# Assoc. Prof. ÖZGE YÜKSEL ORHAN

## Personal Information

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## Education Information

Doctorate, Hacettepe University, Mühendislik Fakültesi, Kimya Mühendisliği, Turkey 2010 - 2015
Postgraduate, Hacettepe University, Mühendislik Fakültesi, Kimya Mühendisliği, Turkey 2007 - 2010
Undergraduate, Hacettepe University, Mühendislik Fakültesi, Kimya Mühendisliği, Turkey 2003 - 2007

## Foreign Languages

German, B1 Intermediate
English, C1 Advanced

## Dissertations

Doctorate, Karbon dioksit gazının iyonik sıvı- CO2 tutan organik sıvı hibrit çözücülere absorpsiyonunun kinetiği, Hacettepe Üniversitesi, Mühendislik Fakültesi, Kimya Mühendisliği Bölümü, 2015

## Research Areas

Chemical Engineering and Technology, Process and Reactor Design, Chemical Reaction Engineering, Engineering and Technology

## Academic Titles / Tasks

Research Assistant, Hacettepe University, Mühendislik Fakültesi, Kimya Mühendisliği Bölümü, 2009 - Continues

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

I. **Enhancing CO<sub>2</sub> desorption efficiency with Non-Aqueous Catalyst-Enhanced Tri-Blend amines**
YÜKSEL ORHAN Ö., Hugul A., ULUS F. N., YAVUZ ERSAN H.
FUEL, 2024 (SCI-Expanded)
II. **Low-energy electrochemical CO<sub>2</sub>-amine desorption driven by the proton-coupled**

**electron transfer reaction (PCET)**
Zhao F., Deng Y., Li M., Lv C., Aminabhavi T. M., YÜKSEL ORHAN Ö., Liu H.
CHEMICAL ENGINEERING JOURNAL, 2024 (SCI-Expanded)

III. **Response Surface Optimization of Nonaqueous Hexanol-Based Trisolvent Amine Blends for Energy-Efficient CO2 Desorption**
Hugul A. E., Ulus N., YÜKSEL ORHAN Ö., YAVUZ ERSAN H.
Energy Technology, 2024 (SCI-Expanded)

IV. **Reduced energy consumption and enhanced CO2 desorption performance of non-aqueous ionic-liquid-containing amine blends with zeolites**
Ulus N., Yüksel Orhan Ö.
JOURNAL OF MOLECULAR LIQUIDS, vol.359, 2022 (SCI-Expanded)

V. **Modeling and Optimizing N/O-Enriched Bio-Derived Adsorbents for CO2 Capture: Machine Learning and DFT Calculation Approaches**
Rahimi M., Abbaspour-Fard M. H., Rohani A., YÜKSEL ORHAN Ö., Li X.
INDUSTRIAL & ENGINEERING CHEMISTRY RESEARCH, vol.61, no.30, pp.10670-10688, 2022 (SCI-Expanded)

VI. **Optimization of novel nonaqueous hexanol-based monoethanolamine/methyl diethanolamine solvent for CO2 absorption**
Ulus N., Ali S. A. S., Khalifa O., YÜKSEL ORHAN Ö., Elkamel A.
INTERNATIONAL JOURNAL OF ENERGY RESEARCH, vol.46, no.7, pp.9000-9019, 2022 (SCI-Expanded)

VII. **Effects of various anions and cations in ionic liquids on CO2 capture**
YÜKSEL ORHAN Ö.
JOURNAL OF MOLECULAR LIQUIDS, vol.333, 2021 (SCI-Expanded)

VIII. **Effect of non-aqueous solvents on kinetics of carbon dioxide absorption by (Bu3P)-Bu-t/B(C6F5)(3) frustrated Lewis pairs**
Cihan N., YÜKSEL ORHAN Ö., YAVUZ ERSAN H.
SEPARATION AND PURIFICATION TECHNOLOGY, vol.258, 2021 (SCI-Expanded)

IX. **The development of reaction kinetics for CO2 absorption into novel solvent Frustrated Lewis (FLPs)**
Yüksel Orhan Ö., Cihan N., Şahin V., Karabakan A., Alper E.
SEPARATION AND PURIFICATION TECHNOLOGY, vol.252, 2020 (SCI-Expanded)

X. **The enhanced enzymatic performance of carbonic anhydrase on the reaction rate between CO2 and aqueous solutions of sterically hindered amines**
Cihan N., YÜKSEL ORHAN Ö.
GREENHOUSE GASES-SCIENCE AND TECHNOLOGY, vol.10, no.5, pp.925-937, 2020 (SCI-Expanded)

XI. **Kinetics and mechanism of reaction between carbon disulfide and novel aqueous amines solutions**
YÜKSEL ORHAN Ö., Cihan F. N., Alper E.
INTERNATIONAL JOURNAL OF GLOBAL WARMING, vol.18, no.3-4, pp.401-409, 2019 (SCI-Expanded)

XII. **Kinetics of reaction between CO2 and ionic liquid-carbon dioxide binding organic liquid hybrid systems: Analysis of gas-liquid absorption and stopped flow experiments**
YÜKSEL ORHAN Ö., Alper E.
CHEMICAL ENGINEERING SCIENCE, vol.170, pp.36-47, 2017 (SCI-Expanded)

