

## Prof. DENİZ ÜNER

### Personal Information

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### International Researcher IDs

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Publons / Web Of Science ResearcherID: P-5819-2015

ScopusID: 6603719926

Yoksis Researcher ID: 3562

### Education Information

Doctorate, Iowa State University of Science and Technology, College of Engineering, Chemical Engineering, United States Of America 1988 - 1994

Postgraduate, Middle East Technical University, Graduate School of Natural and Applied Sciences, Kimya Mühendisliği (YI) (Tezli), Turkey 1985 - 1987

Undergraduate, Middle East Technical University, Faculty of Engineering, Department of Chemical Engineering, Turkey 1980 - 1985

### Foreign Languages

Spanish, A2 Elementary

German, B1 Intermediate

### Dissertations

Doctorate, Proton NMR studies on supported metal catalysts, Iowa State University of Science and Technology, Engineering, Chemical Engineering, 1994

Postgraduate, Momentum and heat transfer studies in an eccentric annulus, Middle East Technical University, Graduate School of Natural and Applied Sciences, 1987

### Research Areas

Process and Reactor Design, Basic Operations and Thermodynamics, Engineering and Technology

### Academic Titles / Tasks

Professor, Middle East Technical University, Faculty of Engineering, Department of Chemical Engineering, 2005 - Continues

Professor, University of California, Berkeley, College Of Chemistry, Chemical And Biomolecular Engineering, 2015 - 2016

Associate Professor, Middle East Technical University, Faculty of Engineering, Department of Chemical Engineering, 1999 - 2004

Assistant Professor, Middle East Technical University, Faculty of Engineering, Department of Chemical Engineering, 1995 - 1999

## Academic and Administrative Experience

Head of Department, Middle East Technical University, Graduate School of Natural and Applied Sciences, Micro and Nanotechnology, 2022 - Continues

Middle East Technical University, Faculty of Engineering, Department of Chemical Engineering, 2010 - 2013

Middle East Technical University, Faculty of Engineering, Department of Chemical Engineering, 2004 - 2006

Middle East Technical University, Faculty of Engineering, Department of Chemical Engineering, 1998 - 2001

## Courses

Advances in Catalysis, Postgraduate, 2019 - 2020

## Supervised Theses

ÜNER D., Interaction of hydrogen with titanium dioxide and palladium-titanium dioxide surface at low and high temperature, Postgraduate, M.YARAR(Student), 2022

ÜNER D., Investigation of the transient behaviors of photocatalytic no oxidation over TiO<sub>2</sub>, Postgraduate, S.ERNAM(Student), 2022

ÜNER D., Empirical evaluation of storage materials and conditions for propellant grade white fuming nitric acid, Postgraduate, K.SAÇ(Student), 2022

ÜNER D., Determining service life and ageing characteristics of composite solid propellants by their chemical properties, Postgraduate, Y.KÖSA(Student), 2022

ÜNER D., Modeling kinetics and thermodynamics of amine based fuel and oxidizer interactions, Postgraduate, M.ÖZKAN(Student), 2021

Kazanç Özerinç F., Üner D., MODELING THE EFFECT OF SCR DENOX UNIT ON DIESEL ENGINE PERFORMANCE, Postgraduate, P.PELEN(Student), 2020

Üner D., Sustainable hydrogen production process development using reducible oxides, Doctorate, A.ÇALIŞAN(Student), 2020

Üner D., Elucidating the role of adsorbed states of hydrogen, water and carbon dioxide over TiO<sub>2</sub> and Pd/TiO<sub>2</sub>, Postgraduate, B.YILMAZ(Student), 2020

Üner D., Ammonia synthesis reaction under time interrupted conditions, Doctorate, M.YASİN(Student), 2019

Üner D., Effect of ZnO morphology on photocatalytic activity determined by no oxidation, Postgraduate, O.KAHRAMAN(Student), 2019

Üner D., Valorization of Şırnak asphaltite and biomass, Postgraduate, V.HELVACI(Student), 2019

İpek Torun B., Üner D., HYDROGEN ADSORPTION ON CU (I)-EXCHANGED ZEOLITES, Postgraduate, İ.Altıparmak(Student), 2019

ÜNER D., Effect of cobalt doping on photocatalytic activity of lead titanate, Postgraduate, S.ODABAŞI(Student), 2018

Erkoç E., Üner D., Gliserolün fotokatalitik oksidasyonu, Postgraduate, Ö.AKYAVAŞOĞLU(Student), 2018

ÜNER D., Optimization of operation temperatures and durations during solar thermal water splitting towards greater energy efficiencies, Postgraduate, E.YAVUZYILMAZ(Student), 2016

ÜNER D., YILMAZ A., Hydrothermal synthesis of rare earth ions doped LaBO<sub>3</sub> and GdBO<sub>3</sub> orthoborates and their photoluminescence properties, Postgraduate, S.VAHED(Student), 2016

ÜNER D., YILMAZ A., Hydrothermal synthesis of rare earth ions doped LaBO<sub>3</sub> and GdBO<sub>3</sub> and their photoluminescence

properties, Postgraduate, S.Vahed(Student), 2016

ÜNER D., The role of precious metal nanoparticles on the oxygen exchange kinetics from ceria, Postgraduate, D.KAYA(Student), 2016

ÜNER D., Population balance modeling of TiO<sub>2</sub> nanoparticles synthesized via thermal hydrolysis method, Postgraduate, A.DOĞAN(Student), 2015

ÜNER D., Characterization of adsorption-desorption properties of oxygen and water on mixed oxides, Postgraduate, C.ATEŞ(Student), 2015

