

CURRICULUM VITAE (November 2023)

Mario Chiesa



Nationality Italian

Place/date of birth Bra (CN) / 03.05.1971

CURRENT/PAST POSITIONS

2018- Full Professor of Inorganic Chemistry, Department of Chemistry, University of Torino

2011-2018 Associate Professor, Department of Chemistry, University of Torino

2006-2011 Researcher, Department of Chemistry, University of Torino

2004-2005 Post-Doctoral Research Scientist, Department of Chemistry, University of Torino

2002-2003 Post-Doctoral Research Scientist, National Institute for the Physics of Matter (INFN), Torino

1997-1998 Scientist, Tribological Polymers Dept., T&N Technology Ltd. (Private Company) Cawston House, Cawston Rugby, U.K.

EDUCATION

2002 Ph.D. in Chemistry, Cardiff University, UK. Supervisor Dr. Damien Murphy.

1996 Degree in Chemistry, University of Torino.

AWARDS

2001 Jeol Prize of the Royal Society of Chemistry ESR Spectroscopy Group.

1999-2001 Marie Curie fellowship. "Probing the Novel Magnetic Properties of Surface Trapped Electrons" (ERB4001GT974510)

VISITING

2005 Visiting Researcher, Department of Physics of the University of Antwerp, Belgium

(Prof. Sabine van Doorslaer)

2003 Visiting Researcher, Department of Chemistry of the Jagiellonian University, Krakow,

Poland (Prof. Zbigniew Sojka)

MAIN RESEARCH ACTIVITY

The research interests are broadly based in the use of EPR spectroscopy for the understanding of open-shell electronic structure, with applications ranging from catalysis to quantum information science.

Relevant topics are:

- Surface and interfacial coordination chemistry of inorganic solids and heterogeneous catalysis.
- Application and implementation of Electron Magnetic Resonance methods to the study of spin centres for applications in catalysis, quantum information technologies and biochemistry.

RESEARCH PERFORMANCE

- Research funding: 9 individual grants (overall budget 3526 k€) as Principal Investigator.
- Publications: 163 publications in high ranking peer refereed international journals with over 4800 citations and h index=35. Cumulative impact factor (2020-2023) 1024. Over 40 oral presentations at national and international meetings and conferences and 25 invited lectures.
- Career supervision: 13 PhD students and 15 master thesis students.

FUNDING ID

Individual grants

2023 - Coordinator PRIN2022PNRR " Exploring Spin Dynamics of Earth Abundant Transition Metal Ion Complexes as MRI Diagnostic Probes" k€ 108.3

2023 - Principal local investigator PRIN2022 " Synthetic and Structural Synergy Towards Advanced Heterogeneous Photoredox Catalysis" k€ 69

2022 – Affiliated entity HEU ERC - European Research Council Synergy Grants “Chirality and spin selectivity in electron transfer processes: from quantum detection to quantum enabled technologies” k€ 170.4

2018- Coordinator H2020-MSCA-ITN-EJD 2018 813209 PARACAT "Paramagnetic Species in Catalysis Research. A Unified Approach Towards Heterogeneous, Homogeneous and Enzyme Catalysis" k€ 2600.

2018- Principal local investigator PRIN2017 "Quantum detection of chiral-induced spin selectivity at the molecular level" k€ 98.3

2016 Principal local investigator PRIN2015 "Quantum Coherence in Nanostructures of Molecular Spin Qubits" k€ 85.28

2012-2015 Principal Investigator in the project: “Direct insight into elusive active Ti species of high-yield Ziegler Natta catalysts.” k€ 190. Funded by Dutch Polymer Institute (DPI)

2010 Principal Investigator in the project “Fluid dynamic and kinetic studies of the chemical events occurring in exhaust gases, with particular reference to the abatement of NOx with SCR technology” k€ 22.8. Funded by Magneti Marelli S.p.A. (Private Company).

2007 Principal Investigator in the project "NO_x Diesel reduction by means of on board generated ammonia for Euro 6 emission compliant vehicles" k€ 182. Funded by Piemonte Region (CIPE Bando Ricerca Scientifica 2006).

Grants as member of research group

2012-2014 "Oxides at the nanoscale: multifunctionality and applications" FIRB - Italian Ministry of Research.

2010-2012 "New generation photosensitive semiconducting oxides modified with non metals to enhance solar light harvesting. Design, synthesis, characterisation and testing. PRIN – Italian Ministry of Research

Other projects as member of research groups include:

2006-2010 COST Action D-41 "Inorganic Oxides: Surfaces and Interfaces"

2005-2007 "Novel electronic and chemical properties of metal oxides by doping and nanostructuring" Ministry of Education, University and Research

2000-2005 COST Action D-19 "Chemical Functionality Specific to the Nanometer Scale"

