Professor Erol Seker
Chair of Chemical Engineering Department
Izmir Institute of Technology
Chemical Engineering Department
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RESEARCH INTERESTS

Heterogeneous catalysis, photocatalysis, electrocatalysis, environmental catalysis, novel catalyst design and synthesis methods, catalyst characterization, sol-gel chemistry, micro-reactors with the focus on:

- Hydrogen and Renewable/Alternative Fuels production
- Production of biofuels (biodiesel, renewable diesel, biogasoline, aviation biofuels)
- Fuel Processing
- Fuel Cells & Electrolyzers
- Catalytic Combustion
- Catalytic NO_x and VOC abatement

SKILLS

- **Catalyst preparation:** Sol-gel method, impregnation, deposition-precipitation, co-precipitation and catalytic coating methods.
- **Catalyst characterization:** X-Ray Diffraction, X-Ray Photoelectron Spectroscopy, Transmission Electron Microscopy, Scanning Electron Microscopy, N_2 adsorption surface area analysis.
- **Catalyst activity screening:** Construction and operation of micro-reactor systems.
- **Chemical/Instrumental analyses**: Mass Spectrometry, Fourier Transform IR spectroscopy, Gas Chromatography, NO_x Analyzer, Adsorption and chemisorption techniques, XPS, TEM, SEM, Refractometers.
- **Separation:** Construction of distillation stills for analysis of vapor-liquid phase equilibrium.
- **Software**: Microsoft Office applications and high level programming languages: MATLAB, Mathematica, Polymath, FOTRAN, BASIC, LabView.

EDUCATION

Ph.D., Chemical Engineering
University of Michigan, Ann Arbor, Michigan USA
Thesis: NO_x reduction with hydrocarbons under oxidizing conditions over alumina supported metal catalysts (Thesis advisor: Prof. Dr. Erdogan Gulari)

M.Sc., Chemical Engineering
Middle East Technical University, Ankara Turkey
Thesis: Vapor-liquid equilibrium still development (Thesis advisor: Prof. Dr. Tarik G. Somer)

B.S., Chemical Engineering
Middle East Technical University, Ankara Turkey

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HONORS and AWARDS

- **Research Awards:** 1st place award in the UniSim® Design Challenge 2017 competition for the design project titled "***Novel Hybrid Process to produce Bio-based Ethylene for Petrochemical Industry through Digestion and Oxidative Coupling Units***" the Americas Honeywell User Group (HUG), June 18th-23th, 2017, San Antonio, Texas, USA.
- **Research Awards:** 1st place award in the UniSim® Design Challenge 2016 competition for the design project titled "***Utilization of Biodiesel By-Product Glycerol: Energy Efficient Integrated Process for Bio-Gasoline Production***", the Americas Honeywell User Group (HUG), June 19th-24th, 2016, San Antonio, Texas, USA.
- **Graduate Fellowship:** Awarded by the Higher Education Board of Turkey, September 1994-September 1998.
- **Young Researcher Award:** Awarded by the Scientific and Technical Research Council of Turkey, 1992.
- **High honor** in senior year (university presidential list), Middle East Technical University.

PROFESSIONAL EXPERIENCES

ACADEMIC EXPERIENCE

Professor May 2016-present

*Department of Chemical Engineering, **Izmir Institute of Technology**, Izmir Turkey*

- Working as the principal investigator in the project "Direct synthesis of biofuels from micro-algal and canola oils over solid catalysts".
- Working as the principal investigator in the project "Renewable diesel from hydrotreated canola oils over super solid catalysts".
- Working as the principal investigator in the project "Direct production of biofuels from 2-6% micro-algal biomass in water using heterogeneous catalysts".
- Working as the principal investigator in the project "Biofuels synthesis using soluble starch over acid heterogeneous catalysts".
- Working as the principal investigator in the project "Ethyl ester biodiesel synthesis from micro-algal and canola oils over solid basic catalysts".
- Working as the principal investigator in the project "Dry reforming of biogas over solid catalysts".
- Working as the principal investigator in the project "Dimethyl Ether production from CO_2 in one step over bifunctional solid catalysts"

Associate Professor January 2009-May 2016

*Department of Chemical Engineering, **Izmir Institute of Technology**, Izmir Turkey*

- Working as the principal investigator in the project "Development of catalytic micro-reactor for methanol combustion for direct methanol fuel cells".
- Working as the principal investigator in the project "Methyl esters biodiesel synthesis from microalgal and canola oils over solid catalysts".
- Working as the principal investigator in the project "Coating technique optimization for membrane assembly electrodes of PEM electrolyzers".
- Working as the co-investigator in the project "Anti-biofouling nano-materials for membrane bioreactors".

