

Somayeh Akbari



— Personal Information

Nationality: a citizen of the Slovenia (European Union)

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— Education

2017-2020 **Postdoctoral Researcher**, Faculty of Mechanical Engineering, University of Ljubljana.

Title of the Project:

GreenCoat; Environmentally friendly, high performance and low-friction contact surfaces adapted to the reactivity of improved DLC coatings with ionic liquids.

Research partner involved at this project:

Instituto Pedro Nunes (**Portugal**), and Norwegian University of Science and Technology (**Norway**).

2013-2016 **Ph.D. Degree in Mechanical Engineering**, Faculty of Mechanical Engineering, University of Ljubljana, Slovenia.

Title of Ph.D. Thesis Project:

Tribochemical mechanisms in boundary and mixed lubrication regime.

Research partner involved at this project:

Total Company (France), **Mercedes-Benz AMG** Company (UK), **Oerlikon Metco** (France) Company, **SKF** Company (Netherland), **Leeds** University (UK), **Ecole Central Lyon** University (France), and **AC²T** Research GMBH (Austria).

Visiting Researcher:

Visiting Researcher at Elettra Sincrotrone Trieste (Italy), do NEXAFS tests (2

Days).
Visiting Researcher at Leeds University (UK), do ATR-FTIR tests (6 Weeks).
Visiting Researcher at SKF Company (Netherland), do XPS Tests (1 Week).
Visiting Researcher at Jozef Stefan Institute (Slovenia), do XPS Tests (1 Month).
Visiting Researcher at Mercedes AMG Company (Northampton, UK), has a presentation about our project and discussion about their interest).

- 2011-2012** **Master Degree in Nanoscience**, Universidad Del País Vasco, Spain.
Title of Master Thesis Project:
Evaluation of Unimolecular Polymeric Nanoparticles as Potential Bioactive Compounds Carrier for drug delivery.
- 2008-2010** **Master Degree in Physical Chemistry**.
Title of Master Thesis Project:
Kinetic and Thermodynamic Studies of Adsorption of Industrial Dyes by Waste Sugar Beet Pulp.
- 2003-2007** **Bachelor Degree in Applied Chemistry**.

Professional Experience

- 2015-2020** **Postdoctoral Researcher, (Slovenia, European Union project)**
<https://greencoatproject.eu>
Development of new environmentally-friendly "green" contact surfaces, based on the innovative HiPIMS technology of application of DLC coatings adapted for operation with ionic liquids. These represent a green form of lubrication and are in line with increasingly stringent legal restrictions on greenhouse gas emissions, which will soon be required for all high-pressure lubricated contacts in automotive and other industries.
- 2013 - 2015** **Researcher (Slovenia, European Union project)**,
Understanding Tribochemical Mechanisms in Boundary and Mixed Lubrication Regime (steel, DLC and Fully formulated oils); Preparing Technical report for Oerlikon Metco Company: Analyses to determine ZDDP and MoDTC additives Existence in lubricant; Taught various courses in English language.
- 2011- 2012** **Master Student**
Practice in the Evaluation of Unimolecular Polymeric Nanoparticles for Nano-Medicine (drug delivery) with the Folic Acid and Hinokitiol.
- 2008 - 2010** **Master Student**
Kinetic and Thermodynamic Studies of Adsorption of Industrial Dyes by Waste Sugar Beet Pulp (at different acidic and basic conditions).

— Awards and Fellowships

- 2016-2020** **Postdoctoral Scholarship** by the European Union,
2015-2016 **Postdoctoral Fellowship** by Slovenian Research Agency of the Republic of Slovenia,
2013-2015 **Marie Curie Scholarship** by the European Union (**Best Scholarship in Europe**)
 for Ph.D. level,
9/06/2015 **TTRF Grant from Swiss Tribology** for ECOTRIB-Conference,
2011-2012 **Student Fellowship in MS'c Level,** by Spain from DIPC,
2008-2010 **Student Fellowship in MS'c Level.**

— Publications and Conferences

Effect of ZDDP concentration on the thermal film formation on steel, hydrogenated non- doped and Si-doped DLC (2016), Appl. Surf. Sci.

Evolution of the nano-scale mechanical properties of tribofilms formed from low-and high-SAPS oils and ZDDP on DLC coatings and steel (2015), TRIBOL INT.

3. "Michael" Nanocarriers Mimicking Transient-Binding Disordered Proteins (2013), ACS Macro Lett. Put as Front Cover of Macromol. Rapid Commun 21/2013. <http://onlinelibrary.wiley.com/doi/10.1002/marc.201370069/abstract>

4. Design and Preparation of Single-Chain Nanocarriers Mimicking Disordered Proteins for Combined Delivery of Dermal Bioactive Cargos (2013), Macromolecular Rapid Communications.

Lo Verso, F.; Arbe, A.; Colmenero, J.; Pomposo, JA Design and Preparation of Single-Chain Nanocarriers Mimicking Disordered Proteins for Combined Delivery of Dermal Bioactive Cargos, (2013), Macromolecular Rapid Communications.

5. Sliding evolution of the chemical and mechanical properties of tribofilms formed from low- and high-saps oils and ZDDP on steel, H-DLC and Si-DLC (STLE 2017, Illinois, USA, May 2017).

6. Atomic-resolved reaction mechanisms for the ZDDP thermal film formation on steel, H-DLC and Si-DLC (STLE 2017, Illinois, USA, May 2017).
7. Sliding evolution of chemical and mechanical properties of tribofilms formed from fully-formulated oils on steel, H-DLC and Si-DLC, (ECOTRIB Conference, Ljubljana, Slovenia, June 2017).
8. Evolution of Chemical and Mechanical Properties of the Tribofilms on Steel and DLC Surfaces with Fully Formulated Oils at Different Sliding Times (Nordtrip Conference, Hämeenlinna, Finland, June 2016).
9. Study the Chemical Reactivity of ZDDP Additive in Mineral Oil onto Steel and Different DLC Coatings (Joint Vacuum Conference (JVC16) and European Vacuum Conference (EVC14) Conference (Portoroz, Slovenia, June 2016).
10. Study the chemical structure of the ZDDP thermal film on steel and DLC surfaces at different times and ZDDP concentrations using ATR-FTIR and XPS (SLOTTRIB 16 Conference, Ljubljana, Slovenia, November 2016).
11. Investigation of Chemical Reactivity of ZDDP in mineral oil on different DLC coatings by ATR-FTIR technique (Ecotrib Conference, Lugano, Switzerland, June 2015).
12. Ex-situ ATR-FTIR Approach for Characterization of Thermal and Tribochemical Reactions of ZDDP on steel and DLC coatings (Leeds-Lyon Conference, Lyon, France, September 2015).

Workshops attended

1. Vacuums Technology Training by Oerlikon Company (France) in Jun 2015.
2. Public Speaking Training by AC2T research GmbH Center (Austria) in January 2014.
3. Innovation Strategies, Project Management, SKF Company (Netherlands) in Jun 2014.
4. Training Module Managing Sustainable Performance in Technological Context by Ecole Central Lyon University on 3-5 of December in 2014.
5. Adhesion Science and Technology Course by the University of Ljubljana, Biotechnical Faculty, Department of Wood Science and Technology (Slovenia) in December in 2013.
6. Intellectual Property Training by TOTAL Company (France) in September 2013.

Professional Membership

- Member of Society of Tribologists and Lubrication Engineers (STLE) Society (2017)
- Scientific Committee Member for SLOTRIB 2016 International Conference. (2014-2016)
- Reviewer for Journal of Lubrication Science with SCI (2015-2020).