

Dr. Ali Can Kizilkaya

Department of Chemical Engineering, Z55
Izmir Institute of Technology, 35030, Urla, Izmir / TURKEY
e-mail: alicankizilkaya@iyte.edu.tr



Work Experience

- **2018 January-Present:** Vice Chairman, Department of Chemical Engineering, Izmir Institute of Technology, Izmir/Turkey.
- **2017 June-Present:** Assistant Professor, Department of Chemical Engineering, Izmir Institute of Technology, Izmir/Turkey.
- **2015 August-2017 March:** Research and Development Engineer, AkzoNobel Metal Coatings, Izmir/Turkey.
- **2015 March-2015 July:** Researcher, Shell Technology Center Amsterdam, Shell Global Solutions International B.V., Amsterdam/Netherlands.

Education

- **Ph.D.:** Department of Chemical Engineering and Chemistry, Eindhoven University of Technology (TU/e), Eindhoven/Netherlands, 2010-2014, Supervised by Prof. Dr. J.W. (Hans) Niemantsverdriet and C.J. (Kees-Jan) Weststrate.
Thesis Title: Effect of Adsorbate Interactions on Catalytic Reactivity: Elementary Surface Reactions on Rhodium and Cobalt.
- **M.Sc.:** Department of Chemical Engineering, Middle East Technical University (METU), Ankara/Turkey, 2008-2010.
Thesis Title: Catalytic Partial Oxidation of Propylene on Copper and Ruthenium-Copper Bimetallic Surfaces by means of Quantum Chemical Methods.
- **B.Sc.:** Department of Chemical Engineering, Middle East Technical University (METU), Ankara/Turkey, 2003-2007.

Achievements

- Academic consultant to AkzoNobel and Toyo Ink in Izmir related to designing novel corrosion resistant paint systems for car refinishes and can coatings market.
- Leader of a research lab with 4 MSc students. (2 of the projects are supported by the coating companies AkzoNobel Kemipol and Toyo Ink). Motivation and mentoring of students with difficulties that helps them to deliver results.
- Coauthored 9 articles in SCI indexed journals which have received a total of 105 citations (6 of them as 1st author).
- Given talks about research results on various international conferences in Denmark, Scotland, Netherlands, South Africa and Turkey.

- Principal investigator of a successfully completed research project performed by a collaboration between AkzoNobel Kemipol in Izmir (Industry) and Izmir Institute of Technology (Academia) related to effects of pretreated steel/aluminum surface characteristics on corrosion resistance of organic coated (painted) metal systems (This project is performed under the Homeland Return Research Scholarship, by Scientific and Technological Research Council of Turkey, 2016-2018 and it is the first and only project of this kind that is performed by AkzoNobel in Izmir).
- Researcher in various projects involving SASOL (Industry) and Eindhoven University of Technology (Academia) related to experimental and computational surface science investigations of elementary reactions on cobalt Fischer-Tropsch Synthesis catalysts, as part of PhD program.
- Part of organizing committee in 3 international catalysis meetings in Turkey in 2017, 2018 and 2019 .
- Appointed as an examiner for R&D centers in Turkey by the Ministry of Industry and Technology (since July 2018).
- Finished the Chemical Engineering Department of the top ranking university in Turkey as the 7th most successful out of 90 students (CGPA of 3.32 out of 4.00).
- Ranked 3298 out of ~1.5 million students in the Turkish University Entrance Examination in 2002.

Skills

- Establishment of surface structure-activity relationships for gas reactants on solid surfaces and for anti-corrosive coatings on metal surfaces.
- Identification of catalytic reaction mechanisms at the molecular level.
- Experimental characterization of metal and oxide surfaces (TPD, STM, Work Function measurements, XPS, LEED, RAIRS, SEM-EDX, AFM).
- Operation of Ultra-High Vacuum Chambers.
- Molecular and kinetic modelling of surface reactions based on Density Functional Theory (DFT) calculations.
- Teaching: Catalytic Surface Science(Grad.), Catalytic Materials (Undergrad.), Chemical Kinetics and Reaction Engineering (Undergrad.), Process Control (Undergrad.).

