

# Zafer Say, Ph. D.

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## SCIENTIFIC BACKGROUND:

### **2015 – Current**

Post-Doctoral Researcher in Chemistry, ***Bilkent University, Ankara, Turkey***

Advisory to Chairman, ***Turkish Standards Institution, Ankara, Turkey***

**2011 – 2015** ***Bilkent University, Ankara, Turkey*** PhD in Chemistry

Thesis: *Investigation of Adsorption/Desorption Properties of NO<sub>2</sub> and SO<sub>2</sub> Molecules on Advanced Ternary and Quaternary Mixed Oxides Used in NSR Application*

Advisor: ***Assoc. Prof. Dr. Emrah Özensoy***, <http://www.fen.bilkent.edu.tr/~ozensoy/>

**2014 – July** ***Chalmers University of Technology, Goteborg, Sweden*** Summer Research

*Performance Tests for NSR catalysts using flow reactors*

Advisor: ***Prof. Dr. Louise Olsson***

**2009 – 2011** ***Bilkent University, Ankara, Turkey*** Master of Science in Chemistry

Thesis: *Ceria Promoted NO<sub>x</sub> Storage and Reduction Catalysts*

Advisor: ***Assoc. Prof. Dr. Emrah Özensoy***, <http://www.fen.bilkent.edu.tr/~ozensoy/>

**2004 – 2009** ***Bilkent University, Ankara, Turkey***. Bachelor of Science, Department of Chemistry

## ACHIEVEMENTS AND AWARDS:

- *TUBITAK Graduate Fellowship (2009-2011) The Scientific and Technological Research Council of Turkey.*
- *TUBITAK Graduate Fellowship (2011-2014) The Scientific and Technological Research Council of Turkey.*
- *NCC 2012 (Turkish National Catalysis Conference), Best Graduate Research Award.*
- *SSS 2008 (Turkish Surface Science Society Meeting), Poster Presentation Award.*
- *Bilkent University Full Undergraduate Fellowship (2005-2009).*

## Teaching Experience:

- *Analytical Chemistry I & II Laboratory Teaching Assistant & Coordinator (2013-2015)*
- *Analytical Chemistry I & II Laboratory Teaching Assistant (2011-2013 )*
- *Physical Chemistry II Course Grader (2012)*
- *General Chemistry I & II Laboratory Teaching Assistant (2009-2011 )*

**ACADEMIC PUBLICATIONS:**

1. *Bias in bonding behavior among boron, carbon, and nitrogen atoms in ion implanted a-BN, a-BC, and diamond like carbon films*

M.F. Genisel, M.N. Uddin, **Z. Say**, M. Kulakci, R. Turan, O. Gulseren, E. Bengu\*

**Journal of Applied Physics, 110 (2011) 7. (IF: 2.18)**

2. *SO<sub>x</sub> Uptake and Release Properties of TiO<sub>2</sub>/Al<sub>2</sub>O<sub>3</sub> and BaO/TiO<sub>2</sub>/Al<sub>2</sub>O<sub>3</sub> Mixed Oxide Systems as NO<sub>x</sub> Storage Materials*

G.S. Sentürk, E.I. Vovk, V.I. Zaikovskii, **Z. Say**, A.M. Soylu, V.I. Bukhtiyarov, E. Ozensoy\*

**Catalysis Today, 184 (2012) 54. (IF: 4.31)**

3. *Enhanced Sulfur Tolerance of Ceria-Promoted NO<sub>x</sub> Storage Reduction (NSR)*

*Catalysts: Sulfur Uptake, Thermal Regeneration and Reduction with H<sub>2</sub> (g)*

**Z. Say**, E.I. Vovk, V.I. Bukhtiyarov, E. Ozensoy\*

**Topics in Catalysis, 56 (2013) 950. (IF: 2.37)**

4. *Influence of Ceria on the NO<sub>x</sub> Reduction Performance of NO<sub>x</sub> Storage Reduction (NSR) Catalysts*

**Z. Say**, E.I. Vovk, V.I. Bukhtiyarov, E. Ozensoy\*

**Applied Catalysis B: Environmental, 142-143 (2013) 89. (IF: 8.32)**

5. *Palladium doped Perovskite-Based NO Oxidation Catalysts: The role of Pd and B-sites for NO<sub>x</sub> Adsorption Behaviour via in-situ Spectroscopy*

**Z. Say**, M. Dogac, E.I. Vovk, Y.E. Kalay, C.H. Kim, W. Li, E. Ozensoy\*

**Applied Catalysis B: Environmental, 154-155 (2014) 51. (IF: 8.32)**

6. *NO<sub>x</sub> Storage and Reduction Pathway on Zirconia and Titania Functionalized Binary and Ternary Oxides as NO<sub>x</sub> Storage and Reduction (NSR) Systems*