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PROFESSIONAL EXPERIENCES

ACADEMIC EXPERIENCE

Assistant Professor June 2002-January 2009

Department of Chemical Engineering, ***Izmir Institute of Technology****, Izmir Turkey*

- Managed and directed a project; "Hydrogen production by steam reforming and decomposition of ethanol over silica supported metal oxide catalysts", funded by the Scientific and Technical Research Council of Turkey.
- Worked as a principal investigator in a project; "Hydrogen production from the solar cell panels powered PEM electrolyzer", funded by the Planning Agency of Turkish Government.
- Worked as principal investigator in the sol-gel synthesis of titania and silica based antibacterial materials for indoor applications.

Senior Research Scientist April 2005-May 2007

Department of Chemical Engineering, ***University of Michigan****, Ann Arbor, MI USA*

- Synthesizing and testing catalysts for the catalytic hydrogen production from ethanol and methanol over mixed oxides prepared with a sol-gel method.
- Developing and constructing flameless catalytic heating units for Antarctic environment.

Research Fellow April 2000-June 2002

Department of Chemical Engineering, ***University of Michigan****, Ann Arbor, MI USA*

- Synthesized and tested gold on alumina, platinum on alumina and copper on alumina catalysts and also barium or ceria doped alumina supported Pt and Cu catalysts for NO_x reduction with aqueous urea solution under lean conditions.
- Developed a novel coating method using a sol-gel procedure and fabricated aluminum plates coated with alumina supported platinum catalysts for carbon monoxide oxidation.

Graduate Student Research Assistant January 1999-April 2000

Department of Chemical Engineering, ***University of Michigan****, Ann Arbor, MI USA*

- Developed a room temperature sol-gel procedure to synthesize alumina supported metal/metal oxide catalysts.
- Performed catalyst characterizations and activity tests for NO_x reduction with hydrocarbons under lean conditions over alumina supported transition metal catalysts.

Graduate Student Instructor September 1998-January 1999

Department of Chemical Engineering, ***University of Michigan****, Ann Arbor, MI USA*

- Led recitation sessions and office hours for junior undergraduate chemical engineering Heat and Mass transfer course. Graded open ended problem reports and part of midterm and final exams.
- Developed and led an open ended problem on "external powerless heating".

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PROFESSIONAL EXPERIENCES

ACADEMIC EXPERIENCE

Graduate Student Instructor September 1990-September 1993
*Department of Chemical Engineering, **Middle East Technical University**, Ankara Turkey*

- Led recitation sessions in freshman undergraduate "introduction to chemical engineering" course.
- Developed and directed junior undergraduate chemical engineering physical chemistry laboratory sessions and also assisted in developing data acquisition software for undergraduate laboratory courses and graduate projects
- Led senior undergraduate chemical engineering design courses.

Process Engineering Intern July-August 1987
PETKIM Petrochemical Inc., Izmir, Turkey

- Worked as an intern at ethylene oxide and ethylene glycols unit.

Courses Taught at Izmir Institute of Technology:

- ***Developed and taught the following graduate courses;***
  ChE 551 Sol-Gel Synthesis of Catalytic Materials
  ChE 520 Materials Concepts in Catalysis
  ChE 545 Advanced Reaction Engineering

- ***Taught undergraduate courses;***
  ChE 220 Thermodynamics I
  ChE 222 Fluid Mechanics
  ChE 302 Chemical Kinetics and Reactor Design
  ChE 431 Sustainable Energy
  ChE 452 Heterogeneous Catalysis and Catalytic Materials
  ChE 454 Reactor Design
  ChE 420/421 Engineering Economics and Design
  ChE 410 Chemical Engineering Laboratory II
  ChE 411 Chemical Engineering Laboratory III
  ChE 432 Fundamentals of Air Pollution and Control

Theses being supervised at Izmir Institute of Technology:
Ph.D.

