



Dr. Angelo Mullaliu

FWO postdoctoral fellow at KU Leuven in the group of Prof. [REDACTED] Advanced characterization on artificial enzymes.

APPOINTMENTS

FWO postdoctoral fellowship <i>KU Leuven</i>	Oct 2021 - present
Postdoctoral fellowship <i>Helmholtz Institute Ulm (HIU)</i>	Jan 2019 - Sept 2021
Project coordinator - BMBF-funded TRANSITION Project <i>Helmholtz Institute Ulm (HIU)</i>	Jun 2020 - present
Peer reviewer <i>ACS Applied Materials Interfaces, ACS Sustainable Chemistry Engineering, Physical Chemistry Chemical Physics, Applied Sciences, Batteries, Membranes, Materials</i>	
Co-supervisor of 5 bachelor and master theses <i>University of Bologna, Italy</i>	2016 - 2019
Teaching tutor in Analytical Chemistry Course <i>University of Bologna, branch located in Faenza, Italy</i>	Mar 2018 - Jun 2018
Teaching tutor in "PLS Abbandoni" <i>University of Bologna, Italy</i>	Oct 2017 - Jun 2018
Teaching tutor in Analytical Chemistry Course <i>University of Bologna, Italy</i>	Mar 2016 - Jun 2016
Student's R.A. for the Master course in Industrial chemistry <i>University of Bologna, Italy</i>	Oct 2013 - Oct 2014
Laboratory quality control <i>FIRMA Srl, Correggio (RE) Italy</i>	Aug 2014 - Sept 2014
Laboratory quality control <i>Pasello Trattamenti Termici Srl, Calderara di Reno (BO) Italy</i>	Jan 2013 - Jun 2013

EDUCATION

PhD in Chemistry <i>Dept. of Industrial Chemistry, University of Bologna, Italy</i>	Mar 2019
---	----------

Thesis title: Synthesis and Characterization of Prussian blue Analogue Materials for Li-ion and post-Li batteries. Thesis advisor: Prof. [REDACTED]

MS Industrial Chemistry. 110/110 Cum Laude

Jul 2015

Dept. of Industrial Chemistry, University of Bologna, Italy

Thesis title: Synthesis, characterization and formulation of a cathode active material: copper nitroprusside. Academic advisors: Prof. [REDACTED] and Prof. [REDACTED] (University of Montpellier)

BS Industrial Chemistry 110/110 Cum Laude

Jul 2013

Dept. of Industrial Chemistry, University of Bologna, Italy

Thesis title: Superficial treatments on steels: effects on tribological behaviour. Academic advisors: Prof. [REDACTED] and Prof. Dr. [REDACTED]. Industrial advisor: Mr. [REDACTED] (Pasello Trattamenti Termici Srl)

Science high school. 100/100 Cum Laude

Jul 2010

Rinaldo Corso High School, Correggio (RE) Italy


AWARDS - Top 5

- **2020** *Jahresprämie* for outstanding scientific performance in 2019 conferred by KIT (Karlsruhe Institute of Technology), Germany
- **2019** Best PhD Thesis Award conferred by SILS (Italian Society of the Synchrotron Radiation)
- **2019** Winner of the PhD "Spada" Award in the Analytical Chemistry division, University of Bologna, Italy
- **2016** Campus France Research Scholarship winner (Research stay in Montpellier, France)
- **2013** DAAD (Deutscher Akademischer Austauschdienst) Alumnus (Hamburg, Germany)

OTHER AWARDS

- **2020** Young Principal Investigator financial support conferred by SILS (Italian Society of the Synchrotron Radiation) and CALIPSO-funded user.
- **2017, 2015** Erasmus+ Mobility programs winner (Lille and Montpellier, France, respectively)
- **2015, 2014, 2013, 2012, 2011** Regional academic scholarships winner conferred by ER.GO, Italy
- **2014** Merit scholarship winner in the Industrial Chemistry Department, University of Bologna, Italy
- **2012** Merit Scholarship conferred to the best 114 students in the entire University of Bologna, Italy
- **2010, 2009, 2008** Merit scholarships winner for high school students conferred by Banca Popolare dell'Emilia Romagna, Italy
- **2010** *Luciano Fonda* contest winner, Trieste, Italy
- **2009** PAD (Pädagogischer Austauschdienst) Alumnus (Würzburg, Germany)

ADDITIONAL INFORMATION

- **Languages:** Italian and Albanian (mother tongues), English (C1) IELTS-certified, German (B2.2/C1.1) TestDaF-certified, French (B1.2), Lithuanian (A1.2)
- **Associations** ACS (American Chemical Society), ECS (The Electrochemical Society), ISE (International Society of Electrochemistry), SILS (Società Italiana Luce di Sincrotrone), SCI (Società Chimica Italiana), SSV Ulm Triathlon Association, ASD Team Spartans
- Attainment of the Italian state qualifying examination for the chemist profession (Chemist, Section A)
- 

