GÜRKAN KARAKAŞ
PROF.

Email : gkarakas@metu.edu.tr
Office Phone : +90 210 263 0
Fax Phone : +90 210 260 0
International Researcher IDs
ScholarID: 2gOhAeoAAAAJ
ORCID: 0000-0002-6423-4215
Publons / Web Of Science ResearcherID: ABA-1205-2020
ScopusID: 6701735806
Yoksis Researcher ID: 100542

Learning Knowledge

Doctorate 1989 - 1995	Middle East Technical University, Faculty of Engineering, Department of Chemical Engineering, Turkey
Postgraduate 1985 - 1988	Middle East Technical University, Faculty of Engineering, Department of Chemical Engineering, Turkey
Undergraduate 1980 - 1985	Middle East Technical University, Faculty of Engineering, Department of Chemical Engineering, Turkey

Academic Titles / Tasks

Professor 2006 - Continues	Middle East Technical University, Faculty of Engineering, Department of Chemical Engineering
Associate Professor 2001 - 2006	Middle East Technical University, Faculty of Engineering, Department of Chemical Engineering
Assistant Professor 1999 - 2001	Middle East Technical University, Faculty of Engineering, Department of Chemical Engineering
Lecturer 1998 - 1998	Middle East Technical University, Faculty of Engineering, Department of Chemical Engineering
Research Assistant 1980 - 1995	Middle East Technical University, Faculty of Engineering, Department of Chemical Engineering

Supported Projects

1. KARAKAŞ G., KILIÇ H., Project Supported by Higher Education Institutions, Toplu Taşıma Araçlarındaki İç Hava

Kalitesinin Arttırılması için Fotokatalitik Konvertör Geliştirilmesi, 2021 - 2022

2. KARAKAŞ G., KOÇ HASKILIÇ B., Project Supported by Higher Education Institutions, FOTOKATALİTİK AKTİVİTESİ GELİŞTİRİLMİŞ ÇİNKO OKSİT İNCE FİLMLERİN DERİN ÖTEKTİK SIVI ELEKTROLİTLER KULLANILARAK ÜRETİMİ, 2021 - 2022
3. KARAKAŞ G., Project Supported by Higher Education Institutions, ATIK SUDA FOSPORLU BİLEŞİKLERİN GİDERİMİ İÇİN Fe2O3 ZEROJEL VE AEROJEL SENTEZİ VE KARAKTERİZASYONU, 2017 - 2017
4. KARAKAŞ G., GÖZDE E., Project Supported by Higher Education Institutions, METAL KLORÜRLERİN DERİN ÖTEKTİK SIVILAR İLE ÇÖZELTİ VE SÜSPANSİYONLARINDA AMONYAK İLE TEPKİME KİNETİĞİNİN İNCELENMESİ, 2017 - 2017
5. KARAKAŞ G., Project Supported by Other Private Institutions, SAYP 2013 03 04 2 00 14Sol Jel Yöntemi ile Nano Yapılı Metalik Xerogel Sentezi ve Karakterizasyonu, 2013 - 2016
6. KARAKAŞ G., Project Supported by Higher Education Institutions, AZOTLU ORGANİK BİLEŞİKLERİN YÜKSEK SICAKLIKTA Pt/Fe2O3 ve CuO/Fe2O3 KATALİZÖRLERİ İLE KATALİTİK OKSİDASYONU, 2015 - 2015
7. KARAKAŞ G., Project Supported by Higher Education Institutions, FOTOKATALİTİK UYGULAMALAR İÇİN TİO2-SİO2 KARIŞIM OKSİTLERİNİN İLETKEN OKSİT KAPLI CAM ÜZERİNE ELEKTROFOREZ METODU İLE KAPLANMASI, 2013 - 2014
8. BÖLÜKBAŞI U., KARAKAŞ G., Project Supported by Higher Education Institutions, Dik Hizalanmış Karbon Nanotüplerin Şablon Olarak Kullanılmasıyla Elde Edilen Titanyum Dioksit Filmlerin Fotokatalitik Aktivitesi., 2012 - 2013
9. KARAKAŞ G., Project Supported by Higher Education Institutions, Antioksidanlar Elektron Tutuklayıcılar Kullanılarak Fotokatalitik Hidrojen Üretimi, 2011 - 2011
10. KARAKAŞ G., Project Supported by Higher Education Institutions, Tek Basamaklı Tepkime-Ayrıştırma Sisteminde Etil Laktat Üretimi., 2010 - 2010
11. KARAKAŞ G., Project Supported by Higher Education Institutions, Suyun Ve Etil Alkol Çözeltilerinin Fotokatalitik İndirgenmesi Yoluyla Hidrojen Üretimi., 2010 - 2010
12. KARAKAŞ G., TUBITAK Project, Çok İşlevli Cam ve Seramik Ürünleri İçin Yarı İletken Fotokatalitik İnce Filmlerin Geliştirilmesi, 2006 - 2008