- O. Deliismail, "**Direct production of biofuels from 2-6% microalgal biomass in water using sol-gel made heterogeneous bifunctional catalysts**", Izmir Institute of Technology, 2016-continues.
- M. Ucaroglu, "**Dry reforming of methane in biogas over perovskite catalysts**", Izmir Institute of Technology, 2017-continues.

M.Sc.

- E. Taranci, "**Catalytic Production of Dimethyl Ether from Methanol**" Izmir Institute of Technology, 2019- continues.

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ACADEMIC EXPERIENCE

Theses being supervised at Izmir Institute of Technology:

- M.K. Aslan, "**On-Purpose Catalytic Production of Propylene from Propane**" Izmir Institute of Technology, 2019- continues
- O. Akin, "**Butadiene Production from Ethanol**" Izmir Institute of Technology, 2019- continues
- C. Karacasulu, "**Ethyl ester biodiesel synthesis from microalgal and canola oils over heterogeneous basic catalysts**", Izmir Institute of Technology, 2019- continues.
- C. Camlik, "**Hydrogen Production from CO_2**" Izmir Institute of Technology, 2017- continues

Theses supervised at Izmir Institute of Technology:
Ph.D.

- E.S. Umdu, "**Hydrogen Production from Biomass on Structured Catalysts**", Izmir Institute of Technology, 2008-2012.

Theses supervised:
M.Sc.

- M. Ucaroglu, "**Biofuels synthesis using soluble starch over acid heterogeneous catalysts**", Izmir Institute of Technology, 2017.
- B. Ozdogru, "**Renewable diesel from hydrotreated canola oils over super solid catalysts**", Izmir Institute of Technology, 2017.
- A. Izer, "**Alumina based Self-cleaning Catalytic Surfaces for Household Ovens**", Izmir Institute of Technology, 2016.
- E. Demirkaya, "**Catalytic Methanol Combustion**", Izmir Institute of Technology, 2015.
- A. Aytac, **"Catalytic Oxidation of Volatile Compounds Generated during Frying Process using Sunflower Oil**", Izmir Institute of Technology, 2014.
- D. Duzgoren, **"Determination of Preparation Conditions for Membrane Electrode Assembly of PEM Electrolyzer**", Izmir Institute of Technology, 2014.
- E. Yalman, **"Biodiesel Production from Safflower using Heterogeneous CaO based Catalysts**", Izmir Institute of Technology, 2012.
- S. Ates, "**Oxidation of ethanol and carbon monoxide on alumina supported metal/metal oxide xerogel catalysts"**, Izmir Institute of Technology, 2011.
- B. Koseoglu, "**Methylene Blue Degradation in Water using Sol-Gel Made TiO_2 Supported Oxide Photocatalysts**", Izmir Institute of Technology, 2011.
- E. Donmez, **"Catalytic Combustion of Methanol on Structured Catalysts for Direct Methanol Fuel Cell"**, Izmir Institute of Technology, 2011.
- H. Yıldırım, "**Biodiesel production from microalgal and used ground coffee oil over heterogeneous basic catalysts**", Izmir Institute of Technology, 2009.
- E.S. Umdu, "**Methyl Ester Production from Vegetable Oils On Heterogeneous Basic Catalysts**", Izmir Institute of Technology, 2008.
- C. Aksakal, "**Hydrogen Production from Water using Solar Cells Powered Nafion Membrane Electrolyzers**", Izmir Institute of Technology, 2007.
- M. Tuncer, "**Effects of Chloride Ion and the Types of Oxides on the Antibacterial Activities of Inorganic Oxide Supported Ag Materials**", Izmir Institute of Technology, 2007.

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PROFESSIONAL EXPERIENCES

ACADEMIC EXPERIENCE

INSTITUTIONAL AND PROFESSIONAL SERVICES

- Chair of Chemical Engineering Department, Izmir Institute of Technology 2017-present
- Member of Engineering Faculty Executive Board, Izmir Institute of Technology 2016-present
- Member of Energy Engineering Academic Board, Izmir Institute of Technology 2009-present
- Guest contributor on the topic of "Renewable Energy and Biofuels" in Live Broadcasting Room TV program on Turkish Radio Television (TRT) Documentary TV channel, July 7, 2011 Izmir Turkey.
- **Workshop Organizing Committees:** Contribution to Polymer Membrane Fuel Cells Summer School organized by European Union-Joint Research Center (JRC-IE) and UNIDO/ICHET, 11-15 July (2010), Izmir Turkey