ÜNER D., Characterization of adsorption-desorption properties of oxygen & water on mixed oxides, Postgraduate, C.Ateş(Student), 2015

ÜNER D., Carbon dioxide reforming of methane on Ni-based bimetallic catalyts, Doctorate, H.Ay(Student), 2014

ÜNER D., Design constraints for gas-liquid catalytic microreactors, Postgraduate, N.BERKER(Student), 2014

ÜNER D., Carbon dioxide reforming of methane on Ni-based bimetallic catalysts, Doctorate, H.AY(Student), 2014

ÜNER D., CO<sub>2</sub> reduction in reverse flow reactors, Postgraduate, N.Can(Student), 2013

ÜNER D., Syngas production over reducible metal oxides, Postgraduate, A.ÇALIŞAN(Student), 2013

ÜNER D., Photocatalytic oxidation of NO<sub>x</sub> over TiO<sub>2</sub> containing cement based materials, Postgraduate, İ.BAYAR(Student), 2013

ÜNER D., Carbon dioxide reduction in reverse flow reactors, Postgraduate, N.CAN(Student), 2013

ÜNER D., Photocatalytic oxidation of NO<sub>x</sub> over TiO<sub>2</sub> containing cement based materials, Postgraduate, İ.Bayar(Student), 2013

ÜNER D., Characterization and reactivity studies for chemical loop gasification of high sulfur lignites, Doctorate, A.KANCA(Student), 2013

ÜNER D., Photocatalytic activity in nano sized titanium dioxide structures, Doctorate, M.MEHMET(Student), 2012

ÜNER D., Supported Ru based ammonia synthesis catalysts, Postgraduate, M.YASİN(Student), 2012

ÜNER D., YILMAZ A., Hydrogen generation of conventional fuels over mesoporous mixed oxide catalysts under time interrupted reaction conditions, Doctorate, M.Can(Student), 2012

ÜNER D., Hydrogen generation from conventional fuels over mesoporous mixed oxide catalysts under time interrupted reaction conditions, Doctorate, M.CAN(Student), 2011

ÜNER D., Photocatalytic carbon dioxide reduction in liquid media, Postgraduate, B.İPEK(Student), 2011

ÜNER D., Synthesis and characterization of ethanol electro-oxidation catalysts, Doctorate, H.DEMİR(Student), 2010

ÜNER D., The effects of platinum particle size to the efficiency of a dye sensitized solar cell (DSSC), Postgraduate, H.BERK(Student), 2010

ÜNER D., Photocatalytic and photoelectrochemical water splitting over ordered titania nanotube arrays, Postgraduate, O.KARSLIOĞLU(Student), 2009

ÜNER D., NO<sub>x</sub> storage and reduction over Ce-Zr mixed oxide supported catalysts, Postgraduate, B.ÇAĞLAR(Student), 2009

ÜNER D., Acidity characterization and adsorption characteristics of cobalt and lead doped SBA15 mesoporous materials, Postgraduate, Ö.GÜNER(Student), 2007

ÜNER D., Methane activation via bromination over sulfated zirconia/SBA-15 catalysts, Doctorate, V.DEĞİRMENÇİ(Student), 2007

ÜNER D., Synthesis and characterization of Co-Pb/SBA-15 mesoporous catalysts, Postgraduate, B.AKÇA(Student), 2006

ÜNER D., Structure and activity predictions on mono- and bi-metallic catalysts, Postgraduate, E.ERÜNAL(Student), 2006

ÜNER D., Structure sensitivity of selective CO oxidation over precious metal catalysts, Postgraduate, B.ATALIK(Student), 2005

ÜNER D., Artificial photosynthesis: Dye assisted photocatalytic reduction of carbon dioxide over pure and platinum containing titania, Postgraduate, Ö.ÖZCAN(Student), 2005

ÜNER D., Diesel soot oxidation catalyst filter system design, Postgraduate, V.Eyüp(Student), 2005

ÜNER D., Steam reforming of ethanol over sol-gel-synthesized mixed oxide catalysts, Postgraduate, H.ÖNDER(Student), 2005

ÜNER D., Diesel soot oxidation catalyst filter sytem design, Postgraduate, V.EYÜP(Student), 2005

ÜNER D., Adsorption calorimetry in supported catalyst characterization : adsorption structure sensitivity on pt( $\gamma$ -Al<sub>2</sub>O<sub>3</sub>), Postgraduate, M.Üner(Student), 2004

ÜNER D., Adsorption calorimetry in supported catalyst characterization: Adsorption structure sensitivity on Pt/gamma-Al<sub>2</sub>O<sub>3</sub>, Postgraduate, M.ÜNER(Student), 2004

ÜNER D., Soot oxidation catalysis, Postgraduate, M.KEMAL(Student), 2002

ÜNER D., CO oxidation on alumina supporter Pd-Pt mono- and BI-metallic catalysts : temperature hysteresis., Postgraduate, S.Kaya(Student), 2002

ÜNER D., CO oxidation on alumina supported Pd-Pt mono and bi-metallic catalysts: Temperature hysteresis, Postgraduate, S.KAYA(Student), 2002

ÜNER D., Assessment of exhaust emissions from gasoline fueled motor vehicles, Postgraduate, R.GÜLTEKİN(Student), 2001

ÜNER D., Catalytic combustion of diesel soot, Postgraduate, B.DERNAİKA(Student), 2001

ÜNER D., Effect of cerium dioxide on carbonmonoxide oxidation reaction mechanism over Pt/y-Al<sub>2</sub>O<sub>3</sub> catalyst, Postgraduate, U.ORAN(Student), 2001