Published journal articles indexed by SCI, SSCI, and AHCI

1. **Modelling and simulation of chemical reaction of porous MgCl2 pellets with NH3 by including impact of heat and mass transfer and structure change**
   Helvaci Z. K., KARAKAŞ G., ULUDAĞ Y.
   Turkish Journal of Chemistry, vol.47, no.3, pp.572-582, 2023 (SCI-Expanded)
2. **Vanadium promoted ZnO films: effects on optical and photocatalytic properties**
   Avşar C., KARAKAŞ G.
   Surface Engineering, vol.39, no.7-12, pp.852-859, 2023 (SCI-Expanded)
3. **Effect of Drying Conditions on the Characteristics and Performance of B/Fe2O3 Nano-Composites Prepared by Sol-Gel Method**
   Yilmaz N. E. D., KARAKAŞ G.
   CENTRAL EUROPEAN JOURNAL OF ENERGETIC MATERIALS, vol.17, no.1, pp.85-106, 2020 (SCI-Expanded)
4. **Methylene Blue Degradation on Praseodymium-Doped Titanium Dioxide Photocatalyst**
   Dogu D., KARAKAŞ G.
   JOURNAL OF THE FACULTY OF ENGINEERING AND ARCHITECTURE OF GAZI UNIVERSITY, vol.35, no.2, pp.859-869, 2020 (SCI-Expanded)
5. **Catalytic oxidation of nitrogen containing compounds for nitrogen determination**
   KARAKAŞ G., SEVİNÇ A.
   CATALYSIS TODAY, vol.323, pp.159-165, 2019 (SCI-Expanded)
6. **Photocatalytic properties and characterization of praseodymium-doped titanium dioxide**
   DOĞU D., KARAKAŞ G.

Journal of Advanced Oxidation Technologies, vol.21, no.1, 2018 (SCI-Expanded)