**Z. Say**, M. Tohumeken, E. Ozensoy\*

**Catalysis Today 231 (2014) 135. (IF: 4.31)**

7. *TiO<sub>2</sub>-Al<sub>2</sub>O<sub>3</sub> Binary Mixed Oxide Surfaces for Photocatalytic NO<sub>x</sub> Abatement*

A. M. Soyulu, M. Polat, D. A. Erdogan, **Z. Say**, C. Yildirim, O. Birer, E. Ozensoy\*

***Applied Surface Science* 318 (2014) 142. (IF: 2.73)**

8. *NaCl-Promoted CuO–RuO<sub>2</sub>/SiO<sub>2</sub> Catalysts for Propylene Epoxidation with O<sub>2</sub> at Atmospheric Pressures: A Combinatorial Micro-reactor Study*

S. Kalyoncu, D. Duzenli, I. Onal\*, A. Seubsai, D. Noon, S. Senkan, **Z. Say**, E. Vovk, E. Ozensoy

***Catalysis Letters* 145 (2015) 596. (IF: 2.29)**

9. *MnO<sub>x</sub>-Promoted PdAg Alloy Nanoparticles for the Additive-Free Dehydrogenation of Formic Acid at Room Temperature*

A. Bulut, M. Yurderi, Y. Karatas, **Z. Say**, H.D. Kivrak, M. Kaya, M. Gulcan, E. Ozensoy, M. Zahmankran\*

***ACS Catalysis* 5 (2015) 6099. (IF: 9.31)**

10. *Spectroscopic Investigations of Sulfur Tolerant Pt/K<sub>2</sub>O/Al<sub>2</sub>O<sub>3</sub>/ZrO<sub>2</sub>/TiO<sub>2</sub> Catalysts*

**Z. Say**, M. Tohumeken, E. Ozensoy\*

***Catalysis Today* 267 (2016) 167-176. (IF: 4.31)**

11. *Sulfur Poisoning and Regeneration Performance of Perovskite-Based NO Oxidation Catalysts*

M. Dogac, **Z. Say**, K.E. Ercan, E.I. Vovk, Y.E. Kalay, C.H. Kim, W. Li, E. Ozensoy\*

***Accepted in Topics in Catalysis* (2016) (IF: 2.37)**

12. *Sulfur-Tolerant BaO/Al<sub>2</sub>O<sub>3</sub>/ZrO<sub>2</sub>/TiO<sub>2</sub>-Quaternary Mixed Oxides for deNO<sub>x</sub> Catalysis*

**Z. Say**, O. Mihai, M. Tohumeken, K.E. Ercan, L. Olsson, E. Ozensoy\*

***Submitted to ChemSusChem* (2015) (IF: 7.65)**

13. *Molecular Level Understanding of the Effect of H<sub>2</sub> and H<sub>2</sub>O on the Nature of Adsorbed NO<sub>x</sub> Species on BaO functionalized Al<sub>2</sub>O<sub>3</sub>/ZrO<sub>2</sub>/TiO<sub>2</sub>-Based LNT Catalysts*

**Z. Say**, E. Ozensoy\*

***In preparation***

14. *Al<sub>2</sub>O<sub>3</sub>/ZrO<sub>2</sub>/TiO<sub>2</sub>-Based Catalysts for Low-Temperature LNT Applications*

**Z. Say**, O. Mihai, L. Olsson, E. Ozensoy\*

***In preparation***

**CONFERENCE PRESENTATIONS:**

**2016 6th National Catalysis Congress, Bursa, Turkey. Oral Presentation**

Sulfur-Tolerant BaO/ZrO<sub>2</sub>/TiO<sub>2</sub>/Al<sub>2</sub>O<sub>3</sub> Quaternary Mixed Oxides for DeNO<sub>x</sub> Catalysis

**Zafer SAY(speaker)**, Oana MIHAI, Merve TOHUMEKEN, Louise OLSSON, Emrah OZENSOY

**2016 XVI. International Congress on Catalysis, Beijing, China. Poster Presentation**

Sulfur-Tolerant BaO/ZrO<sub>2</sub>/TiO<sub>2</sub>/Al<sub>2</sub>O<sub>3</sub> Quaternary Mixed Oxides for DeNO<sub>x</sub> Catalysis

**Zafer SAY**, Oana MIHAI, Merve TOHUMEKEN, Louise OLSSON, Emrah OZENSOY

**2015 XII. European Congress on Catalysis, Kazan, Russia. Oral Presentation**

Sulfur-Tolerant BaO/ZrO<sub>2</sub>/TiO<sub>2</sub>/Al<sub>2</sub>O<sub>3</sub> Quaternary Mixed Oxides for DeNO<sub>x</sub> Catalysis