RESEARCH GRANTS MANAGED AS PRINCIPLE INVESTIGATOR OR RESEARCHER AT IZMIR INSTITUTE OF TECHNOLOGY

- Hydrogen production from biogas over solid catalysts
  Izmir institute of Technology, $1500 (01/04/19-01/04/20)
- Flameless methane combustion in lean fuel mixture over sol-gel made catalysts
  Izmir institute of Technology, $1000 (01/01/18-01/01/19)
- Ethyl Ester Biodiesel production over heterogeneous catalysts
  Izmir institute of Technology, $1,000 (01/12/16-01/12/17)
- Cooperative Research Project: Development of the next generation bioreactor system (with Prof. Dr. Sacide A. Altinkaya of Izmir Institute of Technology)
  European Union 7th Research Framework Programme (FP7), €400,000 (for our research group at Izmir Institute of Technology) (01/12/09-01/12/13)
- Direct epoxidation of propene (with Prof. Dr. Isik Onal)
  The Scientific and Technological Research Council of Turkey, $22,500 (01/01/05-01/06/08)
- Hydrogen production from bio-ethanol on silica supported oxide catalysts
  The Scientific and Technological Research Council of Turkey, $19,000 (01/05/03-01/05/05)
- Water electrolysis in PEM electrolyzer using solar energy (with Prof. Dr. Gulden Gokcen)
  State Planning Agency of Turkey, $50,000 (01/01/02-01/06/05)
- Studies on mixed oxides preparation via sol-gel for molten carbonate fuel cell
  Izmir institute of Technology, $4,500 (01/01/03-01/05/04)

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PROFESSIONAL EXPERIENCES

EDITORIAL BOARD EXPERIENCES

Reviewer:
For Journals;

- International Journal of Hydrogen Energy
- Journal of Sol-Gel Science and Technology
- Fuel
- Energy Conversion and Management
- Catalysis Letters
- Chemical Papers
- Materials Research Bulletin
- Materials and Design
- Chemical Engineering Journal
- Applied Catalysis B: Environmental
- Journal of Molecular Catalysis A: Chemical
- Biotechnology Progress
- Journal of Renewable Energy
- Journal of Biofuels
- Journal of Oleo Science: Japan Oil Chemists' Society
- Fuel Processing Technology
- Turkish Journal of Engineering & Environmental Sciences

Reviewer:
For Grant Institutes;

- European Union COST project reviewer
- Ad hoc reviewer for United States Department of Agriculture
- Project reviewer for Technology and Innovation Support Programmes (the Scientific and Technical Research Council of Turkey)
- Project reviewer for the Scientific and Technical Research Council of Turkey

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PROFESSIONAL RESEARCH EXPERIENCES

PATENTS

E. Seker, E.S. Umdu and E. Yalman, ***"Solid catalyst synthesis procedure for the production of biodiesel"***, *Turkish Patent Institute*, ***patent pending*** (Reg#: 2014-GE-107879 and App#: 2014/16423), Dec. 31, 2014.

PUBLICATIONS (Total number of citations without self-citations as of July 31st, 2019: 612)