7. **Synthesis of Na-, Fe-, and Co-promoted TiO2/multiwalled carbon nanotube composites and their use as a photocatalyst**
   Yurum A., KARAKAŞ G.
   TURKISH JOURNAL OF CHEMISTRY, vol.41, no.3, pp.440-454, 2017 (SCI-Expanded)
8. **Photocatalytic antibacterial activity of TiO2-SiO2 thin films: The effect of composition on cell adhesion and antibacterial activity**
   ERDURAL B., Bolukbasi U., KARAKAŞ G.
   JOURNAL OF PHOTOCHEMISTRY AND PHOTOBIOLOGY A-CHEMISTRY, vol.283, pp.29-37, 2014 (SCI-Expanded)
9. **Room Temperature Photocatalytic Oxidation of Carbon Monoxide Over Pd/TiO2-SiO2 Catalysts**
   KARAKAŞ G., Yetisemiyen P.
   TOPICS IN CATALYSIS, vol.56, pp.1883-1891, 2013 (SCI-Expanded)
10. **Modeling and computational simulation of adsorption based chemical heat pumps**
    YURTSEVER A. O., KARAKAŞ G., ULUDAĞ Y.
    APPLIED THERMAL ENGINEERING, vol.50, no.1, pp.401-407, 2013 (SCI-Expanded)
11. **Electrical and catalytic properties of SnO2/TiO2 measured in operando conditions**
    MUNTEANU C., CALDARARU M., BRATAN V., YETISEMIYEN P., KARAKAŞ G., IONESCU N. I.
    REACTION KINETICS MECHANISMS AND CATALYSIS, vol.105, no.1, pp.13-22, 2012 (SCI-Expanded)
12. **Production of a novel bifunctional catalase-phenol oxidase of Scytalidium thermophilum in the presence of phenolic compounds**
    YUZUGULLU Y., Ogel Z. B., BOLUKBASI U. B., ÇORUH N., KARAKAŞ G.
    TURKISH JOURNAL OF BIOLOGY, vol.35, no.6, pp.697-704, 2011 (SCI-Expanded)
13. **Synthesis and characterization of Ba/MCM-41**
    Kaya E., Oktar N., KARAKAŞ G., Murtezaoglu K.
    TURKISH JOURNAL OF CHEMISTRY, vol.34, no.6, pp.935-943, 2010 (SCI-Expanded)
14. **Antimicrobial properties of TiO2-SiO2 thin films**
    Erdural B. K., KARAKAŞ G., Bakir U., SULUDERE Z., Suludere D.
    NEW BIOTECHNOLOGY, vol.25, 2009 (SCI-Expanded)
15. **Hydrothermal synthesis of nanostructured TiO2 particles and characterization of their photocatalytic antimicrobial activity**
    ERDURAL B. K., YÜRÜM A., BAKIR U., KARAKAŞ G.
    JOURNAL OF NANOSCIENCE AND NANOTECHNOLOGY, vol.8, no.2, pp.878-886, 2008 (SCI-Expanded)
16. **A special issue - Selected peer reviewed articles from NANOMAT 2006 - International Workshop on Nanostructured Materials, June 21-23, 2006, Antalya, Turkey**
    Oezenbas M., TURAN R., Karakas G.
    JOURNAL OF NANOSCIENCE AND NANOTECHNOLOGY, vol.8, no.2, pp.467-468, 2008 (SCI-Expanded)
17. **Photocatalytic microbial inactivation over Pd doped SnO2 and TiO2 thin films**
    ERKAN A., BAKIR U., Karakas G.
    JOURNAL OF PHOTOCHEMISTRY AND PHOTOBIOLOGY A-CHEMISTRY, vol.184, no.3, pp.313-321, 2006 (SCI-Expanded)
18. **The role of alkali-metal promotion on CO oxidation over PdO/SnO2 catalysts**
    MİRKELAMOĞLU B., Karakas G.
    APPLIED CATALYSIS A-GENERAL, vol.299, pp.84-94, 2006 (SCI-Expanded)
19. **CO oxidation over palladium- and sodium-promoted tin dioxide: catalyst characterization and temperature-programmed studies**
    MİRKELAMOĞLU B., Karakas G.
    APPLIED CATALYSIS A-GENERAL, vol.281, pp.275-284, 2005 (SCI-Expanded)
20. **Production of lactic acid esters catalyzed by heteropoly acid supported over ion-exchange resins**
    AYTURK E., HAMAMCI H., Karakas G.
    GREEN CHEMISTRY, vol.5, no.4, pp.460-466, 2003 (SCI-Expanded)
21. **In situ DRIFTS characterization of wet-impregnated and sol-gel Pd/TiO 2 for NO reduction with CH4**

Karakas G., Mitome-Watson J., Ozkan U. S.
Catalysis Communications, vol.3, no.5, pp.199-206, 2002 (SCI-Expanded)

