

PERSONAL INFORMATION

Maria Vittoria Diamanti



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Sex Female | Date of birth 04/08/1981 | Nationality Italian

WORK EXPERIENCE

December 2014-present

Associate professor

Politecnico di Milano, Dept. of Chemistry, Materials and Chemical Engineering “G. Natta” – Via Mancinelli 7, 20131 Milan, Italy

Scientific activity:

- Anodic and thermal oxidation of titanium; optimization of crystal structure, morphology and thickness of oxides obtained by anodic oxidation or thermal treatment (thickness, morphology, structure and interference colors by means of XRD, SEM and spectrophotometric techniques; surface tension; electrochemical properties by means of electrochemical impedance spectroscopy).
- Production and characterization of photoactive materials: photocatalytic activity and self-cleaning properties, especially in the analysis of thin titanium oxide films produced by anodic oxidation and sol-gel, and of titanium dioxide-containing building materials.
- Development of building envelope materials with improved energy performances and reduced environmental impact.
- Production of memristive oxides by anodic oxidation of valve metals.
- Evaluation of the corrosion resistance of passive metals (steels, titanium) and of steel alloys in ionic liquids based environments and in concrete.

Teaching activity at Politecnico di Milano (formal assignments):

- Cementitious and ceramic materials engineering (Master Degree in Materials Engineering and Nanotechnologies, in English) – since AY 2011-2012
- Cementitious and ceramic materials (Bachelor Degree in Materials Engineering and Nanotechnologies, in Italian) – since AY 2015-16
- Materials Science and Technology for Architecture (Bachelor Degree in Architecture, in Italian) – AY 2014-2015
- Materials Science and Technology (Bachelor Degree in Architecture, in Italian) – AY 2011-2012
- Seminars, practices and laboratories in the following classes (Chemical Engineering, Materials Engineering, Design): Materials science and technology, Corrosion and protection of metals, Cementitious and ceramic materials, Materials for Design, Master in Industrial Design for Architecture.
- Seminars for Eni Corporate University, APCE and other industrial partners in the field of corrosion and protection of metals.

Scientific production:

- Guest editor of special issues on the international Journals *Materials* (2018), *Current Nanoscience* (2015), and of the special issue “Corrosion in Italy” on *Corrosion Reviews* (2011).
- Co-editor and chapter author of the book *Biotechnologies and biomimetics for civil engineering*, edited by Springer (2015), and of the book *Nanotechnology in eco-efficient construction*, edited by Woodhead Publishing (2013).
- Italian translation of the textbook: W.D. Callister, D.G. Rethwisch, *Materials Science and Engineering*, 8th ed., John Wiley & Sons, in collaboration with G. Malucelli, G. Mensitieri, M. Ormellese, M.P. Pedefferri, A. Saccani, C. Caneva.
- Invited speaker with a presentation on Advances (and limits) in photocatalytic building materials at the Cleantech conference hosted by the TechConnect World, June 18-21, 2012, Santa Clara (CA).
- Author of 49 articles on international peer-reviewed Journals as listed in Scopus and contributor to several national and international conferences.

March 2013-December 2014

Assistant professor

May 2009-March 2012 *Politecnico di Milano*, Dept. of Chemistry, Materials and Chemical Engineering “G. Natta” – Via Mancinelli 7, 20131 Milan, Italy

September 2012-January 2013 Visiting professor

Masdar Institute of Science and Technology, Abu Dhabi, United Arab Emirates - @ LENS group

Scientific activity:

- Analysis of surface properties of titanium dioxide nanopowders for self-cleaning applications, studied with FT-IR (Fourier transform Infrared) spectroscopy and advanced AFM (Atomic Force Microscopy) techniques. Microstructural and electrical investigation of anodic films on titanium showing memristive behaviour by C-AFM (conductive AFM).

June 2012-February 2013 Postdoc

January 2009-April 2009

Politecnico di Milano, Dept. of Chemistry, Materials and Chemical Engineering “G. Natta”

Scientific activity:

- See current position

Teaching activity:

- Academic year 2008-2009 at Politecnico di Milano: adjunct lecturer in Materials for architecture (Bachelor Degree) at Polo di Piacenza
- Assistant in corrosion classes (Master Degree for international students)
- Seminars, practices and laboratories in the following classes (Chemical Engineering, Materials Engineering, Design):
- Materials science and technology, Corrosion and protection of metals, Cementitious and ceramic materials, Materials for Design.
- Laboratories for Eni Corporate University formation classes on Corrosion and corrosion control in oil and gas industry.

