

Daniela Meroni

CURRICULUM VITAE

SURNAME **MERONI**
NAME **DANIELA**
DATE OF BIRTH 02-01-1985
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EDUCATION

- Master's degree in Chemical Sciences at the Università degli Studi di Milano in 2009 (*magna cum laude*)
- PhD in Chemical Sciences at the Università degli Studi di Milano in 2013 (supervisor: Prof. S. Ardizzone)

CURRENT POSITION

- Research assistant (ricercatore a tempo determinato di tipo A) at the Department of Chemistry of Università degli Studi di Milano

PREVIOUS POSITIONS

- One-year research fellowship at the Università degli Studi di Milano (2013, supervisor: Prof. G. Cappelletti).
- Two-year research fellowship at Università degli Studi di Milano (2014-2016). In 2016, my two-year fellowship was renewed for an additional two years.

AWARDS AND ACKNOWLEDGEMENTS

- ENI award "Debutto in ricerca" 2015 for the best PhD research thesis defended in Italian Universities on energy and the environment (€ 25,000)

SUPERVISION

- Thesis supervisor of two Bachelor's students in Chemistry and of a Master's student.
- External co-tutor of a foreign Master's student in Materials Science (Tania Melisa De la Peña Plata) at the Centro de Investigación de Materiales Avanzados (CIMAV), Mexico. I was her supervisor during her two-month research stay in our laboratories.
- Thesis cosupervisor of 8 Bachelor's (Bachelor's degree in Chemistry/Applied and Environmental Chemistry) and 13 Master's students (Master's degree in Chemical Sciences and Industrial Chemistry) and day-to-day supervisor of 4 Master's students.

MAJOR COLLABORATIONS

- Prof. U.S. Schubert and Prof. S. Hoenpener at the Friedrich-Schiller-Universität of Jena (Germany) for the development of advanced functional materials, which has led to one joint publication, and 3 oral presentations at International congresses.
- Prof. Dirk Poelman and Dr Hilde Poelman at the Ghent University (Belgium) for the study of photocatalytic and luminescent materials, which has led to one joint publication and one in preparation, two congress contributions and the joint supervision of two Master's students.
- Prof. Kevin C. Prince at Elettra (Trieste, Italy) and Dr Robert G. Acres at the Australian synchrotron for the advanced characterization of functionalized oxide films, which has led to two joint publications.

- Dr. Enrico Davoli at the Mario Negri IRCCS of Milan (Italy) for the characterization of intermediates of photocatalytic reactions, which has led to three joint publications.
- Dr M. Maiuri at Princeton University (USA), which has led to one joint publication.
- Dr Liliana Licea Jimenéz at the Centro de Investigación de Materiales Avanzados (CIMAV, Mexico), which has led to the joint supervision of a Master's student.

CAREER BREAKS

- Maternity leave (October 2014-March 2015)

GRANTS OBTAINED

Projects

- **Main proposer of two research projects that were allocated beamtime at International synchrotron facilities.**
 1. Facility: **European Synchrotron Radiation Facility (ESRF, Grenoble)**
Experiment number: MA-3713
Title: Probing local and long-range structure of N-doped TiO₂-based composite (TiO₂, Sn/SnO₂) materials for advanced photo-electrochemical applications
Main proposer: Daniela Meroni
Co-proponents: S. Ardizzone, L. Rimoldi, L. Lo Presti, L. Loconte
Date: January 2018
Number of shifts: a total of 15 (12 at BM08 and 3 at ID22)
 2. Facility: **Elettra Synchrotron (Trieste, Italy)**
Experiment number: 20170306
Title: Structural and electronic characterization of chemisorbed species on halloysite nanotubes: a combined XPS and NEXAFS study
Main proposer: Daniela Meroni
Co-proponents: K. Fidecka, E. Licandro, S. Ardizzone, L. Rimoldi, T. Taroni, S. Cauteruccio
Date: December 13-16; December 18-22
Number of shifts: 24 shifts

PERSONALLY DELIVERED ORAL PRESENTATIONS:

1. L. Porati, D. Meroni, D. Poelman, *Sol-gel synthesis of CaTiO₃:Pr³⁺ red phosphors: tailoring the synthetic parameters for luminescent and afterglow applications*. 19th International Sol-Gel Conference (Sol-gel2017) - Liege, Belgium - September 3-8, 2017
2. D. Meroni, L. Lo Presti, L. Silvestrini, M. Ceotto, S. Ardizzone, *Oxygen vacancies and nonmetal dopant species in anatase TiO₂: A lesson learned?*, 21st International Conference on Solid State Ionics (SSI-21) - Padua, Italy - June 18-23, 2017
3. D. Meroni, T. Taroni, L. Rimoldi, K. Fidecka, S. Cauteruccio, R. Vago, E. Licandro, S. Ardizzone, *Nanocarriers based on nanometric natural and synthetic oxides: the role of the linker-oxide interactions*, XI INSTM Conference - Ischia, Italy - July 12-15, 2017
4. D. Meroni, L. Lo Presti, L. Silvestrini, M. Ceotto, S. Ardizzone, *Experimental and theoretical tools for studying TiO₂ defects: A methodological lesson from N-doping*, 21st International Conference on Semiconductor Photocatalysis & Solar Energy Conversion (SPASEC-21) - Atlanta (USA) - November 13-16
5. D. Meroni, *Energia solare per il disinquinamento dell'aria e dell'acqua*, workshop "Energia e ambiente nella città del futuro" - Milano (Italy) - September 29-30, 2016
6. D. Meroni, G. Soliveri, V. Pifferi, G. Panzarasa, G. Cappelletti, L. Falciola, S. Ardizzone, *Self-cleaning electrochemical sensors based on TiO₂/Ag nanoparticles/SiO₂ multilayers*, 11th

International Conference on Surfaces, Coatings and Nanostructured Materials (NANOSMAT2016) - Aveiro, Portugal - September 6-9, 2016

7. D. Meroni, *Nanostructured semiconductor films: synthesis, surface functionalization and innovative applications*, ENI award 2015 Ideas for a brighter future - Naples, Italy - October 7, 2015
8. D. Meroni, L. Lo Presti, M. Ceotto, G. Cappelletti, *Synchrotron radiation in environmental remediation: Shedding light on the structural and electronic properties of second generation photocatalysts*, XXIII Italian Synchrotron Radiation Society (SILS) meeting - Trento, Italy - July 8-10, 2015
9. D. Meroni, S. Hoepfner, S. Ardizzone, U.S. Schubert, *Surface modification of ITO layers by AFM-based electrooxidative lithography*, 4th Congress of the European Association for Chemical and Molecular Sciences (4th EuChemS) - Prague, Czech Republic - August 26-30, 2012
10. D. Meroni, V. Pifferi, L. Falciola, G. Soliveri, G. Cappelletti, S. Ardizzone, *Electrochemical synthesis and applications of transparent titania layers*, Giornate dell'Elettrochimica Italia (GEI 2013) - Pavia, Italy - September 22-27, 2013
11. G. Soliveri, D. Meroni, G. Cappelletti, R. Annunziata, S. Ardizzone, G. Cerrato, *Wettability features of nano-oxides: the tailoring of the attachment modes of siloxane*, V Workshop on Oxide Based Materials (OXIDE2012) - Turin, Italy - September 24-26, 2012
12. D. Meroni, S. Hoepfner, S. Ardizzone, U.S. Schubert, *Scanning probe electro-oxidative lithography of OTS monolayers on ITO films: A Scanning Kelvin Probe Microscopy investigation*, 26th Conference of the European Colloid and Interface Society (ECIS2012) - Malmö, Sweden - September 2-7, 2012
13. D. Meroni, G. Cappelletti, S. Ardizzone, I. Biraghi, *Complete mineralization of bisphenol A by the combination of ozonation and photocatalysis*, Giornate dell'Elettrochimica Italiana Elettrochimica per il Recupero Ambientale (GEIERA2010) - Modena, Italy - September 5-10, 2010
14. D. Meroni, S. Ardizzone, C.L. Bianchi, G. Cappelletti, D. Poelman, *Nanostructured TiO₂ films by spin coating for air remediation*, XXIII Congresso della Società Chimica Italiana - Sorrento, Italy - July 5-10, 2009

PUBLICATIONS

Book chapters:

1. *"Physicochemical tailoring of material surface properties"* (invited book chapter), S. Ardizzone, I. Biraghi, G. Cappelletti, D. Meroni, F. Spadavecchia, in: L. Rimondini (Ed.), *Surface tailoring of inorganic materials for biomedical applications*, Bentham, London, 2012, pp. 3-42.

Editorials:

1. *"Debuting in Research: The Vision of Two ENI Award Winners - Photoactive Materials in the Year of Light: Light for Matter or Matter of Light?"* (invited editorial), M. Maiuri, D. Meroni, *Chemistry of Materials*, 2016, 28, 409-410.