22. **Reaction network of indole hydrodenitrogenation over NiMoS/γ-Al2O3 catalysts**
BUNCH A., ZHANG L., Karakas G., Ozkan U. S.
Applied Catalysis A: General, vol.190, pp.51-60, 2000 (SCI-Expanded)
23. **NiMoS/gamma-Al2O3 catalysts: The nature and the aging behavior of active sites in HDN reactions**
ZHANG L. P., Karakas G., OZKAN U. S.
JOURNAL OF CATALYSIS, vol.178, no.2, pp.457-465, 1998 (SCI-Expanded)
24. **Supercritical fluid extraction and temperature-programmed desorption of phenol and its oxidative coupling products from activated carbon**
HUMAYUN R., Karakas G., Dahlstrom P., OZKAN U. S., TOMASKO D. L.
INDUSTRIAL & ENGINEERING CHEMISTRY RESEARCH, vol.37, no.8, pp.3089-3097, 1998 (SCI-Expanded)
25. **Effect of H2O and SO2 on the activity of Pd/TiO2 catalysts in catalytic reduction of NO with methane in the presence of oxygen**
MITOME J., Karakas G., Bryan K. A., Ozkan U. S.
Catalysis Today, vol.42, pp.3-11, 1998 (SCI-Expanded)
26. **Characterization and temperature-programmed studies over Pd/TiO2 catalysts for NO reduction with methane**
Ozkan U. S., Kumthekar M. W., Karakas G.
Catalysis Today, vol.40, no.1, pp.3-14, 1998 (SCI-Expanded)
27. **Reactivity of CO2 during thermal cracking of heavy paraffins under supercritical conditions**
Karakas G., Dogu T., Somer T.
INDUSTRIAL & ENGINEERING CHEMISTRY RESEARCH, vol.36, no.11, pp.4445-4451, 1997 (SCI-Expanded)
28. **Self-sustained oscillatory behavior of NO+CH4+O-2 reaction over titania-supported Pd catalysts**
OZKAN U., KUMTHEKAR M., Karakas G.
JOURNAL OF CATALYSIS, vol.171, no.1, pp.67-76, 1997 (SCI-Expanded)
29. **AN EXPERIMENTAL INVESTIGATION OF POLYVINYL-CHLORIDE) EMULSION POLYMERIZATION - EFFECT OF INITIATOR AND EMULSIFIER CONCENTRATIONS ON POLYMERIZATION KINETICS AND PRODUCT PARTICLE-SIZE**
KARAKAS G., ORBEY N.
BRITISH POLYMER JOURNAL, vol.21, no.5, pp.399-406, 1989 (SCI-Expanded)

Refereed Congress / Symposium Publications in Proceedings

1. **INVESTIGATION OF DEEP EUTECTIC SOLVENTS AS REACTION MEDIUM FOR METAL CHLORIDE BASED CHEMICAL HEAT PUMPS**
Gözde E., Dilek Hacıhabiboğlu Ç., Karakaş G.
9th Eastern Mediterranean Chemical Engineering Conference EMCC9 , Ankara, Turkey, 31 August - 02 September 2018, pp.1
2. **Effect of Proton Scavengers on the Textural Properties and Performance of Fe2O3 Xerogels for BoronContaining Pyrotechnics**
YILMAZ N. E. D., KARAKAŞ G.
53rd AIAA/SAE/ASEE Joint Propulsion Conference, ATLANTA, United States Of America, 10 - 12 July 2017
3. **Effect of proton scavengers on the textural properties and performance of Fe2O3 xerogels for boron containing pyrotechnics**
Yilmaz N. E. D., KARAKAŞ G.
53rd AIAA/SAE/ASEE Joint Propulsion Conference, 2017, Atlanta, Georgia, 10 - 12 July 2017
4. **SYNTHESIS OF CNT TiO2 SiO2 NANOCOMPOSITE THINFILMS THE EFFECT OF HEAT TREATMENT ONPHOTOCATALYTIC ACTIVITY**
KARAKAŞ G., TUĞÇE K.