SCIENTIFIC ROLES

2018-present **Member of editorial board of the Journal “Frontiers in Chemistry” – section Catalysis and Photocatalysis**

Reviewer Editor

2008-2012 **Member of technical committee in the Sustainable Industries track of Clean Technology Conference and Expo**

Selection of submitted works for the annual international conference

2008-2012 **Scientific secretary of the annual AIMAT PhD school**

Coordination of the PhD summer school organized by AIMAT – Italian association for Materials Engineering

Projects 2016-2018 **Cariplo-Lombardia region 2016 – Increasing attractiveness of the lombard research system and competitiveness of ERC candidates**

Research project: ProActiv-MOX - PROMoting research on AnodiC memristive Metal OXide films for nanoelectronics. Role: PI

2016-2018 **POR Competitiveness 2014-2020 – Smart fashion and design**

Research project: “Filo di luce”. Role: collaborator.

2014-2015 **Progetto Rocca seed fund for Politecnico di Milano – MIT collaborations 2014**

Research project: “Correlating grain boundary crystallography to the onset of localized corrosion”. Role: Local PI.

2010-2011 **INSTM-Lombardia region 2012**

Research project: “Superfici Intelligenti per il Miglioramento della Qualità dell’aria in ambienti Indoor (SIMQUI)”. Role: collaborator.

2009-2011 **POR Competitiveness 2007-2013 – Call for industrial research and development in energy efficiency funded by Lombardia region**

Research project: “MANTELLO: Materiali e Packaging a MANtenimento TERMico per il Risparmio Energetico nelLa LOGistica e nel Trasporto di Prodotti Alimentari Freschi”. Role: collaborator.

2010-2011 **PRIN (research projects of national relevance) 2007**

Research project: "Nanotechnologies and functionalization of surfaces for the Made in Italy". Role: collaborator.

Honours and awards	2007 Progetto Rocca Visiting Student Fellowship Collaboration project between Politecnico di Milano and MIT, 2007
Conference organization	Member of the organizing committee of the international conference "SMT30 - 30 th international conference on surface modification technologies" (Milan, 29/06-1/7, 2016). Member of the organizing committee of the national conference "Pietro Pedferri e la scuola di corrosione e protezione dei materiali al Politecnico di Milano" (Milan, 26-27/09, 2013)
Reviewer activity	Reviewer of scientific papers for international Journals in the field of materials science and engineering (e.g., <i>Frontiers in Chemistry</i> , <i>Journal of Hazardous Materials</i> , <i>Corrosion Science</i> , <i>Journal of Materials Research</i> , <i>Journal of Materials Science</i> , <i>Photochemistry and Photobiology</i> , <i>Construction and Building Materials</i> , <i>Surface and Coatings Technology</i> , and others). Reviewer of book proposals for Elsevier.
Thesis management	Coordination and co-supervision of 1 research fellow and more than 40 BD and MD theses at Politecnico di Milano, among which 10 Master Degree theses in Materials Engineering and Nanotechnologies and 2 in Chemical Engineering. Most theses were focused on titanium dioxide production and applications, while some of them were related to localized corrosion on steel alloys.

EDUCATION AND TRAINING

January 2006-April 2009	PhD in Materials science and engineering <i>Politecnico di Milano</i> , Dipartimento di Chimica, Materiali e Ingegneria Chimica "G. Natta" ▪ Supervisors: Prof. Pietro Pedferri, Prof. Luciano Lazzari.
February 2007-July 2007	Visiting student <i>Massachusetts Institute of Technology</i> , Cambridge, MA ▪ Supervisor: Prof. Chris Schuh, DMSE - Dept. of Material Science and Engineering ▪ Surface preparation of metals; morphological and crystallographic analyses, study of correlation between crystallographic texture and anodic oxidation phenomena. Acquisition of technical skills and data interpretation skills in the use of characterization instruments: SEM and EBSD equipment, reflectometry analyses for thickness evaluation.
March 2006-April 2006	Visiting student <i>Università degli Studi di Palermo</i> , Palermo, Italy" ▪ Supervisor: Prof. Francesco Di Quarto, Dept. of Chemical Engineering, Processes and Materials ▪ Laboratory activity mainly concerning: surface preparation of metals, electrochemical impedance spectroscopy analyses, photoactivity measurements on titanium oxides obtained by means of anodizing processes; acquisition of skills in investigation techniques and data interpretation
February 2005-June 2005	Permanent training course: Materiali e le tecniche di interesse per la conservazione dei beni culturali (Materials and techniques for the conservation of cultural heritage) Politecnico di Milano, Dipartimento di Chimica, Materiali e Ingegneria Chimica "G. Natta"
2003-2005	Master degree in Materials engineering – 110/110L Politecnico di Milano, Dipartimento di Chimica, Materiali e Ingegneria Chimica "G. Natta"
2000-2005	Bachelor degree in Materials engineering – 100/110 Politecnico di Milano, Dipartimento di Chimica, Materiali e Ingegneria Chimica "G. Natta"