ÜNER D., Thermal and photocatalytic oxidation of carbon monoxide over titanium dioxide-effects of platinum deposition, Postgraduate, İ.ÖZEN(Student), 2001

Üner D., Adsorption dynamics and reaction kinetics at gas-solid interfaces: applications in catalysis and gas sensors, Postgraduate, N.Alper(Student), 1999

ÜNER D., DOĞU T., Determination of rate processes and parameters for hydrogen adsorption on silica supported ruthenium catalysts, Postgraduate, A.İLDEŞ(Student), 1999

Üner D., Improvements in adhesion properties of solid propellant rocket liner, Postgraduate, F.Burcu(Student), 1998

Üner D., Studies on photocatalytic reactions : heterogeneous photocatalysis by titaniumdioxide, Postgraduate, S.Özbek(Student), 1998

Üner D., De-nox catalysis via bimetallics, Postgraduate, D.Ernur(Student), 1998

## Published journal articles indexed by SCI, SSCI, and AHCI

- I. **Effects of dead volume and inert sweep gas flow on photocatalytic hydrogen evolution over Pt/TiO<sub>2</sub>**  
Can Özcan E., ÜNER D., Yildirim R.  
International Journal of Hydrogen Energy, vol.75, pp.540-546, 2024 (SCI-Expanded)
- II. **Dissociation of HNO<sub>3</sub> in water revisited: experiment and theory**  
Munar I., Özer M. Ö., Fusco E., ÜNER D., Aviyente V., Bühl M.  
Physical Chemistry Chemical Physics, vol.26, no.23, pp.16616-16624, 2024 (SCI-Expanded)
- III. **LaCoO<sub>3</sub> is a promising catalyst for the dry reforming of benzene used as a surrogate of biomass tar**  
Çağlar B., ÜNER D.  
Turkish Journal of Chemistry, vol.48, no.4, pp.643-658, 2024 (SCI-Expanded)
- IV. **PdH  $\alpha$ -phase is associated with residual oxygen as revealed by in situ <sup>1</sup>H NMR measurements and DFT-NMR estimations**  
Mete E., YILMAZ B., ÜNER D.  
Applied Surface Science, vol.641, 2023 (SCI-Expanded)
- V. **Pd as a reduction promoter for TiO<sub>2</sub>: Oxygen and hydrogen transport at 2D and 3D Pd interfaces with TiO<sub>2</sub> monitored by TPR, operando <sup>1</sup>H NMR and CO oxidation studies**  
YARAR M., Bouzani A., ÜNER D.  
Catalysis Communications, vol.174, 2023 (SCI-Expanded)
- VI. **Recommendations for improving the experimental protocol for the determination of photocatalytic activity by nitric oxide oxidation measurements**  
ERNAM S., Akgül Z. E., ÜNER D.  
Turkish Journal of Chemistry, vol.47, no.5, pp.1285-1295, 2023 (SCI-Expanded)
- VII. **Elucidating the role of adsorption during artificial photosynthesis: H<sub>2</sub>O and CO<sub>2</sub> adsorption isotherms over TiO<sub>2</sub> reveal thermal effects under UV illumination**  
ÜNER D., YILMAZ B.  
PHOTOSYNTHESIS RESEARCH, vol.154, no.3, pp.353-367, 2022 (SCI-Expanded)