Articles on peer-reviewed International journals:

1. *"Siloxane-TiO₂ Hybrid Nanocomposites. The Structure of the Hydrophobic Layer"* (original research article), F. Milanese, G. Cappelletti, R. Annunziata, C. L. Bianchi, D. Meroni, S. Ardizzone, *Journal of Physical Chemistry C*, 2010, 114, 8287-8293.
2. *"Photocatalytic removal of ethanol and acetaldehyde by N-promoted TiO₂ films: The role of the different nitrogen sources"* (original research article), D. Meroni, S. Ardizzone, G. Cappelletti, C. Oliva, M. Ceotto, D. Poelman, H. Poelman, *Catalysis Today*, 2011, 161, 169-174.
3. *"Mesoporous Titania Nanocrystals by Hydrothermal Template Growth"*, (original research article), G. Cappelletti, S. Ardizzone, F. Spadavecchia, D. Meroni, I. Biraghi, *Journal of Nanomaterials*, 2011, 597954.

4. "Tailored TiO₂ layers for the photocatalytic ozonation of cumylphenol, a refractory pollutant exerting hormonal activity" (original research article), S. Ardizzone, G. Cappelletti, D. Meroni, F. Spadavecchia, *Chemical Communications*, 2011, 47, 2640-2642.
5. "Interplay between Chemistry and Texture in Hydrophobic TiO₂ Hybrids" (original research article), D. Meroni, S. Ardizzone, G. Cappelletti, M. Ceotto, M. Ratti, R. Annunziata, M. Benaglia, L. Raimondi, *Journal of Physical Chemistry C*, 2011, 115, 18649-18658.
6. "Bisphenol A endocrine disruptor complete degradation using TiO₂ photocatalysis with ozone" (original research article), A. Colombo, G. Cappelletti, S. Ardizzone, I. Biraghi, C. L. Bianchi, D. Meroni, C. Pirola, F. Spadavecchia, *Environmental Chemistry Letters*, 2012, 10, 55-60.
7. "About the nitrogen location in nanocrystalline N-doped TiO₂: Combined DFT and EXAFS approach" (original research article), M. Ceotto, L. Lo Presti, G. Cappelletti, D. Meroni, F. Spadavecchia, R. Zecca, M. Leoni, P. Scardi, C. L. Bianchi, S. Ardizzone, *Journal of Physical Chemistry C*, 2012, 116, 1764-1771.
8. "Probe-based Electro-oxidative Lithography of OTS SAMs Deposited onto Transparent ITO Substrates" (original research article), D. Meroni, S. Ardizzone, U.S. Schubert, S. Höppener, *Advanced Functional Materials*, 2012, 22, 4376-4382.
9. "Block copolymers for the synthesis of pure and Bi-promoted nano-TiO₂ as active photocatalysts" (original research article), D. Meroni, V. Pifferi, B. Sironi, G. Cappelletti, L. Falciola, G. Cerrato, S. Ardizzone, *Journal of Nanoparticle Research*, 2012, 14(8):1-15.
10. "Wettability of Bare and Fluorinated Silanes: A Combined Approach Based on Surface Free Energy Evaluations and Dipole Moment Calculations" (original research article), G. Cappelletti, S. Ardizzone, D. Meroni, G. Soliveri, M. Ceotto, C. Biaggi, M. Benaglia, L. Raimondi, *Journal of Colloid and Interface Science*, 2013, 389, 284-291.
11. "Multiscale rough TiO₂ films with patterned hydrophobic/oleophobic features" (original research article), G. Soliveri, R. Annunziata, S. Ardizzone, G. Cappelletti, D. Meroni, *Journal of Physical Chemistry C*, 2012, 116, 26405-26413.
12. "Ultra-Traces Detection by Gold-Based Electrodes in As(III) Novel Photoremediation" (original research article), V. Pifferi, S. Ardizzone, G. Cappelletti, L. Falciola, D. Meroni, *Electrocatalysis*, 2013, 4, 306-311.
13. "Electrochemically assisted deposition of transparent, mechanically robust TiO₂ films for advanced applications" (original research article), G. Maino, D. Meroni, V. Pifferi, L. Falciola, G. Soliveri, G. Cappelletti, S. Ardizzone, *Journal of Nanoparticle Research*, 2013, 15, 2087-2097.
14. "Engineered organic/inorganic hybrids for superhydrophobic coatings by wet and vapour procedures" (original research article), G. Soliveri, D. Meroni, G. Cappelletti, R. Annunziata, V. Aina, G. Cerrato, S. Ardizzone, *Journal of Materials Science*, 2014, 49, 2734-2744.
15. "Photocatalytic remediation of indoor pollution by transparent TiO₂ films" (original research article), A. Antonello, G. Soliveri, D. Meroni, G. Cappelletti, S. Ardizzone, *Catalysis Today*, 2014, 230, 35-40.
16. "Role of the Nitrogen Source in Determining Structure and Morphology of N-doped Nanocrystalline TiO₂" (original research article), L. Lo Presti, M. Ceotto, F. Spadavecchia, G. Cappelletti, D. Meroni, R.G. Acres, S. Ardizzone, *Journal of the Physical Chemistry C*, 2014, 118, 4797-4807.
17. "Multi-Walled Carbon Nanotubes (MWCNTs) modified electrodes: Effect of purification and functionalization on the electroanalytical performances" (original research article), V. Pifferi, G. Cappelletti, C.D. Bari, D. Meroni, F. Spadavecchia, L. Falciola, *Electrochimica Acta*, 2014, 146, 403-410.
18. "Unraveling the Cooperative Mechanism of Visible-light Absorption in Bulk N,Nb Codoped TiO₂ Powders of Nanomaterials" (original research article), C. Marchiori, G. Di Liberto, G. Soliveri, L. Loconte, L. Lo Presti, D. Meroni, M. Ceotto, C. Oliva, S. Cappelli, G. Cappelletti, C. Aieta, S. Ardizzone, *Journal of the Physical Chemistry C*, 2014, 118, 24152-24164.