ADDITIONAL INFORMATION

Mother tongue(s) Italian

Other language(s) English, French

UNDERSTANDING		SPEAKING		WRITING
Listening	Reading	Spoken interaction	Spoken production	
C1	C1	C1	C1	C1
Replace with name of language certificate. Enter level if known.				
A2	B1	B1	A2	A2
Replace with name of language certificate. Enter level if known.				

Levels: A1/2: Basic user - B1/2: Independent user - C1/2 Proficient user
Common European Framework of Reference for Languages

SELECTED JOURNAL PUBLICATIONS (2014-present)

- Prando D., Brenna A., Diamanti M.V., Beretta S., Bolzoni F., Ormellese M., Pedferri M., Corrosion of titanium: Part 1: Aggressive environments and main forms of degradation. *Journal of Applied Biomaterials and Functional Materials* 2017, 15:e291-e302
- Diamanti M.V., Noori S., Pedferri M.P., Ormellese M., Characterization of the corrosion resistance of steel alloys in imidazolium based ionic liquids [Caratterizzazione della resistenza a corrosione di leghe ferrose in liquidi ionici a base imidazolo]. *Metallurgia Italiana* 2017, 109:11-14
- Raffaini G., Ganazzoli F., Diamanti M.V., Ormellese M., Molecular modeling of organic inhibitors in concrete [Modellazione molecolare di inibitori organici nel cemento]. *Metallurgia Italiana* 2017, 109:103-106
- Diamanti M.V., Del Curto B., Ormellese M., Bolzoni F., Cilluffo G., On the use of nitrates as corrosion inhibitors for concrete rebars [Utilizzo di nitrati come inibitori di corrosione per le armature nel calcestruzzo]. *Metallurgia Italiana* 2017, 109:55-58
- Prando D., Brenna A., Bolzoni F.M., Diamanti M.V., Pedferri M., Ormellese M., Electrochemical anodizing treatment to enhance localized corrosion resistance of pure titanium. *Journal of applied biomaterials & functional materials* 2017, 15:e19-e24
- Prando D., Diamanti M.V., Brenna A., Ormellese M., Pedferri M.P., Photoactive TiO2 films produced with different techniques in anodic spark deposition regime. *Advanced Science Letters* 2017, 23:5962-5965
- Paolini R., Sleiman M., Pedferri M., Diamanti M.V., TiO2 alterations with natural aging: Unveiling the role of nitric acid on NIR reflectance. *Solar Energy Materials and Solar Cells* 2016, 157:791-797
- Prando D., Brenna A., Diamanti M.V., Pedferri M., Ormellese M., Electrochemical anodizing treatment to improve the corrosion resistance of commercially pure titanium [Trattamenti superficiali di anodizzazione per incrementare la resistenza a corrosione del titanio commercialmente puro]. *Metallurgia Italiana* 2016, 108:5-12
- Marelli M., Evangelisti C., Diamanti M.V., Dal Santo V., Pedferri M.P., Bianchi C.L., Schiavi L., Strini A., TiO2 Nanotubes Arrays Loaded with Ligand-Free Au Nanoparticles: Enhancement in Photocatalytic Activity. *ACS Applied Materials and Interfaces* 2016, 8:31051-31058
- Marin E., Diamanti M.V., Boffelli M., Sendoh M., Pedferri M.P., Mazinani A., Moscatelli M., Del Curto B., Zhu W., Pezzotti G., Chiesa R., Effect of etching on the composition and structure of anodic spark deposition films on titanium. *Materials and Design* 2016, 108:77-85
- Bettini L.G., Diamanti M.V., Sansotera M., Pedferri M.P., Navarrini W., Milani P., Immobilized TiO2 nanoparticles produced by flame spray for photocatalytic water remediation. *Journal of Nanoparticle Research* 2016, 18:, 238,-
- Diamanti M.V., Velardi U.V., Brenna A., Mele A., Pedferri M., Ormellese M., Compatibility of Imidazolium-Based Ionic Liquids for CO2 Capture with Steel Alloys: A Corrosion Perspective. *Electrochimica Acta* 2016, 192:414-421
- Piazza V., Mazare A., Diamanti M.V., Pedferri M.P., Schmuki P., Key oxidation parameters that influence photo-induced properties and applications of anodic titanium oxides. *Journal of the Electrochemical Society* 2016, 163:H119-H127
- Diamanti M.V., Pozzi P., Randone F., Del Curto B., Pedferri M.P., Robust anodic colouring of titanium: Effect of electrolyte and colour durability. *Materials and Design* 2016, 90:1085-1091
- Pisello A.L., Paolini R., Diamanti M.V., Fortunati E., Castaldo V.L., Torre L., Nanotech-based cool materials for building energy efficiency. *Nano and Biotech Based Materials for Energy Building Efficiency* 2016, 245-278
- Bolzoni F., Beretta S., Brenna A., Diamanti M.V., Lazzari L., Ormellese M., Pedferri M.P., Evaluation of additional protection methods to control reinforcement corrosion. *Key Engineering Materials* 2016, 711:37-44
- Diamanti M.V., Pisoni R., Cologni A., Brenna A., Corinto F., Pedferri M.P., Anodic oxidation as a means to produce memristive films. *Journal of Applied Biomaterials and Functional Materials* 2016, 14:e290-e295