- VIII. **Oxygen vacancies on Pd/TiO<sub>2</sub> are detected at low pressures by ESR spectroscopy at ambient temperatures**  
ÜNER D., YARAR M.  
Turkish Journal of Chemistry, vol.46, no.4, pp.1081-1088, 2022 (SCI-Expanded)
- IX. **Microstructure, resistivity, and shear strength of electrically conductive adhesives made of silver-coated copper powder**  
Hamrah Z. S., Lashgari V. A., Mohammadi M. H. D., Uner D., Pourabdoli M.  
MICROELECTRONICS RELIABILITY, vol.127, 2021 (SCI-Expanded)
- X. **Construction of phase diagrams to estimate phase transitions at high pressures: A critical point at the solid liquid transition for benzene**  
Ibrahimoglu B., ÜNER D., Veziroglu A., Karakaya F., Ibrahimoglu B.  
INTERNATIONAL JOURNAL OF HYDROGEN ENERGY, vol.46, no.29, pp.15168-15180, 2021 (SCI-Expanded)
- XI. **The effect of H<sub>2</sub>:N<sub>2</sub> ratio on the NH<sub>3</sub> synthesis rate and on process economics over the Co<sub>3</sub>Mo<sub>3</sub>N catalyst**  
ASLAN M., Hargreaves J. S., ÜNER D.  
Faraday Discussions, vol.229, pp.475-488, 2021 (SCI-Expanded)
- XII. **Elucidating the Barriers on Direct Water Splitting: Key Role of Oxygen Vacancy Density and Coordination over PbTiO<sub>3</sub> and TiO<sub>2</sub>**  
METE E., Ellialtioglu S., GÜLSEREN O., ÜNER D.  
JOURNAL OF PHYSICAL CHEMISTRY C, vol.125, no.3, pp.1874-1880, 2021 (SCI-Expanded)
- XIII. **Double Perovskite Structure Induced by Co Addition to PbTiO<sub>3</sub>: Insights from DFT and Experimental Solid-State NMR Spectroscopy**  
Mete E., Odabasi S., Mao H., Chung T., Ellialtioglu S., Reimer J. A., Gulseren O., ÜNER D.  
JOURNAL OF PHYSICAL CHEMISTRY C, vol.123, no.44, pp.27132-27139, 2019 (SCI-Expanded)
- XIV. **H-2 adsorption on Cu(I)-ZSM-5: Exploration of Cu(I)-exchange in solution**  
Altıparmak İ., Karakaya B., Üner D., İpek Torun B.  
INTERNATIONAL JOURNAL OF HYDROGEN ENERGY, vol.44, pp.18866-18874, 2019 (SCI-Expanded)
- XV. **Fundamentals of hydrogen storage processes over Ru/SiO<sub>2</sub> and Ru/Vulcan**  
ASLAN M. Y., ÜNER D.  
INTERNATIONAL JOURNAL OF HYDROGEN ENERGY, vol.44, no.34, pp.18903-18914, 2019 (SCI-Expanded)
- XVI. **Steam methane reforming over structured reactors under concentrated solar irradiation**  
Calisan A., Ogulgonen C. G., Yilmaz A., ÜNER D., Kincal S.  
INTERNATIONAL JOURNAL OF HYDROGEN ENERGY, vol.44, no.34, pp.18682-18693, 2019 (SCI-Expanded)
- XVII. **Finding the optimum between volatility and cycle temperatures in solar thermochemical hydrogen production: Pb/PbO pair**  
Calisan A., Ogulgonen C. G., Kincal S., ÜNER D.  
INTERNATIONAL JOURNAL OF HYDROGEN ENERGY, vol.44, no.34, pp.18671-18681, 2019 (SCI-Expanded)
- XVIII. **In situ and downstream sulfidation reactivity of PbO and ZnO during pyrolysis and hydrogenation of a high-sulfur lignite**  
KANCA A., ÜNER D.  
INTERNATIONAL JOURNAL OF HYDROGEN ENERGY, vol.44, no.34, pp.18827-18835, 2019 (SCI-Expanded)
- XIX. **Facilitating role of Pd for hydrogen, oxygen and water adsorption/desorption processes from bulk CeO<sub>2</sub> and CeO<sub>2</sub>/gamma-Al<sub>2</sub>O<sub>3</sub>**  
Kaya D., Singh D., Kincal S., ÜNER D.  
CATALYSIS TODAY, vol.323, pp.141-147, 2019 (SCI-Expanded)
- XX. **Enhancement of hydrogen storage capacity of multi-walled carbon nanotubes with palladium doping prepared through supercritical CO<sub>2</sub> deposition method**  
ERÜNAL E., Ulusal F., ASLAN M. Y., GÜZEL B., ÜNER D.  
INTERNATIONAL JOURNAL OF HYDROGEN ENERGY, vol.43, no.23, pp.10755-10764, 2018 (SCI-Expanded)
- XXI. **Effect of mechanical activation on thermal energy storage properties of Co<sub>3</sub>O<sub>4</sub>/CoO system**  
Nekokar N., Pourabdoli M., Hamidi A. G., ÜNER D.

- ADVANCED POWDER TECHNOLOGY, vol.29, no.2, pp.333-340, 2018 (SCI-Expanded)
- XXII. **H-2 Adsorption on Cu(I)-SSZ-13**  
Ipek B., Pollock R. A., Brown C. M., Üner D., Lobo R. F.  
JOURNAL OF PHYSICAL CHEMISTRY C, vol.122, pp.540-548, 2018 (SCI-Expanded)
- XXIII. **Following the structure and reactivity of Tuncbilek lignite during pyrolysis and hydrogenation**  
Kanca A., Dodd M., Reimer J. A., ÜNER D.  
FUEL PROCESSING TECHNOLOGY, vol.152, pp.266-273, 2016 (SCI-Expanded)
- XXIV. **Using spilled over hydrogen in NH<sub>3</sub> synthesis over supported Ru catalysts**  
ÜNER D., ASLAN M. Y.  
CATALYSIS TODAY, vol.272, pp.49-57, 2016 (SCI-Expanded)
- XXV. **Dry reforming of methane over CeO<sub>2</sub> supported Ni, Co and Ni-Co catalysts**  
Ay H., ÜNER D.  
APPLIED CATALYSIS B-ENVIRONMENTAL, vol.179, pp.128-138, 2015 (SCI-Expanded)
- XXVI. **The influence of relative humidity on photocatalytic oxidation of nitric oxide (NO) over TiO<sub>2</sub>**  
ÜNER D., Bayar I., Tabari T.  
APPLIED SURFACE SCIENCE, vol.354, pp.260-266, 2015 (SCI-Expanded)
- XXVII. **Time interrupted behavior of ammonia synthesis over ruthenium based catalysts**  
ÜNER D., ASLAN M. Y., Uner N. B.  
ABSTRACTS OF PAPERS OF THE AMERICAN CHEMICAL SOCIETY, vol.249, 2015 (SCI-Expanded)
- XXVIII. **Effect of process control agents on synthesizing nano-structured 2Mg-9Ni-Y catalyst by mechanical milling and its catalytic effect on desorption capacity of MgH<sub>2</sub>**  
Hosseini-Gourajoubi F., Pourabdoli M., ÜNER D., Raygan S.  
ADVANCED POWDER TECHNOLOGY, vol.26, no.2, pp.448-453, 2015 (SCI-Expanded)
- XXIX. **A comparative study for synthesis methods of nano-structured (9Ni-2Mg-Y) alloy catalysts and effect of the produced alloy on hydrogen desorption properties of MgH<sub>2</sub>**  
Pourabdoli M., Raygan S., Abdizadeh H., ÜNER D.  
INTERNATIONAL JOURNAL OF HYDROGEN ENERGY, vol.38, no.36, pp.16090-16097, 2013 (SCI-Expanded)
- XXX. **Determination of kinetic parameters and hydrogen desorption characteristics of MgH<sub>2</sub>-10 wt% (9Ni-2Mg-Y) nano-composite**  
Pourabdoli M., Raygan S., Abdizadeh H., ÜNER D.  
INTERNATIONAL JOURNAL OF HYDROGEN ENERGY, vol.38, no.27, pp.11910-11919, 2013 (SCI-Expanded)
- XXXI. **On the mechanism of photocatalytic CO<sub>2</sub> reduction with water in the gas phase**  
ÜNER D., Oymak M. M.  
CATALYSIS TODAY, vol.181, no.1, pp.82-88, 2012 (SCI-Expanded)
- XXXII. **Comparative photodecolorization of red dye by anatase, rutile (TiO<sub>2</sub>), and wurtzite (ZnO) using response surface methodology**  
Khameneh S., Sadrnezhaad S. K., Rad M. K., ÜNER D.  
TURKISH JOURNAL OF CHEMISTRY, vol.36, no.1, pp.121-135, 2012 (SCI-Expanded)
- XXXIII. **NO oxidation and NO<sub>x</sub> storage over Ce-Zr mixed oxide supported catalysts**  
Caglar B., ÜNER D.  
CATALYSIS COMMUNICATIONS, vol.12, no.6, pp.450-453, 2011 (SCI-Expanded)
- XXXIV. **Carbon Nanotube Structures as Support for Ethanol Electro-Oxidation Catalysis**  
Kivrak H., Kulyev S., Tempel H., Schneider J., Uner D.  
INTERNATIONAL JOURNAL OF CHEMICAL REACTOR ENGINEERING, vol.9, 2011 (SCI-Expanded)
- XXXV. **Sulfated Zirconia Modified SBA-15 Catalysts for Cellobiose Hydrolysis**  
Degirmenci V., ÜNER D., Cinlar B., Shanks B. H., YILMAZ A., van Santen R. A., Hensen E. J. M.  
CATALYSIS LETTERS, vol.141, no.1, pp.33-42, 2011 (SCI-Expanded)
- XXXVI. **CO<sub>2</sub> utilisation by photocatalytic conversion to methane and methanol**  
Uner D., Oymak M. M., Ipek B.  
INTERNATIONAL JOURNAL OF GLOBAL WARMING, vol.3, pp.142-162, 2011 (SCI-Expanded)
- XXXVII. **Selective methane bromination over sulfated zirconia in SBA-15 catalysts**

