

AcademicCV– Leonora Podvorica



Personal Information

Name: Leonora Podvorica
Date of birth: 27/01/1993
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Education

- 2017, **Master’s Degree Analytical and Environmental Chemistry**, Hasan Prishtina University, Kosovo. Thesis title: “*Method Development for Through Characterization of Surface Modified Polymeric Particles Used in Anion Exchange Chromatography*”. Supervisors: Prof. Avni Berisha (Hasan Prishtina University, Kosovo), Dr. Dinh Ngoc Phuoc (Umeå University, Sweden), Dr. Tobias Jonsson (Diduco AB, Sweden).
- 2015, **Bachelor’s Degree in Chemistry – Engineering**, Hasan Prishtina University, Kosovo. Thesis title: “Antibacterial Activity of Different Extracts of *Daucus Carota* (L.) Grown Wild in Kosovo”. Supervisor: Prof. Arben Haziri.

Present appointments

- May 2019 – present, **MSCA (Marie Skłodowska-Curie Actions) Joint PhD Candidate in Chemical and Material Science**, University of Turin & University of Antwerp. Working on thesis entitled “Paramagnetic active sites in Ziegler-Natta catalysts”. Supervisors: Prof. Mario Chiesa & Prof. Sabine Van Doorslaer.

Professional experiences

- September – October 2017 – Practice at the Hydrometeorological Institute of Kosovo
- August 2018 – October 2018, High school chemistry teacher in British School of Kosova
- October 2018 – March 2019 Analytical Chemist, GentiPharm, FusheKosove, Kosovo.

Grants

- Scholarship beneficiary from the University of Prishtina in 2013 and 2014 as a student of excellence
- Scholarship beneficiary from the Ministry of Education, Science and Technology of the Republic of Kosovo as a student of excellence, 2015.
- Scholarship beneficiary from the European Union within the Erasmus + program to complete the fourth semester at Umeå University in Sweden, 2017.

Publications

1. **Podvorica, L.**; Salvadori, E.; Piemontesi, F.; Vitale, G.; Morini, G.; Chiesa, M. Isolated Ti(III) Species on the Surface of a Pre-active Ziegler Natta Catalyst. *Appl. Magn. Reson.* **2020**, *51*, 1515–1528.
DOI: [10.1007/s00723-020-01266-2](https://doi.org/10.1007/s00723-020-01266-2)
2. Bracci, M.; Bruzzese P. C.; Famulari, A.; Fioco, D.; Guidetti, A.; Liao Y.- K.; **Podvorica, L.**; Rezayi, S. F.; Serra, I.; Thangavel, K. Paramagnetic Species in Catalysis Research: A Unified Approach Towards (the role of EPR in) Heterogeneous, Homogeneous and Enzyme Catalysis. In *Electron Paramagnetic Resonance: Volume 27*; Chechik, Victor; Murphy, D. M.; Bode, Bela E, Ed.; Royal Society of Chemistry: London, 2020; pp. 1 – 46. DOI: [10.1039/9781839162534-00001](https://doi.org/10.1039/9781839162534-00001)

Conferences

- Poster presentation "EPR Characterization of Ti (III) Species in Heterogeneous Ziegler-Natta Catalysts" on the 11th Conference of European Federation of EPR Groups, 2 September 2019, Bratislava, Slovakia.
- Poster presentation "The Characterization of Paramagnetic Ti (III) Species in Heterogeneous Ziegler-Natta Catalysts" on the 8th School of the European Federation of EPR groups on "Advanced EPR". 20 November 2019, Brno, Czech Republic.
- Poster presentation "EPR Characterization of Paramagnetic Ti (III) Species in Heterogeneous Ziegler-Natta Catalysts" 7th Annual Cardiff Catalysis Institute Conference. 15 – 16 January 2020, Cardiff, UK.
- Oral Presentation "Multifrequency EPR investigation on isolated Ti(III) Species on the Surface of Pre-active Ziegler Natta Catalysts" on the 54th International Meeting of the ESR Spectroscopy Group of the Royal Society of Chemistry. 12 April 2021, Cardiff, UK .
- Poster presentation "EPR Investigation on Isolated Ti(III) Species on the Surface of Pre-active Ziegler Natta Catalysts" on 28th Benelux EPR Society Meeting, 28 June 2021, Belgium.
- Oral Presentation "Isolated Ti(III) Species on the Surface in Pre-Active and Active Ziegler - Natta Catalysts" in an International Workshop in Honor of Gaetano Granozzi and Elio Giannello, 26 November 2021, Baveno, Italy.