XIII. **Innovative Carbon Dioxide-Capturing Organic Solvent: Reaction Mechanism and Kinetics**
YÜKSEL ORHAN Ö., Tankal H., KAYI H., Alper E.
CHEMICAL ENGINEERING & TECHNOLOGY, vol.40, no.4, pp.737-744, 2017 (SCI-Expanded)

XIV. **The Absorption Kinetics of CO2 into Ionic Liquid-CO2 Binding Organic Liquid and Hybrid Solvents**
YÜKSEL ORHAN Ö., Ume C. S., Alper E.
ENERGY EFFICIENT SOLVENTS FOR CO2 CAPTURE BY GAS-LIQUID ABSORPTION: COMPOUNDS, BLENDS AND ADVANCED SOLVENT SYSTEMS, pp.241-261, 2017 (SCI-Expanded)

XV. **Kinetics of CO2 capture by carbon dioxide binding organic liquids: Experimental and molecular modelling studies**
Orhan O. Y., Tankal H., Kayi H., ALPER E.
INTERNATIONAL JOURNAL OF GREENHOUSE GAS CONTROL, vol.49, pp.379-386, 2016 (SCI-Expanded)

XVI. **Experimental and theoretical investigation of the reaction between CO2 and carbon dioxide binding organic liquids**
Tankal H., YÜKSEL ORHAN Ö., Alper E., ÖZDOĞAN T., KAYI H.
TURKISH JOURNAL OF CHEMISTRY, vol.40, no.5, pp.706-719, 2016 (SCI-Expanded)

XVII. **Kinetics of CO2 Capture by Carbon Dioxide Binding Organic Liquids**
YÜKSEL ORHAN Ö., KAYI H., Alper E.
ENERGY, TRANSPORTATION AND GLOBAL WARMING, pp.591-603, 2016 (SCI-Expanded)

XVIII. **Kinetics of Carbon Dioxide Binding by Promoted Organic Liquids**
Orhan O. Y., ALPER E.
CHEMICAL ENGINEERING & TECHNOLOGY, vol.38, no.8, pp.1485-1489, 2015 (SCI-Expanded)

XIX. **Kinetics and performance studies of a switchable solvent TMG (1,1,3,3-tetramethylguanidine)/1-propanol/carbon dioxide system**
YÜKSEL ORHAN Ö., Ozturk M. C., Seker A., Alper E.
TURKISH JOURNAL OF CHEMISTRY, vol.39, no.1, pp.13-24, 2015 (SCI-Expanded)

XX. **Kinetics of carbon dioxide binding by 1,1,3,3-tetramethylguanidine in 1-hexanol**
Ozturk M. C., YÜKSEL ORHAN Ö., Alper E.
INTERNATIONAL JOURNAL OF GREENHOUSE GAS CONTROL, vol.26, pp.76-82, 2014 (SCI-Expanded)

## Articles Published in Other Journals

I. **CO2 utilization: Developments in conversion processes**
Alper E., YÜKSEL ORHAN Ö.
Petroleum, vol.3, no.1, pp.109-126, 2017 (Scopus)

## Refereed Congress / Symposium Publications in Proceedings

I. **Kinetics of carbon dioxide absorption by nonaqueous solutions of promoted sterically hindered amines**
Gordesli Duatepe F. P., YÜKSEL ORHAN Ö., Alper E.
13th International Conference on Greenhouse Gas Control Technologies (GHGT), Lausanne, Switzerland, 14 - 18 November 2016, vol.114, pp.57-65

## Supported Projects

YÜKSEL ORHAN Ö., Cihan F. N., Project Supported by Higher Education Institutions, Sterik Engelli Aminlerin Sulu Çözeltilerine Karbondioksit Absorpsiyon Hızının Enzimatik Arttırılması, 2018 - 2021
YÜKSEL ORHAN Ö., KOÇUM İ. C., TANYOLAÇ D., Project Supported by Higher Education Institutions, BİR OZON JENERATÖRÜ, 2016 - 2021
YÜKSEL ORHAN Ö., Project Supported by Higher Education Institutions, "CO2 hidrojenasyonu için seçici katalitik süreçlerin modellenmesi", 2017 - 2018
YÜKSEL ORHAN Ö., ALPER E., Project Supported by Higher Education Institutions, CO2 ile iyonik sıvı-karbon dioksit tutan organik sıvı hibrid sistemler arasındaki reaksiyon kinetiği, 2017 - 2017
YÜKSEL ORHAN Ö., Project Supported by Higher Education Institutions, Petrokimya Tesislerinde Proses Atığı CO2'den Yararlanma, 2017 - 2017
YÜKSEL ORHAN Ö., ALPER E., Project Supported by Higher Education Institutions, Yeni geliştirilen karbon dioksit tutan organik sıvıların absorpsiyon ve ultrasonik desorpsiyon performanslarının incelenmesi, 2016 - 2017
TUBITAK Project, Karbon dioksit yakalayan organik sıvıların reaksiyon kinetiği ve mekanizmasının deneysel ve moleküler modelleme yöntemleriyle incelenmesi, 2014 - 2016

YÜKSEL ORHAN Ö., ALPER E., KAYI H., Project Supported by Higher Education Institutions, Karbon Dioksit Gazının CO2 Tutan Organik Sıvılara Absorpsiyonunun Kinetiği, 2015 - 2015

## Metrics

Publication: 22
Citation (WoS): 92
Citation (Scopus): 591
H-Index (WoS): 6
H-Index (Scopus): 9

## Non Academic Experience

Ghent Üniversitesi
Ruhr Üniversitesi