1. B. Turkkul, O. Deliismail, E. Seker, ***"Ethyl esters biodiesel production from Spirulina sp. and Nannochloropsis oculata microalgal lipids over alumina-calcium oxide catalyst"*** *Renewable Energy* **145**, 1014-1019 (2020).
2. O. Deliismail, B. Ozdogru, E. Seker, "***Biofuel production from Nannochloropsis oculata microalgae in seawater without harvesting and dewatering over alumina-silicate supported nickel catalysts***" *Bioresource Technology Reports*, **3**, 205-210 (2018).
3. M. Ercelik, A. Ozden, E. Seker, C.O. Colpan, "**Characterization and performance evaluation of Pt-Ru/C-TiO_2 anode electrocatalyst for DMFC applications**" *International Journal of Hydrogen Energy*, **42(33)**: 21518-21529 (2017).
4. P. Kaner, D.J. Johnson, E. Seker, N. Hilal and S.A. Altinkaya, **"Layer-by-layer surface modification of poly(ether sulfone) membranes using polyelectrolytes and AgCl/TiO_2 xerogels"** *Journal of Membrane Science*, **493**: 807-819 (2015).
5. D. Duzenli, E. Seker, S. Senkan, and I. Onal, "**Epoxidation of Propene by High-Throughput Screening Method Over Combinatorially Prepared Cu Catalysts Supported on High and Low Surface Area Silica**" *Catalysis Letters*, **142**: 1234-1243 (2012).
6. E.S. Umdu, E. Seker, "**Transesterification of sunflower oil on single step sol–gel made Al_2O_3 supported CaO catalysts: Effect of basic strength and basicity on turnover frequency**", *Bioresource Technology*, **106**, 178 (2012).
7. M. Tuncer, E. Seker, **"Single Step Sol-Gel made Silver Chloride on Titania Xerogels to Inhibit E. Coli bacteria Growth: Effect of Preparation and Chloride ion on Bactericidal Activity**", *Journal of Sol-Gel Science and Technology*, **59**, 304 (2011).
8. I. Onal, D. Duzenli, A. Seubsai, M. Kahn, E. Seker and S. Senkan, **"Propylene Epoxidation: High-Throughput Screening of Supported Metal Catalysts Combinatorially Prepared by Rapid Sol-Gel Method"**, *Topics in Catalysis*, **53(1-2)**, 92 (2010).
9. B. Weidenhof, M. Reiser, K. Stöwe, W. F. Maier, M. Kim, J. Azurdia, E. Gulari, E. Seker, A. Barks, and R.M. Laine, **"High-Throughput Screening of Nanoparticle Catalysts Made by Flame Spray Pyrolysis as Hydrocarbon/NO Oxidation Catalysts"**, *Journal of the American Chemical Society*, **131(26)**, 9207 (2009).
10. E.S. Umdu, M. Tuncer, E. Seker, "**Transesterification of Nannochloropsis oculata microalga's lipid to biodiesel on Al_2O_3 supported CaO and MgO catalysts**", *Bioresource Technology*, **100**, 2828 (2009).
11. E. Seker, **"The catalytic reforming of bio-ethanol over SiO_2 supported ZnO catalysts: The role of ZnO loading and the steam reforming of acetaldehyde"**, *International Journal of Hydrogen Energy*, **33(8),** 2044 (2008).

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PROFESSIONAL EXPERIENCES

PUBLICATIONS

12. E. Seker and E. Gulari, **"Single-Step Sol-Gel Made Gold/Alumina Catalyst for Selective Reduction of NO_x under Oxidizing Conditions: Effect of Gold Precursor and Reaction Conditions"**, *Applied Catalysis A:General*, **232**, 203 (2002).
13. E. Seker, N. Yasyerli, E. Gulari, Christine Lambert and Robert H. Hammerle, **"NO reduction by Urea under Lean Conditions over Single Step Sol-Gel Cu/Alumina Catalyst"**, *Journal of Catalysis*, **208**, 15 (2002).
14. E. Seker, N. Yasyerli, E. Gulari, Christine Lambert and Robert H. Hammerle, **"NO_X reduction by urea under lean conditions over single step sol–gel Pt/alumina catalyst"**, *Applied Catalysis B:Environmental*, **37**, 27 (2002).
15. E. Seker, E. Gulari, Robert H. Hammerle, Christine Lambert, Jiraporn Leerat and S. Osuwan, **"NO reduction by urea under lean conditions over alumina supported catalysts"**, *Applied Catalysis A:General*, **226**, 183 (2002).
16. E. Seker and E. Gulari, **"Activity and N_2 Selectivity of Sol-Gel prepared Pt/Alumina Catalysts for Selective NO_x Reduction"**, *Journal of Catalysis*, **194**, 4 (2000).
17. E. Seker, J. Cavataio, E. Gulari, P. Lorpongpaiboon, S. Osuwan, **"Nitric Oxide Reduction by Propene over Silver Alumina and Silver-Gold/Alumina Catalysts: Effect of Preparation Methods"**, *Applied Catalysis A:General*, **183**, 121 (1999).
18. E. Seker and E. Gulari, **"Improved N_2 Selectivity for Platinum on Alumina Prepared by Sol-Gel Technique in the Reduction of NO_x by Propene"**, *Journal of Catalysis*, **179**, 339 (1998).
19. E. Seker and T.G. Somer, **"Vapor-Liquid-Equilibrium Still-A New Design"**, *Measurement Science & Technology*, 4, 776 (1993).