19. "Second Generation Nitrogen doped Titania Nanoparticles: a comprehensive electronic and microstructural picture" (review), F. Spadavecchia, M. Ceotto, L. Lo Presti, C. Aieta, I. Biraghi, D. Meroni, S. Ardizzone, G. Cappelletti, *Chinese Journal of Chemistry*, **2014**, 32, 1195–1213.
20. "Photo-mineralization of noxious o-toluidine water pollutant by nano-ZnO: The role of the oxide surface texture on the kinetic path" (original research article), V. Pifferi, G. Cappelletti, S. Ardizzone, L. Falciola, C. Di Bari, F. Spadavecchia, D. Meroni, A. Carrà, G. Cerrato, S. Morandi, E. Davoli, *Applied Catalysis B: Environmental*, **2015**, 178, 233-240.
21. "Self-cleaning properties in engineered sensors for dopamine electroanalytical detection" (original research article), G. Soliveri, V. Pifferi, G. Panzarasa, S. Ardizzone, G. Cappelletti, D. Meroni, K. Sparnacci, L. Falciola, *Analyst*, **2015**, 140, 1486-1494.
22. "New Thiocyanate-Free Ruthenium(II) Sensitizers with Different Pyrid-2-yl Tetrazolate Ligands for Dye-Sensitized Solar Cells" (original research article), A. Colombo, C. Dragonetti, M. Magni, D. Meroni, R. Ugo, G. Marotta, M.G. Lobello, P. Salvatori, F. De Angelis, *Dalton Transactions*, **2015**, 44, 11788-11796.
23. "Hazardous o-toluidine mineralization by photocatalytic bismuth doped ZnO slurries" (original research article), G. Cappelletti, V. Pifferi, S. Mostoni, L. Falciola, C. Di Bari, F. Spadavecchia, D. Meroni, E. Davoli, S. Ardizzone, *Chemical Communications*, **2015**, 51, 10459-10462.
24. "Alkylsilane-SiO₂ Hybrids. A Concerted Picture of Temperature Effects in Vapor Phase Functionalization" (original research article), G. Soliveri, V. Pifferi, R. Annunziata, L. Rimoldi, V. Aina, G. Cerrato, L. Falciola, G. Cappelletti, D. Meroni, *Journal of Physical Chemistry C*, **2015**, 119, 15390-15400.
25. "Double side self-cleaning polymeric materials: the hydrophobic and photoactive approach" (original research article), G. Soliveri, V. Sabatini, H. Farina, M.A. Ortenzi, D. Meroni, A. Colombo, *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, **2015**, 483, 285-291.
26. "Electrochemical sensors cleaned by light: a proof of concept for on site applications towards integrated monitoring systems" (original research article), V. Pifferi, G. Soliveri, G. Panzarasa, S. Ardizzone, G. Cappelletti, D. Meroni, L. Falciola, *RSC Advances*, **2015**, 5, 71210-71214.
27. "Impregnation versus Bulk Synthesis: How the Synthetic Route Affects the Photocatalytic Efficiency of Nb/Ta:N Codoped TiO₂ Nanomaterials" (original research article), L. Rimoldi, C. Ambrosi, G. Di Liberto, L. Lo Presti, M. Ceotto, C. Oliva, D. Meroni, S. Cappelli, G. Cappelletti, G. Soliveri, S. Ardizzone, *Journal of Physical Chemistry C*, **2015**, 119, 24104–24115.
28. "Solution behaviour of amphiphilic glycodendrimers with a rod-like core" (original research article), S. Ordanini, G. Zanchetta, V. Porkolab, C. Ebel, F. Fieschi, I. Guzzetti, D. Potenza, A. Palmioli, Ć. Podlipnik, D. Meroni, A. Bernardi, *Macromolecular Bioscience*, **2016**, 16, 896-905.
29. "Photo-renewable electroanalytical sensor for neurotransmitters detection in body fluid mimics" (original research article), V. Pifferi, G. Soliveri, G. Panzarasa, G. Cappelletti, D. Meroni, L. Falciola, *Analytical and Bioanalytical Chemistry*, **2016**, 1-11.
30. "Green and low cost tetracycline degradation processes by nanometric and immobilized TiO₂ systems" (original research article), L. Rimoldi, D. Meroni, G. Cappelletti, S. Ardizzone, *Catalysis Today*, **2017**, 281, 38-44.
31. "Tailored routes for home-made Bi-doped ZnO nanoparticles. Photocatalytic performances towards o-toluidine, a toxic water pollutant" (original research article), S. Mostoni, V. Pifferi, L. Falciola, D. Meroni, E. Pargoletti, E. Davoli, G. Cappelletti, *Journal of Photochemistry and Photobiology A: Chemistry*, **2017**, 332, 534-545.
32. "Emerging pollutant mixture mineralization by TiO₂ photocatalysts. The role of the solution composition" (original research article), L. Rimoldi, D. Meroni, E. Falletta, V. Pifferi, L. Falciola, G. Cappelletti, S. Ardizzone, *Photochemical & Photobiological Sciences*, **2017**, 16, 60-66.
33. "A Close Look at the Structure of the TiO₂-APTES Interface in Hybrid Nanomaterials and at Its Degradation Pathway: An Experimental and Theoretical Study" (original research article), D.