LIST OF PUBLICATIONS

1. Cycle parameter dependent degradation analysis in automotive lithium-ion cells. Storch et al. [Journal of Power Sources 506 \(2021\) 230227](#)
2. Cross-Investigation on Copper Nitroprusside: Combining XRD and XAS for In-Depth Structural Insights. Mullaliu et al. [Condens. Matter 2021, 6\(3\), 27](#)
3. Dual-anion ionic liquid electrolyte enables stable Ni-rich cathodes in lithium-metal batteries. Wu et al. [Joule](#)
4. Multi-edge and Multiple Scattering EXAFS Analysis of Metal Hexacyanoferrates: Application in Battery Materials. Giorgetti et al. Book chapter in "Synchrotron Radiation Science and Applications". [Springer International Publishing, 2021.](#)
5. Impact of Crystal Density on the Electrochemical Behavior of Lithium-Ion Anode Materials: Exemplary Investigation of (Fe-Doped) GeO₂. Eisenmann et al. [J. Phys. Chem. C 2021, 125, 17, 8947–8958](#)
6. Soft x-ray transmission microscopy on lithium-rich layered-oxide cathode materials. Sorrentino et al. [Applied Sciences, 2021, 11\(6\), 2791](#)
7. Effect of Applying a Carbon Coating on the Crystal Structure and De/Lithiation Mechanism of Mn-Doped ZnO Lithium-Ion Anodes. Eisenmann et al. [The Journal of Electrochemical Society, 2021, 168, 030503](#)
8. Local Interactions Governing the Performances of Lithium- and Manganese-Rich Cathodes. Ali et al. [The Journal of Physical Chemistry Letters, 2021, 12, 1195–1201](#)
9. Titanium Activation in Prussian Blue Based Electrodes for Na-ion Batteries: A Synthesis and Electrochemical Study. Li et al. [Batteries 2021, 7\(1\), 5](#)
10. Structural effects of anomalous current densities on manganese hexacyanoferrate for Li-ion batteries. Mullaliu et al. [Appl. Sci. 2020, 10\(21\), 7573](#)
11. Metal Hexacyanoferrate Absorbents for Heavy Metal Removal. Mario Berrettoni, Angelo Mullaliu, Marco Giorgetti. Book chapter in "Green Adsorbents to Remove Metals, Dyes and Boron from Polluted Water", Springer. [Environmental Chemistry for a Sustainable World, 2021](#)
12. Detailing the Self-Discharge of a Cathode Based on a Prussian Blue Analogue. Musella et al. [Energies, 2020, 13\(15\), 4027](#)
13. Structural investigation of quaternary layered oxides upon Na-ion deinsertion. Mullaliu et al. [Inorg. Chem. 2020, 59, 11, 7408–7414](#)
14. Lattice Compensation to Jahn-Teller Distortion in Na-rich Manganese Hexacyanoferrate for Li-ion Storage: An Operando Study. Mullaliu et al. [ACS Appl. Energy Mater. 2020, 3, 6, 5728–5733](#)
15. Effect of Water and Alkali-Ion Content on the Structure of Manganese(II) Hexacyanoferrate(II) by a Joint Operando X-ray Absorption Spectroscopy and Chemometric Approach. Mullaliu et al. [ChemSusChem 2020, 13, 608–615](#)