ORAL PRESENTATIONS

1. B. Koseoglu, M. Tuncer, E. Seker, "***Degradation of Methylene Blue in Water Using Sol-gel Made TiO_2 Photocatalysts: Preparation Effects***", 4th National Catalysis Conference (NCC-4), March 21-24 (2012), Kocaeli Turkey.
2. M. Tuncer, F. Tihminlioglu, E. Seker, "***Investigation of antibacterial properties of AgCl-TiO_2 materials***", 9th National Chemical Engineering Congress, June 22-25 (2010), Ankara Turkey.
3. I. Onal, D. Duzenli, A. Seubsai, M. Kahn, E. Seker, S. Senkan, "***Propylene epoxidation: High-throughput screening of supported metal catalysts combinatorially prepared by rapid sol-gel method***", 1st International Combinatorial Catalysis Symposium (ICCS), (2008), Daejon Korea.
4. M. Tuncer, E.S. Umdu, E. Kursat, G. Yilmaz, Y. Durmaz, S. Gokpinar and E. Seker, "***Biodiesel Production from Microalgae over Heterogeneous Catalysts***", Global Conference on Global Warming, July 6-10 (2008), Istanbul Turkey.
5. E.S. Umdu, S.C. Sofuoglu and E. Seker, "***Biodiesel production over solid catalysts***", Biofuels and Biofuels Technologies Symposium, December 12-14 (2007), Ankara Turkey.
6. C. Aksakal, E. Seker and G. Gokcen, ***"Hydrogen Production by using Photovoltaic Module Powered PEM Electrolyzers at Izmir Institute of Technology"***, 2nd International Hydrogen Energy Congress and Exhibition, July 13-15 (2007), Istanbul Turkey.

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PROFESSIONAL EXPERIENCES

ORAL PRESENTATIONS

7. E. Seker and E. Gulari, ***"Hydrogen Production from Bio-Ethanol over ZnO-SiO_2 Supported Metal Catalysts"***, 28th Annual Spring Symposium of the Michigan Catalysis Society, May 25 (2006), Midland, Michigan USA.
8. E. Seker, E. Gulari, N. Yasyerli, C. Lambert and R. Hammerle, ***"NO_x Reduction by Urea under Lean Conditions over Cu/Alumina Catalyst"***, 2005 Annual Meeting of American Institute of Chemical Engineers, October 30-November 4 (2005), Cincinnati, Ohio USA.
9. E. Seker and E. Gulari, ***"Hydrogen Production from Ethanol and Methanol over Sol-Gel Synthesized Mixed Oxides Catalysts"***, 2005 Annual Meeting of American Institute of Chemical Engineers, October 30-November 4 (2005), Cincinnati, Ohio USA.
10. C. J. Brown, E. Gulari and E. Seker, *"**Methanol Decomposition and Steam Reforming over Sol-Gel Prepared Promoted Pt on Alumina Catalysts**",* 2002 Annual Meeting of American Institute of Chemical Engineers, November 3-8 (2002), Indianapolis USA.
11. E. Gulari, N. Yasyerli and E. Seker, ***"Selective Reduction of NO_x by Urea with a Copper Oxide Catalyst"***, 2001 Annual Meeting of American Institute of Chemical Engineers, November 4-9 (2001), Reno, Nevada USA.
12. E. Seker, E. Gulari, R. Hammerle and J. Cavataio, ***"Sol-Gel Catalysts for NO Reduction by Urea under Lean Conditions"***, 17th North American Catalysis Society Meeting, June 3-8 (2001), Toronto Canada.
13. E. Gulari and E. Seker, ***"Unusually Active Gold/Alumina Catalysts for Selective Reduction of NO_x with Propene"***, 2000 Annual Meeting of American Institute of Chemical Engineers, November 12-17 (2000), Los Angeles, California USA.
14. R. Hammerle, J. Cavataio, E. Gulari and E. Seker, ***"Catalytic Reduction of NO with Urea"***, 2000 Annual Meeting of American Institute of Chemical Engineers, November 12-17 (2000), Los Angeles, California USA.
15. E. Seker and E. Gulari, ***"Activity and Selectivity of Sol-Gel prepared Pt/Alumina Catalysts for Reduction NO_x with Propene under Oxidizing Conditions"***, 1999 Annual Meeting of American Institute of Chemical Engineers, November 7-12 (1999), Dallas, Texas USA.
16. E. Seker and E. Gulari, ***"Sol-Gel Prepared Pt/Alumina Catalysts for NO_x Reduction with Propene under Oxidizing Conditions"***, 21th Annual Spring Symposium of the Michigan Catalysis Society, May 20 (1999), Midland, Michigan USA.
17. J. Cavataio, E. Seker and E. Gulari, **"Selective Reduction of NO_x by Hydrocarbons over 5% Silver Sol-Gel Alumina Catalyst: Effect of Hydrocarbon Type, Oxygen Content, Sulfur Dioxide and Water"**, 21th Annual Spring Symposium of the Michigan Catalysis Society, May 20 (1999), Midland, Michigan USA.
18. E. Seker, P. Lorponpaiboon and E. Gulari, **"NO Reduction by Propene under an Oxidizing Condition on Alumina Supported Silver and Gold Catalysts Prepared by a Sol-Gel Technique"**, 20th Annual Spring Symposium of the Michigan Catalysis Society, May 14 (1998), Detroit, Michigan USA.