- Degirmenci V., YILMAZ A., ÜNER D.  
CATALYSIS TODAY, vol.142, pp.30-33, 2009 (SCI-Expanded)
- XXXVIII. **Pt-incorporated anatase TiO<sub>2</sub>(001) surface for solar cell applications: First-principles density functional theory calculations**  
METE E., ÜNER D., GÜLSEREN O., ELLİALTIOĞLU S. Ş.  
PHYSICAL REVIEW B, vol.79, no.12, 2009 (SCI-Expanded)
- XXXIX. **Determination of the dispersion of supported Pt particles by gas-phase and liquid-phase measurements**  
Kivrak H., Mastalir A., Kiraly Z., ÜNER D.  
CATALYSIS COMMUNICATIONS, vol.10, no.6, pp.1002-1005, 2009 (SCI-Expanded)
- XL. **On the Structure Sensitivity of CO Oxidation on Alumina Supported Pd-Pt Bimetallic Catalysts**  
Kaya S., Erunal E., Shaltaf R., Ellialtioglu S., ÜNER D.  
TURKISH JOURNAL OF CHEMISTRY, vol.33, no.1, pp.11-21, 2009 (SCI-Expanded)
- XLI. **Oxidation States and the Acidity of Ordered Arrays of Co-Pb Mixed Oxide Nanoparticles Templated in SBA15**  
Akca B., Guner O., Can M., YILMAZ A., ÜNER D.  
TOPICS IN CATALYSIS, vol.49, pp.187-192, 2008 (SCI-Expanded)
- XLII. **Synthesis and NMR Characterization of Titanium and Zirconium Oxides Incorporated in SBA-15**  
Degirmenci V., Erdem O. F., Ergun O., YILMAZ A., Michel D., ÜNER D.  
TOPICS IN CATALYSIS, vol.49, pp.204-208, 2008 (SCI-Expanded)
- XLIII. **CO Oxidation over Mono and Bi-Metallic Sequentially Impregnated Pd-Pt Catalysts**  
Kaya S., ÜNER D.  
TURKISH JOURNAL OF CHEMISTRY, vol.32, no.5, pp.645-652, 2008 (SCI-Expanded)
- XLIV. **Dye sensitized CO<sub>2</sub> reduction over pure and platinumized TiO<sub>2</sub>**  
Ozcan O., Yukruk F., Akkaya E. U., Uner D.  
TOPICS IN CATALYSIS, vol.44, no.4, pp.523-528, 2007 (SCI-Expanded)
- XLV. **Effect of molecular and electronic structure on the light-harvesting properties of dye sensitizers**  
Mete E., Uner D., Cakmak M., Gulseren O., Ellialtoghlu S.  
JOURNAL OF PHYSICAL CHEMISTRY C, vol.111, no.20, pp.7539-7547, 2007 (SCI-Expanded)
- XLVI. **Sulfated zirconia in SBA-15 structures with strong Bronsted acidity as observed by H-1 MAS NMR spectroscopy**  
Degirmenci V., Erdem O. F., Yilmaz A., Michel D., Uner D.  
CATALYSIS LETTERS, vol.115, pp.79-85, 2007 (SCI-Expanded)
- XLVII. **Dye sensitized artificial photosynthesis in the gas phase over thin and thick TiO<sub>2</sub> films under UV and visible light irradiation**  
Ozcan O., Yukruk F., Akkaya E. U., Uner D.  
APPLIED CATALYSIS B-ENVIRONMENTAL, vol.71, pp.291-297, 2007 (SCI-Expanded)
- XLVIII. **Liquid chromatography as a novel method for determination of the dispersion of supported Pd particles**  
Kiraly Z., Mastalir A., Csaszar A., Demir H., Uner D., Findenegg G. H.  
JOURNAL OF CATALYSIS, vol.245, no.2, pp.267-271, 2007 (SCI-Expanded)
- XLIX. **Preparation and characterization of ordered TiO<sub>2</sub> photocatalysts: films and mesoporous structures**  
Erguen O., Karslioglu O., YILMAZ A., ÜNER D.  
TURKISH JOURNAL OF CHEMISTRY, vol.31, no.5, pp.501-508, 2007 (SCI-Expanded)
- L. **Preparation and morphological characterization of a catalytic soot oxidation SiC foam filter**  
Caglar B., ÜNER D.  
TURKISH JOURNAL OF CHEMISTRY, vol.31, no.5, pp.487-492, 2007 (SCI-Expanded)
- LI. **Structure sensitivity of selective CO oxidation over Pt/ $\gamma$ -Al<sub>2</sub>O<sub>3</sub>**  
Atalik B., Uner D.  
JOURNAL OF CATALYSIS, vol.241, no.2, pp.268-275, 2006 (SCI-Expanded)
- LII. **A novel catalyst for diesel soot oxidation**

