., Alyoubi A., Basahel S., Francis L.F., Narasimharao K., Macosko C. W., Mkhoyan A., Al-Thabaiti S., Stottrup B., Tsapatsis M\*, “2D Zeolite Coating: Langmuir Trough Deposition of 3 nm-thick MFI Zeolite Nanosheets”, *Angew. Chem. Int. Ed.* 54 (2015), 6571-6575 (**evaluated as hot paper**). Impact Factor: 11.261
7. Topuz B.\*, Şimşek D., Çiftçioğlu M.”Preparation of Monodisperse Silica Spheres and Determination of Their Densification Behaviour” , *Ceramics International*, 41 (2015) 43-52. Impact Factor: 2.758
8. Keser N., Topuz B., Yılmaz L, Kalıpçılar H.\*, “Synthesis of ZIF-8 from Recycled Mother Liquors”, *Microporous and Mesoporous Materials*, 198 (2014) 291-300. Impact Factor: 3.349
9. Topuz B., Oral E.E., Kalıpçılar H.\*, “Synthesis of Sapo-34 at Low Temperatures from Stagnant and Recirculating-Flow Mixtures”, *Journal of Porous Materials*, 20 (6) 2013, 1491-1500. Impact Factor: 1.385
10. Agrawal K.V., Topuz B., Rojas M.N., Jiang Z., Nguenkam K., Elyassi B., Francis L.F., Tsapatsis M\*, Solution-Processable Exfoliated Zeolite Nanosheets Purified by Density Gradient Centrifugation,

AICHE Journal, 59 (9) (2013) 3458-3467. Impact Factor: 2.748 (Invited article in the special issue of AICHE J. Founders Tribute to Neal R. Amundson.)

11. Topuz B., Yılmaz L., Kalıpçılar H.\*,”Development of Alumina Supported Mixed Matrix Membranes for Separation of H<sub>2</sub>/Light-Alkane Mixtures”, Journal of Membrane Science, 415-416 (2012) 725-733. Impact Factor: 5.557
12. Topuz B.\*, Çiftçioğlu M., ”Preparation and Characterization of Diphasic Sol-gel Derived Unsupported Mullite Membranes”, Journal of Sol-Gel Science and Technology, 58 (1) (2011) 6-11. Impact Factor: 1.473
13. Topuz B.\*, Çiftçioğlu M., ”Sol-gel Derived Mesoporous and Microporous Alumina Membranes”, Journal of Sol-Gel Science and Technology, 56 (3) (2010) 287-299. Impact Factor: 1.473
14. Topuz B.\*, Çiftçioğlu M., “Preparation of Particulate/Polymeric Sol-gel Derived Microporous Silica Membranes and Determination of Their Gas Permeation Properties”, Journal of Membrane Science, 350 (1-2) (2010) 42-52. Impact Factor: 5.557
15. Topuz B.\*, Çiftçioğlu M., “Permeation of Pure Gases through Silica Membranes with Controlled Pore Structures”, Desalination, 200 (2006) 80-82. Impact Factor: 4.412
16. Topuz B., Çiftçioğlu M., Özkan F., “Effects of Processing on the Properties and Permeability of Pure Gases through Sol-gel Silica Membranes”, Key Engineering Materials, 264-268 (2004) 2187-2190.
17. Topuz B., Çiftçioğlu M., Özkan F., “Investigation of the Permeability of Pure Gases in Sol-gel Derived Al<sub>2</sub>O<sub>3</sub> Membrane”, Key Engineering Materials, 264-268 (2004) 399-402.

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Journal Articles Covered by TUBITAK ULAKBİM:

1. Yurtsever HA., Satik E., Topuz B.\*,” The Effect of Synthesis Conditions and Zinc Precursor on the Gas Permeation Properties of Zif-L Membranes”, DEU Journal of Science and Engineering, 18, 54(3) (2016).
2. Yurtsever HA., Akgünlü MA., Kurt T., Yurttaş AS., Topuz B.\*” Photocatalytic Activities of Ag<sup>+</sup> Doped Zif-8 and Zif-L Crystals, JOTCS-A, 3 (3) (2016), 265-280.
3. Topuz B., Yurttaş AS., Altunsoy A. Preparation of  $\alpha$ -Al<sub>2</sub>O<sub>3</sub> Supports for Thin Membrane Fabrication, 5(1) (2018), 191-204.
4. Topuz B.\*, Yılmaz L., Kalıpçılar H., “Preparation and Characterization of Supported PES Membranes”, sGazi Üniversitesi Journal of Science and Engineering, *accepted*.