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PROFESSIONAL EXPERIENCES

POSTER PRESENTATIONS

1. E. Demirkaya and E. Seker, "***Biogasoline Production from Glycerol over Single Step Sol-Gel Made Mixed Oxides: Effect of Acid Strength and Acid Type on Product Distribution***" 2nd International Congress on Energy Efficiency and Energy Related Materials, October 16-19 (2014), Mugla Turkey.
2. H. Oguzlu, M. Tuncer, D. Altiok, F. Tihminlioglu, E. Seker, "***Preparation and investigation of antibacterial activities of Inorganic oxide supported Silver Chloride containing Chitosan Films***" , 9th National Chemical Engineering Congress, June 22-25 (2010), Ankara Turkey.
3. E.S. Umdu, S.C. Sofuoglu and E. Seker, *"**Biodiesel Production from Canola Oil over Basic Heterogeneous Catalysts**"*, 2nd National Catalysis Conference (NCC-2), June 18-21 (2008) Erzurum Turkey.
4. I. Onal, D. Duzenli, A. Seubsai, M. Kahn, E. Seker, S. Senkan, ***"Propylene Epoxidation: High-throughput Screening of Silica and Alumina Supported Silver and Copper Catalysts Combinatorially Prepared by Rapid Sol-Gel Method***", 2nd National Catalysis Conference (NCC-2), June 18-21 (2008) Erzurum Turkey.
5. H. Gurboyoglu, S. Ergünsen, I. Polatoglu and E. Seker, *"**Evaluation of Armfield Batch Distillation for Undergrad Education**"* 8th National Chemical Engineering Congress, August 26-29 (2008), Malatya Turkey.
6. M. Tuncer, F. Tihminlioglu and E. Seker, *"**Preparation and Characterization of Silver Chloride Containing Antibacterial Polyethylene Materials**"*, Somer Symposium Series, May 14-15 (2007), Ankara Turkey.
7. H.O. Olcay, H. Demir, D. Uner and E. Seker, ***"Ethanol steam reforming over mixed oxides prepared by a sol-gel method"***, 6th National Chemical Engineering Congress, September 7-10 (2004), Izmir, Turkey.
8. P. Nebol, M. Tuncer, A. Top, D. Demirbuker, F. Tihminlioglu and E. Seker, ***"The preparation of Ag/TiO_2 by a sol-gel method and its antibacterial activity study"***, 6th National Chemical Engineering Congress, September 7-10 (2004), Izmir, Turkey.
9. J. Cavataio, R. Hammerle, E. Seker and E. Gulari, ***"Dynamic Response of Silver/Alumina Catalysts for Selective NO_x Reduction at High Space Velocities"***, 16th Meeting of the North American Catalysis Society, May 30 – June 4 (1999), Boston, Massachusetts USA.
10. E. Seker and E. Gulari, ***"Improving N_2 Selectivity of Pt/Alumina Catalysts for Selective NO_x Reduction through a Sol-Gel Preparation Technique"***, 16th Meeting of the North American Catalysis Society, May 30 – June 4 (1999), Boston, Massachusetts USA.
11. E. Seker and E. Gulari, ***"Ag/Alumina and Pt/Alumina Sol-Gel Catalysts for NO_x Reduction with Propene under Oxidizing Conditions"***, Mini-Symposium of Institute for Environmental Sciences, Engineering and Technology, September 8 (1998), Ann Arbor, Michigan USA.