- Uner D., Demirkol M., Dernaika B.  
APPLIED CATALYSIS B-ENVIRONMENTAL, vol.61, pp.334-345, 2005 (SCI-Expanded)
- LIII. **Methane to higher hydrocarbons via halogenation**  
Degirmenci V., Uner D., Yilmaz A.  
CATALYSIS TODAY, vol.106, pp.252-255, 2005 (SCI-Expanded)
- LIV. **Adsorption calorimetry in supported catalyst characterization: Adsorption structure sensitivity on Pt/-gamma-Al<sub>2</sub>O<sub>3</sub>**  
Uner D., Uner M.  
THERMOCHIMICA ACTA, vol.434, pp.107-112, 2005 (SCI-Expanded)
- LV. **Testing molten metal oxide catalysts over structured ceramic substrates for diesel soot oxidation**  
Genc V., Altay F., Uner D.  
CATALYSIS TODAY, vol.105, pp.537-543, 2005 (SCI-Expanded)
- LVI. **Mechanisms of CO oxidation reaction and effect of chlorine ions on the CO oxidation reaction over Pt/CeO<sub>2</sub> and Pt/CeO<sub>2</sub>/gamma-Al<sub>2</sub>O<sub>3</sub> catalysts**  
Oran U., Uner D.  
APPLIED CATALYSIS B-ENVIRONMENTAL, vol.54, no.3, pp.183-191, 2004 (SCI-Expanded)
- LVII. **Oxygen adsorption on Pt/TiO<sub>2</sub> catalysts**  
Uner D., Tapan N., Ozen I., Uner M.  
APPLIED CATALYSIS A-GENERAL, vol.251, no.2, pp.225-234, 2003 (SCI-Expanded)
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## Refereed Congress / Symposium Publications in Proceedings

- I. **selectivity control through microkinetic analysis of complex catalytic reactions**  
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5th Anatolian school of catalysis, İzmir, Turkey, 8 - 11 September 2019
- II. **H<sub>2</sub> Storage at Ambient Temperature using Cu(I)-SSZ-39**  
İpek Torun B., Altıparmak I., Üner D.  
4. Uluslararası Hidrojen Teknolojileri Konferansı, Edirne, Turkey, 20 - 23 June 2019
- III. **In-situ and downstream desulfurization ability of PbO and ZnO during pyrolysis and hydrogenation of a high-sulfur lignite**  
KANCA A., ÜNER D.  
3th International Hydrogen Technologies Congress, 15 - 18 March 2018, pp.53-56
- IV. **Comparison of Low and High Pd Loadings on CNTs via Supercritical Fluid Deposition as Hydrogen**

## **Storage Materials**

ERÜNAL E., ULUSAL F., ODABAŞI S., ASLAN M. Y., GÜZEL B., ÜNER D.

14th International Conference on Energy Storage, Adana, Turkey, 25 - 28 April 2018