16. Highlighting the Reversible Manganese Electroactivity in Na-Rich Manganese Hexacyanoferrate Material for Li- and Na-Ion Storage. Mullaliu et al. [Small Methods 2019, 1900529, 1-7](#)
17. Role of Manganese in Lithium- and Manganese-Rich Layered Oxides Cathodes. Simonelli et al. [Journal Physical Chemistry Letters 2019, 10, 12, 3359-3368](#)
18. The peculiar redox mechanism of copper nitroprusside disclosed by a multi-technique approach. Mullaliu et al. [Radiation Physics and Chemistry, 2020, 175, 108336](#)
19. XAFS studies on battery materials: data analysis supported by a chemometric approach. Giorgetti et al. [Radiation Physics and Chemistry, 2020, 108252](#)
20. Newly developed electrochemical synthesis of Co-based Layered Double Hydroxides: toward noble metal-free electro-catalysis. Musella et al. [Journal of Materials Chemistry A, 2019, 7, 11241-11249](#)
21. Beyond Oxygen Redox Strategy in Designing Cathode Material for Batteries: Dynamics of a Prussian Blue-like Cathode Revealed by Operando XRD and XAFS and by Theoretical Approach. Mullaliu et al. [Journal of Physical Chemistry C 2019, 123, 8588–8598](#)
22. Operando XAFS and XRD study of a Prussian Blue Analogue cathode material: Iron Hexacyanocobaltate. Mullaliu et al. [Condensed Matter 2018, 3, 36](#)
23. Metal hexacyanoferrates: ion insertion (or exchange) capabilities. Angelo Mullaliu, Marco Giorgetti. Book chapter in "Applications of Ion exchange Materials". [Inamuddin, Ahamed M., Asiri A. \(eds\) Applications of Ion Exchange Materials in the Environment. Springer, Cham](#)
24. Thin layer films of copper hexacyanoferrate: Structure identification and analytical applications. Ventura et al. [Journal of Electroanalytical Chemistry, 2018, 827, 10-20](#)
25. Copper Electroactivity in Prussian Blue-Based Cathode Disclosed by Operando XAS. Mullaliu et al. [Journal of Physical Chemistry C 2018, 122, 28, 15868-15877](#)
26. The electrochemical activity of the nitrosyl ligand in copper nitroprusside: a new possible redox mechanism for lithium battery electrode materials? Mullaliu et al. [Electrochimica Acta 2017, 257, 364-371](#)

RESEARCH EXPERIENCE

1. 17-23.11.2020: Experiments at Elettra Sincrotrone, Basovizza (Italy).
Project 20200299 (██████████ as PI)
2. 03-08.08.2020: Experiments at Elettra Sincrotrone, Basovizza (Italy).
Project 20195449 (Dr. ██████████ as PI)
3. 19-24.05.2020: Experiments at Elettra Sincrotrone, Basovizza (Italy).
Project 20195468 (Prof. Dr. ██████████ as PI)
4. 18-22.02.2020: Experiments at Alba Synchrotron, Barcelona (Spain).
Project 2019093934 (Prof. Dr. ██████████ as PI).
5. 04-07.12.2018: Experiments at Elettra Sincrotrone, Basovizza (Italy).
Project 20180360 (Prof. Dr. ██████████ as PI)
6. 14-17.11.2018: Experiments at Elettra Sincrotrone, Basovizza (Italy).
Project 20180220 (Prof. Dr. ██████████ as PI)
7. 18-21.07.2018: Experiments at Soleil Synchrotron, Paris (France).
Project 20171297 (Prof. Dr. ██████████ as PI)
8. 01.06.2018-15.07.2018: Visiting PhD student. Research stay at the HIU – Helmholtz Institut Ulm (Germany) under the supervision of Prof. Dr. ██████████
9. 12.-16.12.2017: Experiments at Elettra Sincrotrone, Basovizza (Italy).
Project 20165434 (Prof. Dr. ██████████ as PI)
10. 05-11-12.2017: Experiments at Elettra Sincrotrone, Basovizza (Italy).
Ceric Project 20172042 (Prof. Dr. ██████████ as PI)
11. 13-15.11.2017: Experiments at the National Institute for Material Physics, Magurele (Romania).
Ceric Project 20172042 (Prof. Dr. ██████████ as PI)
12. 03.2017-06.2017: Visiting PhD Student. Research stay at the UCCS Université de Lille (France) under the supervision of Prof. Dr. ██████████. Research stay financed by Erasmus+ Mobility program
13. 22-23.06.2017: XRD data analysis with Dr ██████████ at Elettra Sincrotrone, Basovizza (Italy)
14. 13-15.09.2017: Visiting PhD Student. Research stay at ICG-AIME of the Université de Montpellier (France) under the supervision of Prof. Dr. ██████████
15. 01-06.12.2015: Experiments at Elettra Sincrotrone, Basovizza (Italy).
Project 20150161 (Prof. Dr. ██████████ as PI)
16. 07-12.03.2016: Experiments at Elettra Sincrotrone, Basovizza (Italy).
Project 20155185 (Prof. Dr. ██████████ as PI)
17. 19-23.04.2016: Experiments at Alba Synchrotron, Barcelona (Spain).
Project 2015091392 (Prof. Dr. ██████████ as PI)
18. 01.09.2016-01.10.2016: Visiting PhD student. Research stay at the ICG-AIME of the Université de Montpellier (France) under the supervision of Prof. Dr. ██████████. Research stay funded by Campus France
19. 02.2015-05.2015: Master thesis work at the ICG-AIME of the Université de Montpellier (France) under the supervision of Prof. Dr. ██████████. Research stay funded by Erasmus+ Mobility program