Trainings

- 1st PARACAT School on "Basics of Electron Paramagnetic Resonance for Catalysis [PARACAT], 2019
- Training on activation of MgCl₂-supported Ziegler-Natta catalysts by treatments with TEA and pre-polymerization process and participation on MOPLEN School in the laboratories of Giulio Natta R&D Centre of Basell Poliolefine Italia, 21 January – 29 February 2020, Ferrara, Italy

- 2nd PARACAT training school: Winter School on Catalysis [PARACAT], 13 – 17th January 2020, Cardiff, UK
- Online training on Life Cycle Analysis [PARACAT], 2 – 4 September 2020, Zaragoza Spain.
- 3rd PARACAT Summer School. Training on "Spectroscopic and computational methods towards molecular structure and reactivity" [PARACAT], 14 – 24 July 2021, Zaragoza, Spain.
- 4th PARACAT Training School On “Chemistry at the Surface Key Aspects in Materials Design and Catalysis. An International Workshop in Honor of Gaetano Granozzi and Elio Giamello”, 25 - 27 November 2021, Baveno, Italy.

Statement of interest

- My chemistry background, gained through my bachelor and master studies, helped me to build strong skills in the development and implementation of different analytical methods. Thanks to an Erasmus+ scholarship, I had the chance to work on my master thesis at the University of Umeå, in Sweden. The main focus of my work, carried out in collaboration with University of Pristina and University of Umeå, in the laboratories of Diduco AB company, was method development for through characterization of surface modified polymeric particles used in anion exchange chromatography”. During this time I gained direct hands-on experience on the characterization of surface modified polymeric particles, evaluation of the swelling properties materials, determination of the surface and pore size, determination of ion-exchange capacity, evaluation of mechanical and pH stability of the packing material and chromatographic testing to characterize retention and selectivity. This international experience gave me the chance to put into practice my theoretical studies and improve my data analysis skills, thanks to continuous exchange with professionally trained colleagues. Most importantly, this experience helped me to improve my English skills and taught me how to better interact with a multidisciplinary and multicultural environment. After a 6 month work experience in the pharmaceutical industry as an analytical chemist, during which I further strengthened my experimental and data analysis skills, I decided to pursue a post-graduate

career. In 2019 I was selected as a MSCA PhD candidate from the PARACAT project that is funded by the European Union in the framework of the H2020 Marie Skłodowska Curie Actions – Innovative Training Networks. Within PARACAT I am working as an Early Stage researcher at the University of Turin and University of Antwerp in the group of Prof. Mario Chiesa and in the group of Prof. Sabine Van Doorslaer. My research focuses on exploring the role of paramagnetic species obtained by the reductive activation of Ziegler Natta pre-catalysts and their role in olefin polymerization reactions. Continuous Wave (CW) EPR and advanced EPR (electron paramagnetic resonance) techniques are applied to provide detailed insights into the nature of Ti(III) species, their interaction with co-catalysts residues and specific Lewis bases used to enhance the stereoselectivity in ethylene polymerization. In this work, the catalyst activation and the role of coordinated Lewis bases used to promote the catalyst stereo-selectivity, are elucidated by using isotopically enriched (^{13}C , ^{17}O) alkyl aluminium activating agents and Lewis bases, in conjunction with multifrequency CW and pulse EPR methods. The evaluation of the geometrical and electronic structure of Ti(III) surface sites proves their catalytic activity and gives an understanding of the electronic effects and the origin of stereoselectivity induced by non-sterically hindering Lewis bases. By comparison of the experimental data with the results of DFT computations on model complexes, a direct evidence for the Ti(III)-alkyl bond (using isotopically enriched reagents) and a microscopic description of the catalytic sites can be obtained, which gives insights into the microreversibility of the polymerization process and electronic and geometric factors favoring depolymerization reactions.

- Language skills**
- Albanian: Mother Tongue
 - English
 - German
 - Italian – basic
 - Spanish - basic

Driving license B