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- VI. **Hydrogen Storage Capacity Investigations of Pd Loading Ratio on MW-CNTs Prepared via ScCO<sub>2</sub> Deposition Method**  
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- VII. **N<sub>2</sub> Catalyzed methane pyrolysis for H<sub>2</sub> generation under concentrated solar irradiation**  
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oğulonen c. g., ÇALIŞAN A., ÜNER D., KINCAL S.  
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- X. **A low cost continuous H<sub>2</sub>-CH<sub>4</sub> sensor assembly**  
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- XI. **Hydrogen storage capacity investigations of Pd loading ratio on ME-CNTs via Supercritical Fluid deposition method**  
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- XII. **Water splitting through Pb/PbO cycle**  
ÇALIŞAN A., oğulonen c. g., ÜNER D., KINCAL S.  
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- XIII. **A Cost Analysis for Ammonia as a Hydrogen Carrier**  
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- XIV. **The Effect of Oxygen Vacancies on Steam Reforming of Lean Methane by NiAl<sub>2</sub>O<sub>3</sub>, CeCo<sub>3</sub>, and Sr<sub>0.6</sub>Ce<sub>0.4</sub>Fe<sub>0.7</sub>Co<sub>0.3</sub>O<sub>3</sub>**  
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- XV. **The Effect of UV Light on Desorption of Oxygen from TiO<sub>2</sub> and 0.5 wt Pt/TiO<sub>2</sub>**  
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4. Anadolu Kataliz Okulu, 11 - 14 September 2017
- XVI. **Effect of Ru Particle Size on the Behavior of Hydrogen over Ru/SiO<sub>2</sub> Catalysts with Various Metal Loadings**  
ASLAN M. Y., ÜNER D.  
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- XVII. **H<sub>2</sub> Molekülünün Heterojen Yapılı Kütlece 1 Pd/CeO<sub>2</sub> Katalizörü Üzerine Oda Sıcaklığında Adsorplanmasının Tezgâh Üstü NMR Spektrometresi ile İncelenmesi**  
ÜNER D., volkan e.  
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- XX. **getting to know your catalyst**  
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- XXI. **Influence of Particle Size and Morphology of ZnO nanoparticles on Photocatalytic NO Oxidation**  
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8th World Congress on Oxidation Catalysis, 3 - 08 September 2017
- XXII. **Photocatalytic Oxidation of Glycerol in Continuous Mini-Flow Reactor**  
Akyavaşoğlu Ö., ÜNER D., ERKOÇ E.  
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- XXIII. **Transport limitations of oxygen exchange processes: an experimental study on Pt/Co<sub>3</sub>O<sub>4</sub>**  
ÇALIŞAN A., KINCAL S., ÜNER D.  
13th European Congress on Catalysis, Floransa, Italy, 27 - 31 August 2017, pp.532
- XXIV. **Enhancing the rate of hydrogen and oxygen evolution from CeO<sub>2</sub> during solar thermal water splitting: addition of Pd and Al<sub>2</sub>O<sub>3</sub>**  
ÜNER D., kaya d.  
EUROPACAT 13th european congress on catalysis, 27 - 31 August 2017
- XXV. **Photocatalytic activity of the modified coupled semiconductors and its relationship with surface properties.**  
ÜNER D., khamaneh asl s.  
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- XXVI. **photocorrosion of NT within water splitting and dye decolorization reactions**  
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- XXVII. **Enhancement of hydrogen storage capacity of multi-walled carbon nanotubes with palladium doping prepared through supercritical CO<sub>2</sub> deposition method**  
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- XXVIII. **Optimization Approach to Operation Conditions of Solar Thermochemical Water Splitting Process**  
YAVUZYLMAZ E., ÜNER D., KINCAL S.  
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- XXIX. **Transport Limitations of Oxygen Exchange in Solar Thermochemical Processes: An Experimental Study on Co<sub>3</sub>O<sub>4</sub>**  
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- XXX. **Hydrogen Storage Capacity of Palladium Doped Multi Wall Carbon Nanotubes Prepared via Supercritical CO<sub>2</sub> Deposition Method**  
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- XXXI. **Hydrogen Storage Capacity of Palladium Doped Multi-Walled Carbon Nanotubes Prepared via Supercritical CO<sub>2</sub> Deposition Method**  
ERÜNAL E., Ulusal F., ASLAN M. Y., GÜZEL B., ÜNER D.  
2nd International Hydrogen Technologies Congress, Turkey, 15 - 18 March 2017
- XXXII. **ARTIFICIAL PHOTOSYNTHESIS: FROM MOLECULAR RATIONALIZATION TO INDUSTRIAL SCALE CATALYSIS**  
ÜNER D.  
49th Polish annual conference on catalysis, 15 - 17 March 2017
- XXXIII. **CHEMICAL REACTIVITY IN CONFINED SPACE TIMES**  
ÜNER D.

8th EMCC Eastern Mediterranean Collaborative Chemical Engineering Conference, 26 February - 01 March 2017