Conference Abstracts:

1. Yurttaş A.S., Yurtsever H.A., Altunsoy A., Topuz B.\*, Preparation of Alumina Supports for the Fabrication of High Flux Thin Membranes, 15<sup>th</sup> Conference and Exhibition of the European Ceramic Society, 2017, July 9-13, Budapest, Hungary.
2. Sheete Meera, Kumar Manjesh, Kim Donghun, Rangnekar Neel, Xu Dandan, TOPUZ BERNA, Varoon Agrawal Kumar, Karapetrova Evguenia, Stottrup Benjamin, Al Thabaiti Shaeel, Basahel, Sulaiman, Katabathini Narasimharao, Rimer Jeffrey, Tsapatsis Michael Nanoscale Control of Homoeptaxial Growth on a Two-Dimensional Zeolite. AIChE Meeting, 2017, Minneapolis, MN, USA.
3. Kurt Tugçe, Topuz Berna, Preparation of Organically-linked Silica Membranes, International Congress on Chemistry and Material Science, October 5-7, Ankara, Turkey.
4. Topuz B., Tsapatsis M., “Fabrication of High Performance Zif-8 Membranes for Gas Separation, International Membrane Science and Technology Conference, 2016, December 5-8, Adelaide, South Australia.
5. Sahin F., Topuz B., Kalıpçılar H., “Solvent Recovery by PDMS/ZIFs Mixed Matrix Membrane”, Euromembrane 2015, 6-10 September, 2015, Aachen, Germany.
6. Rangnekar N., Agrawal K.V., Topuz B<sup>+</sup>, Pham T.C.T., Sauer N., Zhang H., Narasimharao K., Basahel S., Francis L.F., Macosko C. W., Al-Thabaiti S., Tsapatsis M., Yoon K.B. “Oriented MFI membranes by gel-less secondary growth of sub-100nm MFI-nanosheet seed layers” 2015 AIChE Annual Meeting, Salt Lake City, UT, USA.
7. Agrawal K.V, Topuz B., Francis L.F., Tsapatsis M., “Purification of MFI-Nanosheets by Density Gradient Centrifugation and Their Application as Ultrathin Zeolite Membranes”, 17<sup>th</sup> International Zeolite Conference, 2013, July 7-12, Moscow, Russia.
8. Zhang H., Agrawal K.V., Jeon M.Y., Topuz B., Macosko C., Francis L., Tsapatsis M., “Zeolite Membranes Supported by Porous Supports with MFI Nanosheets as Building Blocks”, 6<sup>th</sup> International Zeolite Membrane Meeting, 2013, June 15-19, Jeju Island, Korea.
9. Agrawal K.V., Topuz B., Rojas M.N., Jiang Z., Nguenkam K., Francis L.F., Tsapatsis M., “Solution-Processable Exfoliated Zeolite Nanosheets Purified by Density Gradient Centrifugation”, 6<sup>th</sup> International Zeolite Membrane Meeting, 2013, June 15-19, Jeju Island, Korea.
10. Agrawal K.V., Topuz B., Rojas M.N., Jiang Z., Francis L.F., Tsapatsis M., “Purification of Zeolite Nanosheets by Density Gradient Centrifugation and Sub-100 nm Thin Zeolite Film”, 2012 AIChE Annual Meeting, Pittsburgh, PA, USA.
11. Önder A., Topuz B., Kalıpçılar H., Yılmaz L., “Synthesis of MFI Membranes through Recirculated Flow at Elevated Temperatures”, International Congress on Membranes and Membrane Processes, (ICOM-2011) July 23-29, 2011, Amsterdam, The Netherlands.
12. Topuz B., Çiftçioğlu M., “Preparation and Characterization of Alumina-Silica Membranes”, 5<sup>th</sup>

International Zeolite Membrane Meeting -IZMM 2010, 23-26 May, 2010, Loutraki, Greece.