Publications

- Kizilkaya A.C., Niemantsverdriet J.W., Weststrate C.J., *Effect of Ammonia on Cobalt Fischer–Tropsch Synthesis Catalysts: A Surface Science Approach*, Catal. Sci. Tech., 2019, 9, 702-710
- Caglar B., Kizilkaya A.C., Niemantsverdriet J.W., Weststrate C.J., *Application of Work Function Measurements in the Study of Surface Catalyzed Reactions on Rh(100)*, Catalysis, Structure and Reactivity, 2018, 4:1, 1-11.
- Kizilkaya A.C., Niemantsverdriet J.W., Weststrate C.J., *Oxygen Adsorption and Water Formation on Co(0001)*, J. Phys. Chem. C, 2016, 120, 4833-4842.
- Kizilkaya A.C., Niemantsverdriet J.W., Weststrate C.J., *Ammonia Adsorption and Decomposition on Co(0001) in relation to Fischer-Tropsch Synthesis*, J. Phys. Chem. C, 2016, 120, 3834-3845.
- Weststrate C.J., Kizilkaya A.C., Rossen E.T.R., Verhoeven M.G.W.M., Ciobica I.M., Saib A.M., Niemantsverdriet J.W., *Atomic and Polymeric Carbon on Co(0001): Surface Reconstruction, Graphene Formation, and Catalyst Poisoning*, J. Phys. Chem. C, 2012, 116, 11575-11583.

- Kizilkaya A.C., Gracia J., Niemantsverdriet J.W., *A Direct Relation Between Adsorbate Interactions, Configurations, and Reactivity: CO oxidation on Rh(100) and Rh(111)*, J. Phys. Chem. C, 2010, 114, 21672-21680.
- Jansen M.M.M., Gracia J., Kizilkaya A.C., Nieuwenhuys B.E., Niemantsverdriet J.W., *How Surface Reactivity Depends on the Configuration of Coadsorbed Reactants: CO Oxidation on Rh(100)*, J. Phys. Chem. C, 2010, 114, 17127-17135.
- Kizilkaya A.C., Senkan S., Onal I., *Investigation of Ruthenium-Copper Bimetallic Catalysts for Direct Epoxidation of Propylene: A DFT Study*, J. Mol. Cat. A: Chem., 2010, 330, 107-111.
- Kizilkaya A.C., Fella M.F., Onal I., *Direct Gas-Phase Epoxidation of Propylene to Propylene Oxide through Radical Reactions: A Theoretical Study*, Chem. Phys. Lett., 2010, 487, 183-189.

Oral Presentations in International Conferences

- A molecular perspective on the poisoning of cobalt Fischer-Tropsch Synthesis catalysts by ammonia, Syngas Convention 3, 25-28 March 2018, Cape Town, South Africa.
- Water formation on cobalt surfaces in relation to Fischer-Tropsch Synthesis, Netherlands Catalysis and Chemistry Conference (NCCC) XIX, 5-7 March 2018, Noordwijkerhout/Netherlands.
- Understanding the Poisoning Effect of Ammonia in Cobalt Catalyzed Fischer-Tropsch Synthesis (FTS), 2nd International Summer School on Catalysis for Sustainability, 23-26 June 2013, Rolduc/Netherlands.
- Surface Chemistry of Ammonia on Co(0001) Surface in Relation to Fischer-Tropsch Synthesis (FTS), 29th European Conference on Surface Science (ECOSS-29), 3-7 September 2012, Edinburgh/Scotland.
- A Direct Relation Between Adsorbate Configurations and Reactivity: CO Oxidation on Rh(100) and Rh(111), 3rd Meeting of the European Graduate School on Sustainable Energy: The Molecular Approach, 9-11 December 2010, Nyborg/Denmark.