LIST OF CONTRIBUTIONS TO CONFERENCES

1. Operando synchrotron studies of high-capacity Mn-hexacyanoferrate for Na- and Li-ion storage.
A. Mullaliu, M. Gaboardi, P. Conti, J. R. Plaisier, G. Aquilanti, S. Passerini, M. Giorgetti.
Abstract accepted as an oral presentation in the XAFS2021 conference, Sydney, Australia.
2. Structural insight into the electroactivity of a CuS-based composite electrode material for all-solid-state lithium battery.
A. Mullaliu, S. M. Hosseini, P. Conti, G. Aquilanti, M. Giorgetti, S. Passerini.
Abstract accepted as an oral presentation in the XAFS2021 conference, Sydney, Australia.
3. Operando Investigation of Na-rich Manganese Hexacyanoferrate for Na- and Li-ion Storage.
A. Mullaliu, M. Gaboardi, P. Conti, J. R. Plaisier, G. Aquilanti, S. Passerini, M. Giorgetti.
Abstract accepted as an oral presentation in the SILS 2021 conference, Bologna, Italy.
4. Germanium Oxide Negative Electrodes - Tuning Synthesis Conditions Towards High-Energy and High-Power Lithium-Ion Cells.
T. Eisenmann, H. G. Baek, A. Mullaliu, S. Passerini, and D. Bresser.
Abstract sent to PRiME 2020 in Honolulu (USA)
5. XAS-based Investigation of the Reversible Jahn-Teller Distortion in Na-rich Manganese Hexacyanoferrate Material for Li- and Na-ion Storage.
Angelo Mullaliu, Jakob Asenbauer, Giuliana Aquilanti, Marco Giorgetti, Stefano Passerini.
Abstract accepted as poster in IBA 2020 in Bled (Slovenia)
6. Dynamic Processes in Metal Hexacyanoferratebased Batteries Revealed by Operando XAS and XRD.
Marco Giorgetti, Angelo Mullaliu, Giuliana Aquilanti, Jasper Plaisier.
Abstract accepted as oral presentation in SILS 2019 in Camerino (Italy)
7. The uncommon electrochemistry of copper nitroprusside disclosed by spectroscopic and diffraction techniques.
Angelo Mullaliu, Elisa Musella, Reinhard Denecke, Marco Giorgetti.
Abstract accepted as oral presentation in XXVII Congresso della Divisione di Chimica Analitica in Bologna (Italy).
8. The peculiar redox mechanism of copper nitroprusside disclosed by a multi-technique approach.
Angelo Mullaliu, Elisa Musella, Lorenzo Stievano, Giuliana Aquilanti, Jasper Plaisier, Sylvain Cristol, Reinhard Denecke, Marco Giorgetti.
Abstract accepted as oral presentation in the 69th Annual Meeting of the International Society of Electrochemistry in Bologna (Italy)
9. Soft x-ray microscopy of lithium-rich layered-oxide cathode materials.
A. Sorrentino, L. Simonelli, N. Laszczynski, A. Birrozzi, A. Mullaliu, E. Pereiro, M. Giorgetti, S. Passerini and D. Tonti.
Abstract accepted as poster in the 69th Annual Meeting of the International Society of Electrochemistry in Bologna (Italy)
10. The peculiar redox mechanism of copper nitroprusside disclosed by a multi-technique approach.
Angelo Mullaliu, Lorenzo Stievano, Giuliana Aquilanti, Jasper Plaisier, Sylvain Cristol, and Marco Giorgetti.
Abstract accepted as oral presentation in XAFS17 2018 congress in Cracow (Poland)
11. XAFS studies on battery materials: data analysis supported by a chemometric approach.
Marco Giorgetti, Angelo Mullaliu, Paolo Conti.
Abstract accepted as poster in XAFS17 2018 congress in Cracow (Poland)

12. Operando characterization of batteries using X-ray absorption and X-ray diffraction.
Marco Giorgetti, Angelo Mullaliu.
Abstract accepted as oral presentation in the 6th World Congress and Expo on Nanotechnology and Materials Science in Valencia (Spain)
13. Electronic Structure Investigation of a Layered-Oxide Cathode Material by a Multi-technique Approach.
L. Simonelli, A. Sorrentino, S. Passerini, M. Giorgetti, A. Mullaliu, A. Birrozzi, N. Laszczynski, W. Olszewski, C. Marini, N. Ramanan, D. Heinis, D. Tonti.
Abstract accepted as oral presentation in VIII AUSE CONGRESS in Barcelona (Spain).
14. Operando characterization of a battery material: the case of copper nitroprusside.
Angelo Mullaliu, Lorenzo Stievano, Giuliana Aquilanti, Jasper Plaisier, Sylvain Cristol, Marco Giorgetti.
Abstract accepted as poster in FisMat2017 congress in Trieste (Italy)
15. Participation to the ASC Winter School 2017 in Rimini (Italy) as part of the local organizing committee