13. Topuz B., Çiftçioğlu M., “Sol-Gel Derived Alumina-Silica Membranes”, 6<sup>th</sup> Chemical Engineering Conference for Collaborative Research in Eastern Mediterranean Countries, (EMCC-6), 7-12 March, 2010, Antalya, Turkey.
14. Topuz B., Çiftçioğlu M., “Determination of Gas Permeation Properties of Microporous Silica Membranes with Controllable Pore Structure through 2-structural Sol-gel Processing”, Euromembrane 2009, 6-9 September, 2009, Montpellier, France.
15. Topuz B., Çiftçioğlu M., “Permeation of Pure Gases through Silica Membranes with Controlled Pore Structures”, Euromembrane 2006, 24-28 September, 2006, Giardini Naxos, Taormina, Italy.
16. Topuz B., Çiftçioğlu M., “Effects of Processing on the Properties and Permeability of Pure Gases through Sol-gel Derived Ceramic Membranes”, Application of Nanotechnologies for Separation and Recovery of Volatile Organic Compounds from Waste Air Streams (ANVOC), 30 May-1 June, 2005, Istanbul, Turkey.
17. Topuz B., Çiftçioğlu M., Özkan F., “Investigation of the Permeability of Pure Gases in Sol-gel Derived Al<sub>2</sub>O<sub>3</sub> Membrane”, 8<sup>th</sup> Conference and Exhibition of the European Ceramic Society, 29 June-3 July, 2003, Istanbul, Turkey.
18. Topuz B., Çiftçioğlu M., Özkan F., “Effects of Processing on the Properties and Permeability of Pure Gases through Sol-gel Silica Membranes”, 8<sup>th</sup> Conference and Exhibition of the European Ceramic Society, (8<sup>th</sup> ECERS), 29 June-3 July, 2003, Istanbul, Turkey.

## PROJECTS

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Preparation of TiO<sub>2</sub> doped hydrothermally stable organosilica membranes, Berna Topuz (PI), TUBITAK 118M029, 2018-2019.

Development of Thin Nanosheet based Hydrophobic MFI Membranes, Berna Topuz (PI), TUBITAK 214M165, 2015-2017.

Preparation and Characterization of ZIF-filled PDMS Mixed Matrix Membranes for Recovery of Volatile Organic Compounds, Berna Topuz (Researcher), TUBITAK 116M438, 2016-2018.

Preparation and Characterization of Organosilica Membranes, Berna Topuz (PI), Ankara University BAP, 17L0443001, 2017-2019.

Development of High Performance ZIF-8 Membranes for Gas Separation, Berna Topuz (PI), TUBITAK 204M012, 2014-2016.

p-xylene Enrichment using Membranes, Exxon Mobil, Prof. Michael Tsapatsis (PI), Berna Topuz (Researcher), Kumar Varoon Agrawal (Researcher) 2012-2014.

SAPO-34 Membranes Synthesized using Circulating Flow, UOP-Honeywell, USA, Prof. Halil Kalıpçılar (PI), Berna Topuz (Researcher), 2010-2012.

Synthesis of Zeolite Membranes in Pressurized Recirculating Flow Systems at High Temperatures, TUBITAK, Project no: 110M402, Researcher, 2010-2011.

Preparation of Silica Membranes by Sol-Gel and Determination of Their Gas Permeabilities, (2003 İYTE 37), Researcher, İYTE, 2005.

The Use and Characterisation of Composite Alumina, Zirconia, Silica, Titania Ceramic Membranes in Gas Separation (2001 MÜHYL 06), Researcher, İYTE, 2003.

## WORKSHOPS AND TRAINING COURSES

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1. NanomemCourse EA1: Nanostructured materials and membranes for Energy: 8-17 March, 2009, SINTEF, Materials and Chemistry, Oslo, Norway.
2. NanomemCourse EF2: Nanostructured materials and membrane modeling and simulation: 18-27 June, 2008, FORTH/Institute of Chemical Engineering and High Temperature Chemical Processes, Patras, Greece.
3. XXII Summer School of the European Membrane Society on the 'Inorganic Membranes: Preparation, Characterization and Applications' September, 5-9, 2005– University of Zaragoza in Jaca, Spain.

## RESEARCH GRANTS

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1. Nanosheet-based Zeolite Films, TUBITAK 2219, International Postdoctoral Research Scholarship-University of Minnesota, 2012-2013.
2. Preparation and Characterization of Mixed Matrix Membranes, TUBITAK 2218, National Postdoctoral Research Scholarships-Middle East Technical University, 2011-2012.
3. European Membrane Society (EMS)-Euromembrane 2006-Student Registration Award
4. Marie Curie Scholarship for participation in the 3<sup>rd</sup> NanoMemCourse: *EA1*
5. 5<sup>th</sup> International Zeolite Membrane Meeting -IZMM 2010- Registration Award