Poster Presentations in International Conferences

- Kizilkaya A.C., Gracia J. M., Niemantsverdriet., *A Direct Relation Between Surface Structure and Reactivity: CO Oxidation on Rh(100) and Rh(111)*, Netherlands Catalysis and Chemistry Conference (NCCC) XII, 28 February-2 March 2011, Noordwijkerhout/Netherlands.
- Kizilkaya A.C., Gracia J. M., Niemantsverdriet., *A Direct relation Between Surface Structure and Reactivity: CO Oxidation on Rh(100) and Rh(111)*, 6th EFCATS Summer School, 13-19 September 2010, İzmir/Turkey.
- Ozbek M.O., Kizilkaya A.C., Fella M.F., Onal I., *A DFT Study on Cu Doped Ag Surfaces for Propylene Epoxidation*, 21st North American Meeting of the North American Catalysis Society, 7-12 June 2009, San Francisco-California/USA.
- Kizilkaya A.C., Onal. I., *Propylene Epoxidation on Cu(111): A DFT Study*, 6th World Congress on Oxidation Catalysis, 5-10 July 2009, Lille/France.

Conferences & Summer Schools

- Netherlands Catalysis and Chemistry Conference (NCCC) XV, 10-12 March 2014, Noordwijkerhout/Netherlands.
- 2nd International Summer School on “Catalysis for Sustainability”, 23-26 June 2013, Rolduc/Netherlands.

- Netherlands Catalysis and Chemistry Conference (NCCC) XIV, 11-13 March 2013, Noordwijkerhout/Netherlands.
- 29th European Conference on Surface Science (ECOSS-29), 3-7 September 2012, Edinburgh/Scotland.
- International Summer School on “Reactivity of nanoparticles for more efficient and sustainable energy production”, 5-10 August 2012, Skælskør/Denmark.
- Dutch Institute for Catalysis Research Catalytic Surface Science Course, 19-21 March 2012, Leiden/Netherlands.
- Netherlands Catalysis and Chemistry Conference (NCCC) XIII, 5-7 March 2012, Noordwijkerhout/Netherlands.
- Netherlands Catalysis and Chemistry Conference (NCCC) XII, 28 February-2 March 2011, Noordwijkerhout/Netherlands.
- Dutch Institute for Catalysis Research Presenting Science Course, 14 December 2011, Eindhoven/Netherlands.
- International Summer School on “Catalysis for Sustainability”, 23-26 June 2011, Rolduc/Netherlands.
- Dutch Institute for Catalysis Research Catalyst Characterization Course, 24-26 January 2011, Eindhoven/Netherlands.
- 3rd meeting of the European Graduate School on Sustainable Energy: The Molecular Approach, 9-11 December 2010, Nyborg/Denmark.
- 6th EFCATS (European Federation of Catalysis Societies) Summer School, 13-19 September 2010, Izmir/Turkey.
- IDECAT (Integrated design of catalytic nanomaterials for a sustainable production) Summer School on “Computational methods and applications in catalysis and material science”, 25-29 May 2010, Lyon, France.
- 2nd meeting of the European Graduate School on Sustainable Energy: The Molecular Approach, 7-9 April 2010, Freising/Germany.

Certificates & Awards

- Catalysis as an Integrated Approach Course, Certificate of Proficiency: Dutch Institute for Catalysis Research, 2012, Eindhoven/Netherlands.
- Catalytic Surface Science, Certificate of Proficiency: Dutch Institute for Catalysis Research, 2012, Leiden/Netherlands.
- Presenting Science Course, Certificate of Proficiency: Dutch Institute for Catalysis Research, 2011, Eindhoven/Netherlands.
- Catalyst Characterization Course, Certificate of Proficiency: Dutch Institute for Catalysis Research, 2011, Eindhoven/Netherlands.
- Intercultural Communication and Cooperation Course, Certificate of Proficiency: Eindhoven University of Technology, 2010, Eindhoven/Netherlands.
- Best Poster Award: 6th EFCATS Summer School, 2010, Izmir/Turkey.