INVITED LECTURES

1. SEMINARIO "Dropping electrons on nanostructured surfaces" Hahn-Meitner-Institut, Berlin. Department of Heterogeneous material systems. "Porous Semiconductor – Science and Technology" June 2004.
2. SEMINARIO "The nature of the chemical bond between metal atoms and oxide surfaces. New evidences from spin density studies of K atoms on alkaline-earth oxides" Università degli studi di Modena e Reggio Emilia, Dpt. Fisica. Ottobre 2005
3. INVITED LECTURE "Expanded metal atoms stabilized at the surface of ionic insulators" 6th European Federation of EPR groups meeting. Madrid, Spain, September 2006.
4. SEMINARIO "Interazione di atomi del gruppo IA con ossidi ionici. La superficie come agente solvatante". Università degli studi di Firenze, Dpt. di Chimica, Settembre 2007.
5. SEMINARIO: "Pulse EPR Techniques in Surface Chemistry and Catalysis." University of Krakow Dept. of Chemistry, Aprile 2011.
6. KEY NOTE LECTURE "Surface Chemistry and Pulse EPR" 1st Joint Meeting ARPE-GERPE-GIRSE. Palermo, Italia, 2012.
7. INVITED SEMINAR "Application of EPR Spectroscopy to Ziegler Natta Catalysis and Polyolefin Degradation" Japan Advanced Institute of Science and Technology (JAIST) Maggio 2013
8. INVITED LECTURE "Advanced EPR Techniques in Surface Chemistry and Catalysis" 35 th FGMR Discussion Meeting and Joint Conference of the German, Italian and Slovenian Magnetic Resonance Societies. September 9 to 12, 2013, Frauenwörth, Germany.
9. INVITED LECTURE "Probing the Nature of Ti³⁺ Centres in Heterogeneous Ziegler Natta Catalysts" World Polyolefine Congress 2015. November 23-27, 2015, Tokyo, Japan.
10. INVITED LECTURE "Rational Design of Engineered Multifunctional Heterogeneous Catalysts. The Role of Advanced EPR Techniques." 49th Annual International Meeting of the ESR Spectroscopy Group of the Royal Society of Chemistry 3rd-7th April 2016. Colchester, UK.

11. INVITED LECTURE "Advanced EPR methods for the characterization of heterogeneous catalysts: the role of hyperfine techniques" Symposium Applications of EPR spectroscopy to catalysis research" 22 July 2016 Harwell Catalysis Hub, Oxford, UK
12. INVITED LECTURE "Structure-Reactivity Relationships in Heterogeneous Catalysis Revealed by Advanced EPR Techniques." 13th EUROMAR Meeting July 2-6, 2017 Warsaw, Poland
13. KEY NOTE "Exploring and Engineering Spin-states in Solid State and Surface Chemistry" XXVI Congresso Nazionale SCI 10-14 Settembre 2017 Paestum Salerno, Italy
14. INVITED LECTURE "Advanced EPR Methods in the Characterization of Functional Materials" 8th North America-Greece-Cyprus Workshop on Paramagnetic Materials. 18-22 June 2018 Sparta, Greece.
15. PLENARY LECTURE "Surface Chemistry and Catalysis by EPR: Concepts, Examples and Perspectives" XI EFEP Conference, September 1-5, 2019 Bratislava
16. INVITED LECTURE "Surface Coordination Chemistry of Single Magnetic Atoms" 2023 Joint CTMNM/NAGC Conference May 7-12, 2023 Spetses, Greece.
17. KEY NOTE "17O Hyperfine Spectroscopy in Surface Chemistry and Catalysis" 19th EUROMAR Meeting July 9-13, 2023 Glasgow, UK
18. INVITED LECTURE "Surface Chemistry and Catalysis by EPR" International Workshop „EPR for Catalysis Research“ 10-13 September 2023 Schloss Ringberg, Germany.

TEACHING

General Chemistry Course for the second year of Physics (Bachelor)

Inorganic Chemistry for the second year of Chemistry (Bachelor)

Magnetic Resonance Course for the Master Degree in Chemistry

Invited Lecturer at International and National Advanced Schools:

2023 EF-EPR School Geneva (Switzerland)

2018 International EPR School Marseille and Carry-Le-Rouet (France)

2017 National NMR School (University of Torino, Italy)

2016 International Joint School "Smart Nanomaterials and X-ray Optics 2016 Modeling, Synthesis and Diagnostics" (Kaliningrad, Russia)

2012 International EuCheMS-SCI School on "Synthesis and Characterization of Novel Nano-Sized Inorganic Materials" (University of Bari, Italy)

2009 International COST Winter School "Methods to Characterize Oxide Surfaces" (Fritz-Haber-Institut der Max-Planck-Gesellschaft, Berlin, Germany)

2009 National Electron Paramagnetic Resonance School (University of Firenze, Italy)

2003 National Electron Paramagnetic Resonance School (University of Urbino, Italy)

NATIONAL AND INTERNATIONAL COOPERATION:

Prof. Roberta Sessoli, Dpt. Of Chemistry University of Florence

Prof. Paolo Fornasiero, Dpt. of Chemistry University of Trieste

Prof. Mauro Botta, Dpt. of Chemistry University of Piemonte Orientale

Prof. Sabine Van Doorslaer Dpt. of Physics University of Antwerp, Belgium.

Prof. Zbigniew Sojka, Dpt. of Chemistry, University of Krakow, Poland.

Prof. Damien Murphy, School of Chemistry University of Cardiff, UK.

ORGANIZATION OF INTERNATIONAL MEETINGS:

2021 International School on Inorganic Materials - Società Chimica Italiana

2021 Chemistry at the Surface - International Workshop

2016 Xth Conference of the European Federation of EPR groups (EFEPR)(Local organizer)

2010 Annual Meeting of the COST Action D41 "Inorganic Oxides: Surfaces and Interfaces" Torino, October 7-9, 2010

2008 COST Action D41 WG2 Meeting "Inorganic Oxides: Surfaces and Interfaces" Verbania, April 10-11,

OTHERS:

External examiner for PhD defense at the Dpt. of Physics University of Antwerp, Belgium and University of Lille, France, University of Manchester, UK.

Member of the scientific board of the Division of Inorganic Chemistry of Società Chimica Italiana (SCI)

Coordinator of the PhD Programme in Chemical and Material Sciences of the University of Torino.

President of the Master course (Laurea Magistrale) in Chemistry at the University of Torino