**Zafer SAY (Speaker)**, Oana MIHAI, Merve TOHUMEKEN, Louise OLSSON, Emrah OZENSOY

**2015 XII. European Congress on Catalysis, Kazan, Russia. Oral Presentation**

Going Heterogeneous in the Additive-Free Hydrogen Production from Formic Acid at Room Temperature

Ahmet BULUT, Mehmet YURDERI, **Zafer SAY (participant)**, Hilal KIVRAK, Mehmet GULCAN, Murat KAYA, Emrah OZENSOY, Mehmet ZAHMAKIRAN

**2015 XII. European Congress on Catalysis, Kazan, Russia. Poster Presentation**

Effect of the Synthesis Route on NO<sub>x</sub> Storage over Ceria/Zirconia based-Mixed Oxides in LNT Applications

**Zafer SAY (presenter)**, Zehra Aybegüm SAMAST, Emrah OZENSOY

**2015 XII. European Congress on Catalysis, Kazan, Russia. Poster Presentation**

Novel Hybrid Perovskite Catalysts for DeNO<sub>x</sub> Applications

Kerem Emre ERCAN, **Zafer SAY (presenter)**, Evgeny VOVK, Giuseppe PANTELAO, Emrah OZENSOY

**2015 3th RACIRI, Summer School on Synchrotron Facilities, Berlin, Germany. Oral Presentation**

New Generation Catalyst for Air Pollution

**Zafer SAY (Science Slammer)**, Emrah OZENSOY

**2015 3th RACIRI, Summer School on Synchrotron Facilities, Berlin, Germany. Poster Presentation**

Sulfur-Tolerant BaO/ZrO<sub>2</sub>/TiO<sub>2</sub>/Al<sub>2</sub>O<sub>3</sub> Quaternary Mixed Oxides for DeNO<sub>x</sub> Catalysis

**Zafer SAY (Presenter)**, Oana MIHAI, Merve TOHUMEKEN, Louise OLSSON, Emrah OZENSOY

### **2015 24th North American Catalysis Society Meeting, Pittsburgh, USA. Oral Presentation**

Sulfur-Tolerant BaO/ZrO<sub>2</sub>/TiO<sub>2</sub>/Al<sub>2</sub>O<sub>3</sub> Quaternary Mixed Oxides for DeNO<sub>x</sub> Catalysis

**Zafer SAY (Speaker)**, Oana MIHAI, Merve TOHUMEKEN, Louise OLSSON, Emrah OZENSOY

### **2014 30th European Conference on Surface Science, Antalya, Turkey. Poster Presentation**

Zirconia and Titania Functionalized Ternary and Quaternary Mixed Oxides as NO<sub>x</sub> Storage and Reduction (NSR) Systems

**Zafer SAY (presenter)**, Merve TOHUMEKEN, Emrah OZENSOY

### **2014 4th National Catalysis Congress, Adana, Turkey. Oral Presentation**

Investigation of Adsorption/Desorption Properties of NO<sub>2</sub> and SO<sub>2</sub> molecules on Zirconia and Titania Functionalized Advanced Ternary and Quaternary Mixed Oxides used in NSR Application

**Zafer SAY (Speaker)**, Merve TOHUMEKEN, Emrah OZENSOY

### **2013 XI. European Congress on Catalysis, Lyon, France. Poster Presentation**

Photocatalytic NO<sub>x</sub> Oxidation and Storage (PHONOS) Catalysts

Ash Melike SOYLU, Meryem POLAT, **Zafer SAY (presenter)**, Emrah OZENSOY

### **2013 XI. European Congress on Catalysis, Lyon, France. Oral Presentation**

Effect of Pd Incorporation on the Sulfur Uptake and Release Properties of Perovskite-based DeNO<sub>x</sub> Catalysts

Merve DOGAC, **Zafer SAY (participant)**, Evgeny VOVK, Kerem ERCAN, Chang KIM, Wei LI, Emrah OZENSOY

### **2012 3th National Catalysis Congress, Kocaeli, Turkey. Oral Presentation**

Ceria Promoted NO<sub>x</sub> Storage/Reduction (NSR) materials

**Zafer SAY (Speaker & PhD Award Winner)**, Evgeny VOVK, Emrah OZENSOY

### **2010 6th European Federation of Catalysis Societies (EFCATS), İzmir, Turkey, Poster Presentation**

Effect of Ceria Promotion on NO<sub>x</sub> Storage and Reduction Catalysts

**Zafer SAY (presenter)**, Evgeny VOVK, Emrah OZENSOY