- XXXIV. **Tuncbilek linyitinin kimyasal halka yontemi ile gazlastirmasi**  
KANCA A., ÇALIŞAN A., ÜNER D.  
Ulusal Kimya muhendisligi kongresi, Turkey, 23 - 26 August 2016
- XXXV. **Stokymetrik olmayan oksitler uzerinde gunes enerjisinden hidrojen uretimi**  
YAVUZYLMAZ E., KINCAL S., ÜNER D.  
ulusal kmya muhendisligi kongresi, Turkey, 23 - 26 August 2016
- XXXVI. **Ammonia Synthesis Reaction On Ru Nanoparticles**  
ASLAN M. Y., AKBAYRAK S., özkar S., ÜNER D.  
6th national catalysis conference, Turkey, 27 - 30 April 2016
- XXXVII. **The Role Of Precious Metals On Adsorption Desorption Kinetics Of Oxygen Over Reducible Oxide**  
ÜNER D., kaya d., singh d.  
6th National catalysis conference, Turkey, 27 - 30 April 2016
- XXXVIII. **Catalytic Tar Removal on Nickel loaded Perovskites**  
ÇAĞLAR B., tabari t., ÜNER D.  
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- XXXIX. **Catalytic Role of Pyrite on Hydrodesulfurization of Lignite and Asphaltite**  
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6th National Catalysis Conference, Turkey, 27 - 30 April 2016
- XL. **Benzene Oxidation as an Alternative Method for Assessing Photocatalytic Activity**  
oymak m. m., tabari t., ÜNER D.  
6th national catalysis conference, Turkey, 27 - 30 April 2016
- XLI. **Material Performance of Co<sub>3</sub>O<sub>4</sub> CeO<sub>2</sub> and Co Ce Mixed Oxide on Oxygen Storage for Solar Thermal Hydrogen Production**  
ÇALIŞAN A., KAYA D., ÜNER D.  
12 EUROPEAN CONGRESS ON CATALYSIS, Kazan, Russia, 30 August - 04 September 2015
- XLII. **Photocatalytic removal of NO under visible light irradiation over sol gel synthesized PbTiO<sub>3</sub> nanoparticles**  
TABARI T., ÜNER D.  
12TH EUROPEAN CONGRESS ON CATALYSIS, Kazan, Russia, 30 August - 04 September 2015
- XLIII. **Fickian Spillover Models Validation and Parameter Estimation**  
Dheerendra S., Üner N. B., ÜNER D.  
12th EUROPEAN CONGRESS ON CATALYSIS, Kazan, Russia, 30 August - 04 September 2015
- XLIV. **Estimating and Validating Time Interrupted Behavior of Ammonia Synthesis over Ruthenium Based Catalysts**  
ÜNER D., ASLAN M. Y., üner n. b.  
249th American Chemical Society National Meeting, Denver, United States Of America, 22 - 26 March 2015
- XLV. **Using nonstoichiometric Co-Pb mixed metal oxides for solar thermal synthesis of hydrogen and CO**  
Calisan A., Kincal S., ÜNER D.  
248th National Meeting of the American-Chemical-Society (ACS), San-Francisco, Costa Rica, 10 - 14 August 2014, vol.248

## Supported Projects

ÜNER D., ODABAŞI S., YAVUZYLMAZ E., KAHRAMAN O., HALVACI V., ASLAN M. Y., KAYA D., ÇALIŞAN A., Project Supported by Higher Education Institutions, Adsorplanmış moleküllerin NMR spektroskopisi ile incelenmesi, 2017 - 2017

ÜNER D., AKBAYRAK S., ASLAN M. Y., Project Supported by Higher Education Institutions, Rutenyum nanokümelerinin amonyak sentezinde katlizör olarak kullanıminin incelenmesi, 2016 - 2016

ÜNER D., ATEŞ C., Project Supported by Higher Education Institutions, Karışık Yapılı Metal Oksitlerde Oksijen Ve Su

Adsorpsiyon-Desorpsiyon Özelliklerinin Karakterizasyonu, 2014 - 2015

ÜNER D., Project Supported by Higher Education Institutions, FEN BİLİMLERİ ENSTİTÜSÜ/LİSANSÜSTÜ TEZ PROJESİ, 2014 - 2015

ÜNER D., ASLAN M. Y., ATEŞ C., Project Supported by Higher Education Institutions, Ru/SBA-15 ve Kobalt-Oksit Sentezi için Kül Fırın Alımı, 2014 - 2014

ÜNER D., ASLAN M. Y., Project Supported by Higher Education Institutions, Soy metal amonyak sentezi katalizörlerinin hidrojenle zehirlenme mekanizmasının taşma olayları ile ilişkisinin incelenmesi, 2013 - 2013

ÜNER D., Project Supported by Higher Education Institutions, Gazların Katalizör Yüzeyine Adsorplanma Isılarının Mikrokalorimetre Yöntemi İle Tayini, 2012 - 2012

ÜNER D., Project Supported by Higher Education Institutions, Gaz Fazda Benzenin Katalitik Hidrojenlenmesi, Kinetik İncelenmesi Ve Mekanizmanın Aydınlatılması., 2011 - 2011

ÜNER D., Project Supported by Higher Education Institutions, Katalitik Tepkimelerin Gaz Fazında İncelenmesi, 2011 - 2011

ÜNER D., Project Supported by Higher Education Institutions, Destekli değerli metal katalizörler üzerine adsorplanmış moleküllerin drifts analizi karakterizasyonu., 2010 - 2010

## Activities in Scientific Journals

APPLIED CATALYSIS B: ENVIRONMENTAL, Committee Member, 2022 - Continues

Catalysis Reviews-Science And Engineering, Committee Member, 2016 - Continues

Catalysis Communications, Committee Member, 2010 - Continues

## Memberships / Tasks in Scientific Organizations

INTERNATIONAL ASSOCIATION FOR CATALYSIS SOCIETIES IACS, Country Representative, 2012 - Continues, France

EUROPEAN FEDERATION OF CATALYSIS EFCATS, Country Representative, 2007 - Continues, Netherlands

Catalysis Society of Turkey, Board Member, 2006 - Continues, Turkey

## Scientific Refereeing

Project Supported by Public Organizations in Other Countries, Spanish Government Ministry of Science and Innovation, Spain, May 2022

Horizon Europe Project, Horizon Europe Project, REA, Belgium, November 2021

H2020 Project, ERC H2020 European Research Council Project, european research council, Belgium, May 2018

H2020 Project, ERC H2020 European Research Council Project, european research council, Belgium, March 2018

## Metrics

Publication: 127

Citation (WoS): 1852

Citation (Scopus): 1963

H-Index (WoS): 23

H-Index (Scopus): 24

## Congress and Symposium Activities

9th eastern mediterranean conference in Chemical engineering, Invited Speaker, Ankara, Turkey, 2018

## **Invited Talks**

Storage of Solar Energy in Chemical Bonds, Conference, 9th Eastern Mediterranean Chemical Engineering Conference, Turkey, September 2018

## **Non Academic Experience**

University of California Berkeley  
Orta Doğu Teknik Üniversitesi