18. Lai C.-Y., Cozzolino M., Diamanti M.V., Al Hassan S., Chiesa M., Underlying Mechanism of Time Dependent Surface Properties of Calcite (CaCO₃): A Baseline for Investigations of Reservoirs Wettability. *Journal of Physical Chemistry C* 2015, 119:29038-29043
19. Omar Y.M., Maragliano C., Lai C.-Y., Iacono F.L., Bologna N., Diamanti M.V., Shah T., Ghaferi A.A., Chiesa M., Multi-wall carbon nanostructured paper: Characterization and potential applications definition. *Materials Research Express* 2015, 2, 095601,-
20. Diamanti M.V., Paolini R., Rossini M., Aslan A.B., Zinzi M., Poli T., Pedferri M.P., Long term self-cleaning and photocatalytic performance of anatase added mortars exposed to the urban environment. *Construction and Building Materials* 2015, 96:270-278
21. Lo Iacono F., Bologna N., Diamanti M.V., Chang Y.-H., Santos S., Chiesa M., General parametrization of persisting long-range nanoscale phenomena in force measurements emerging under ambient conditions. *Journal of Physical Chemistry C* 2015, 119:13062-13067
22. Diamanti M.V., Magagnin L., Thin metal oxide films for functional and decorative advanced applications. *Current Nanoscience* 2015, 11:262-
23. Diamanti M.V., Pedferri M.P., Bioinspired self-cleaning materials. *Biotechnologies and Biomimetics for Civil Engineering* 2015, 211-234
24. Diamanti M.V., Garbagnoli P., Del Curto B., Pedferri M.P., On the growth of thin anodic oxides showing interference colors on valve metals. *Current Nanoscience* 2015, 11:307-316
25. Diamanti M.V., Ormellese M., Pedferri M., Application-wise nanostructuring of anodic films on titanium: a review. *Journal of Experimental Nanoscience* 2015, 10:1285-1308
26. Diamanti M.V., Pérez Rosales E.A., Raffaini G., Ganazzoli F., Brenna A., Pedferri M., Ormellese M., Molecular modelling and electrochemical evaluation of organic inhibitors in concrete. *Corrosion Science* 2015, 100:231-241
27. Diamanti M.V., Souier T., Stefancich M., Chiesa M., Pedferri M.P., Probing anodic oxidation kinetics and nanoscale heterogeneity within TiO₂ films by Conductive Atomic Force Microscopy and combined techniques. *Electrochimica Acta* 2014, 129:203-210
28. Diamanti M.V., Ormellese M., Del Curto B., Pedferri M.P., Tuning of anodic oxidation parameters for the production of nanostructured TiO₂ films. *Metallurgia Italiana* 2014, 106:47-50
29. Del Curto B., Garbagnoli P., Diamanti M.V., Masconale V., Pedferri M.P., Engineering processes for jewellery design. *International Journal of Designed Objects* 2014, 7:1-8

Milan, February 27th 2018

Maria Vittoria Diamanti