- Meroni, L. Lo Presti, G. Di Liberto, M. Ceotto, R. G. Acres, K. C. Prince, R. Bellani, G. Soliveri, S. Ardizzone, *Journal of Physical Chemistry C*, **2017**, *121*, 430-440.
34. “Zn- vs Bi-based oxides for o-toluidine photocatalytic treatment under solar light” (original research article), E. Pargoletti, S. Mostoni, G. Rassa, V. Pifferi, D. Meroni, L. Falciola, E. Davoli, M. Marelli, G. Cappelletti, *Environmental Science and Pollution Research*, **2017**, *24*, 8287-8296.
 35. “The role played by different TiO₂ features on the photocatalytic degradation of paracetamol” (original research article), L. Rimoldi, D. Meroni, E. Falletta, A.M. Ferretti, A. Gervasini, G. Cappelletti, S. Ardizzone, *Applied Surface Science*, **2017**, *424*, 198-205.
 36. “Electrochemical characterization of insulating silica-modified electrodes: transport properties and physicochemical features” (original research article), V. Pifferi, L. Rimoldi, D. Meroni, F. Segrado, G. Soliveri, S. Ardizzone, L. Falciola, *Electrochemistry Communications*, **2017**, *81*, 102-105.
 37. “Sol-Gel Synthesis of CaTiO₃:Pr³⁺ Red Phosphors: Tailoring the Synthetic Parameters for Luminescent and Afterglow Applications” (original research article), D. Meroni, L. Porati, F. Demartin, D. Poelman, *ACS Omega*, **2017**, *2*, 4972-4981.

Articles on other journals

1. “Urbanistica, nuove tecnologie energetiche, materiali innovativi ed arte: alla ricerca di una città abitabile”, D. Meroni, A. Minguzzi, F. Tessore, G. Chiarello, A. Amadori, C. Oliva, I. Rossetti, *La Chimica e l'Industria Newsletter* - ISSN 2532-182X - 2017, 4(2), aprile.