NCC 6 CATALYSIS CONFERENCE, 6. KATALİZ KONGRESİ, Turkey, 27 - 30 April 2016

5. **Catalyst For Complete Oxidation of Nitrogen Containing Samples**
   KARAKAŞ G., ATAMER B., SEVİNÇ A.
   10th EUROPEAN CONGRESS OF CHEMICAL ENGINEERING, 27 September - 01 October 2015
6. **Effect of carbon nanotube templates and, sodium, iron and cobalt doping on the photocatalytic activity of sol-gel synthesized titania for water treatment**
   Yurum A., KARAKAŞ G.
   11th International Biorelated Polymer Symposium / 243rd National Spring Meeting of the American-Chemical-Society (ACS), California, United States Of America, 25 - 29 March 2012, vol.243
7. **ANTIMICROBIAL PROPERTIES OF TITANIUM NANOPARTICLES**
   ERDURAL B. K., YURUM A., BAKIR U., KARAKAŞ G.
   NATO Advanced Study Institute on Functionalized Nanoscale Materials, Devices and Systems for Chem-Bio Sensors, Photonics and Energy Gereration and Storage, Sinaia, Romania, 4 - 15 June 2007, pp.409-414
8. **Low temperature oxidation of carbon monoxide over alkali-metal promoted palladium-tin oxide catalysts**
   MİRKELAMOĞLU B., KARAKAŞ G.
   NATO Advanced Research Workshop on Surface Chemistry in Biomedical and Environmental Science, Kiev, Ukraine, 14 - 17 September 2005, vol.228, pp.359-361

Academic and Administrative Experience

2007 - 2010	**Head of Department**	Middle East Technical University, Faculty of Engineering, Department of Chemical Engineering
1998 - 2004	**Deputy Head of Department**	Middle East Technical University, Faculty of Engineering, Department of Chemical Engineering

Advising Theses

KARAKAŞ G., Effect of synthesis parameters on structural properties and thermal behavior of sol-gel synthesized iron oxide xerogels, Doctorate, N.EZGİ(Student), 2018
KARAKAŞ G., ULUDAĞ Y., Mathematical and computational modelling of chemical heat pumps, Postgraduate, T.GÜNEŞ(Student), 2018
KARAKAŞ G., Catalyst screening for complete oxidation of nitrogen containing compounds, Postgraduate, A.SEVİNÇ(Student), 2017
KARAKAŞ G., Synthesis of CNT-titania-silica nanocomposite thin films: The effect of heat treatment on photocatalytic activity, Postgraduate, T.KIRBAŞ(Student), 2014
KARAKAŞ G., Electrodeposition of ZnO thin films: Effect of vanadium doping, Postgraduate, C.AVŞAR(Student), 2013
KARAKAŞ G., YÜCEL H., Comparison of sorption capacities of hydrocarbons on different samples of MCM-41, Postgraduate, B.AYDOĞDU(Student), 2013
YÜCEL H., KARAKAŞ G., Comparison of sorption capacities on different samples of MCM-41, Postgraduate, B.Aydoğdu(Student), 2013
BÖLÜKBAŞI U., KARAKAŞ G., Photocatalytic antimicrobial and self-cleaning properties of titana-silica mixed oxide thin films, Doctorate, B.Korkmaz(Student), 2012
KARAKAŞ G., Photocatalytic antimicrobial and self-cleaning properties of titania-silica mixed oxide thin films, Doctorate, B.KORKMAZ(Student), 2012
KARAKAŞ G., Sensitization of sol-gel derived titania-silica photocatalytic thin films with ascorbic acid, Postgraduate, E.YILMAZ(Student), 2012
ÖGEL B., KARAKAŞ G., The photocatalytic activity of praseodymium doped titanium dioxide, Doctorate, D.DOĞU(Student),

2012
KARAKAŞ G., ULUDAĞ Y., Mathematical modeling of adsorption/desorption systems for chemical heat pumps, Postgraduate, A.ONUR(Student), 2011
KARAKAŞ G., Analysis of phenol oxidation products by Scytalidium thermophilum bifunctional catalase/phenol oxidase (CATPO), Doctorate, G.AVCI(Student), 2011
KARAKAŞ G., HAMAMCI H., Production of lactic acid esters by reactive distillation, Postgraduate, Ö.YALÇIN(Student), 2011
KARAKAŞ G., Low temperature photocatalytic oxidation of carbon monoxide over palladium doped titania catalysts, Postgraduate, P.YETİŞEMİYEN(Student), 2010
KARAKAŞ G., YÜCEL H., Sorption of C8 aromatics on MCM-41, Postgraduate, B.ALİ(Student), 2010
KARAKAŞ G., Photocatalytic activity of titania–silica mixed oxides prepared with co-hydrolyzation, Postgraduate, B.BAYRAM(Student), 2009
KARAKAŞ G., VOLKAN M., Preparation and characterization of titania-silica-gold thin films over ito substrates for laccase immobilization, Postgraduate, Z.EKER(Student), 2009
KARAKAŞ G., The synthesis of titanium dioxide photocatalysts by sol-gel method: The effect of hydrothermal treatment conditions and use of carbon nanotube template, Doctorate, A.YÜRÜM(Student), 2009
KARAKAŞ G., Enzyme immobilization on titania-silica-gold thin films for biosensor applications and photocatalytic enzyme removal for surface patterning, Postgraduate, M.ÇINAR(Student), 2009
KARAKAŞ G., Application of semi conductor films over glass/ceramic surfaces and their low temperature photocatalytic activity, Postgraduate, T.İRFAN(Student), 2009
KARAKAŞ G., PARLAK M., PRODUCTION OF TITANIUM DIOXIDE THIN FILMS WITH IMPROVED PHOTOCATALYTIC ACTIVITY: THE USE OF BACTERIA AS 3D TEMPLATES, Postgraduate, B.KOÇ(Student), 2009
KARAKAŞ G., Carbon monoxide oxidation under oxidizing and reducing conditions with alkali-metal and palladium doped tin dioxide, Doctorate, B.MİRKELAMOĞLU(Student), 2006
KARAKAŞ G., Dynamic resistivity behavior of thin oxide based multilayer thin films under reducing conditions, Postgraduate, B.Kurbanoğlu(Student), 2006
KARAKAŞ G., Dynamic resistivity behavior of tin oxide based multilayer thin films under reducing conditions, Postgraduate, B.KURBANOĞLU(Student), 2006
KARAKAŞ G., HAMAMCI H., Partial removal of proteins from lactic acid broth and recovery of proteins from brewery wastes by foam fractionation technique, Postgraduate, L.KURT(Student), 2006
KARAKAŞ G., Investigation of thin semiconductor coatings and their antimicrobial properties, Postgraduate, A.Erkan(Student), 2005
KARAKAŞ G., Kinetics of methyl lactate formation over the ion exchange resin catalysts, Postgraduate, S.AKBELEN(Student), 2004
KARAKAŞ G., YILMAZ L., Screening and characterization of catalytic composite membranes for ethyllactate production, Postgraduate, Ö.OĞUZER(Student), 2004
KARAKAŞ G., Parametric studies on cell flotation of Mazıdağı phosphate rock, Postgraduate, E.ÖZTİN(Student), 2003
KARAKAŞ G., YILMAZ L., Ethyl lactate production by hybrid processes: Determination of phase diagrams and evaluation of performance of organophilic pervaporation membranes, Postgraduate, M.İNAL(Student), 2003
KARAKAŞ G., Design and construction of a flotation column, Postgraduate, Ç.ÇAĞDAŞ(Student), 2002
KARAKAŞ G., Dynamic resistivity behavior of tin oxide based thick films under reducing and oxidizing conditions, Postgraduate, I.SEVERCAN(Student), 2002
KARAKAŞ G., Dynamic resistivity behavior of tin oxide based thick films under recuding and oxidizing conditions, Postgraduate, I.Severcan(Student), 2002
KARAKAŞ G., Investigation of carbon monoxide oxidation over tin dioxide based catalysts by dynamic methods., Postgraduate, B.MİRKELAMOĞLU(Student), 2002
KARAKAŞ G., YILMAZ L., Ethyl lactate production by hybrid processes: Evaluation of performance of hydrophilic pervaporation membranes for ethyl lactate-water-ethanol mixtures, Postgraduate, S.KORKUT(Student), 2001
KARAKAŞ G., Characterization of adsorption and chemisorption of permanent gases over metal supported oxide powders with magnetic permeability, Postgraduate, S.BEKTESEVİC(Student), 2000

Metrics

Publication: 37
Citation (WoS): 605
Citation (Scopus): 658
H-Index (WoS): 13
H-Index (Scopus): 13

Research Areas

Technical Sciences, Chemical Engineering and Technology, Process and Reactor Design, Chemical Reaction Engineering, Catalysis and Catalytic Processes, Basic Sciences, Chemistry, Physical Chemistry, Surface Chemistry

Non Academic Experience

Ohio State Üniversity