

## Curriculum vitae

### PERSONAL INFORMATION

Bordiga Silvia  
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### EDUCATION

1993 PhD in Chemical Science: “New structures in zeolites: synthesis, characterization and properties”.  
1988 Master Degree in Chemistry (110/110 with laude).

### Current and Past positions

2016 - present Full professor, Department of Chemistry, University of Turin, Italy  
2012 - 2020 Professor II, Department of Chemistry, University of Oslo, Norway  
2001 -2016 Associate professor, Department of Chemistry, University of Turin, Italy  
1995 - 2001 Researcher, Department of Chemistry, University of Turin, Italy

### Present teaching activities

Master in Chemistry: Catalysis; Master in Material Science: Surface phenomena at the micro and nano scale; Bachelor in Material Science: Materials for Energy;

### PUBLICATION RECORDS

Number of papers **487**. Citations received per year in the 1989 to 2022 period according to Scopus, overall citations: **47.520**; **h-index: 112**; **4** Popular papers, and **8** video-camera exposures.

### EXPERIENCE

I have always applied spectroscopic methods to achieve a detailed understanding of the physicochemical nature of a large variety of nanostructured high surface area materials that find applications as heterogeneous catalysts. The peculiarity of my work is to develop a versatile experimental platform based on the combined use of laboratory spectroscopies and advanced techniques available at the synchrotron beam lines in controlled atmosphere. Broad aim of the work is to describe the structure and the number of the active sites; the reaction mechanisms; the origin of catalysts deactivation. Most of these activities are performed thanks to the collaboration with industrial partners. Relevant examples are: 1) TS-1 (Titanium silicalite) a unique catalyst for selective partial oxidation with H<sub>2</sub>O<sub>2</sub>; 2) Fe-Zeolites, a relevant catalyst in partial oxidation with N<sub>2</sub>O; 3) H-Zeolites used for Methanol to hydrocarbon/olefin processes; 3) Cu-exchanged zeolites for ammonia selective catalytic reduction and direct synthesis of Methanol from Methane. More recently I'm actively working to the development of the emerging field of Porous Metallorganic Frameworks, both contributing to the understanding of known materials and researching new ones for specific applications (e.g. in collaboration with Oslo University: discovery of UiO-66 metallorganic framework topology that is a very thermal and chemical stable metallorganic framework; in collaboration with Berkeley university: disclosure of the reaction mechanism of CO<sub>2</sub> adsorption on post-synthetic modified metallorganic framework). The commune denominator of my interests is the broad concept of **sustainability**, strongly interconnected with the **energy efficiency** and of the **integration of resources** (possibly renewable) to allow a sustainable grow of our society.

I am also strongly involved in dissemination, communication, and teaching. Since many years I organize and take part to “third mission” activities, presenting talks at different audiences with the scope of engaging people of any age, towards a better knowledge of our planet, showing the limitation of its resources, risks in exploiting them, opportunities in reduce waste and develop a sustainable growth. Finally, being the President of the Master Course in Materials Science in the period 2015-2021 (one of the few courses at the university of Turin, fully given in English), I favoured access to

the course for international students, encouraging those from countries under development. From 2022 I'm the coordinator of the Internationalization commission of the Chemistry Department at the Turin University.

### **Contract with industries**

BASF (TiO<sub>2</sub> based materials for photocatalysts) 2009-2011; Topsøe (developments of new zeolitic materials) 2008-2016; Saes Getters (new getters for H<sub>2</sub>O and CO<sub>2</sub>) 2011-2013; ENI (Ethylene Polymerization catalysts) 2011-2013; Infineum (Molibdenum sulphides as lubricant); 2013-2014; Evonik (Ti-silicalites) 2013-2016; 2018-2019 Umicore (NH<sub>3</sub>-SCR DeNO<sub>x</sub> catalysts).

### **Major collaborations** (outside of the University of Turin)

Karl Petter Lillerud, Unni Olsbye, Stian Svelle, Petra Agota Szilagyí (Department of Chemistry, University of Oslo, Norway); Mircea Dinca (Massachusetts Institute of Technology, USA); Veronique Van Speybroeck (University of Gent, Belgium); Jeroen Anton Van Bokhoven (ETH Zurich, Switzerland); Jorge Gascon (KAUST, Saudi Arabia); Richard Blom and Carlos Grande (SINTEF, Norway); Pablo Beato (HTAS, Denmark); Alessandra Quadrelli (École Supérieure de Chimie Physique Électronique de Lyon, France); Marco Daturi (Laboratoire, Catalyse and spectrochimie, Caen, Normandia, France) Johan Martens (Centre for Surface Chemistry and Catalysis, KU Leuven, Belgium); Alexander Soldatov (Southern Federal University, Rostov-on-Don, Russia) Russell Morris (School of Chemistry, St. Andrews University, UK); Norbert Stock (Institut für Anorganische Chemie, Christian-Albrechts Universität zu Kiel, Germany); Jeffrey Long (Department of Chemistry, University of California, Berkeley, USA); Fabrizio Cavani (Department of Industrial Chemistry «Toso Montanari», University of Bologna, Italy); Leonardo Marchese (Piemonte Orientale University); Claudio Gerbaldi (Polytechnic of Turin); Franz Schmidt (Active Oxygens-Performance Oxidants, Evonik); Roberto Millini, Giuseppe Bellussi (Eni); Pascal Raybaud (Direction Catalyse et Séparation IFPEN); Ton V.W. Janssens, (Umicore); Peter N.R. Vennestrøm, (Umicore);

### **Institutional responsibilities and awards**

- 2023- Socio Corrispondente dell'Accademia dei Lincei
- 2021 Accademia dei Lincei prize: "Antonio Feltrinelli"
- 2021- Member of the Editorial Board of Journal of Catalysis.
- 2020- Associate Editor of ACS Catalysis
- 2020- Member of EFCATS Council
- 2019 Wilhelm Manchot Research Professorship of the Dep. of Chemistry- TUM Germany
- 2018/2019 Chemistry Europe Fellowship
- 2019 The Francois Gault Lectureship Award from the European Federation of catalysis Societies (EFCAT)
- 2019-2020 Member of the Editorial Advisory Board (EAB) of ACS Catalysis.
- 2017 Prize from the French Chemical Society (bilateral prize France – Italy).
- 2015-2018 Int. advisor for DEFNET project (EU MC ETN <http://www.defnet-etn.eu/> via H2020).
- 2015-2020 Directive member of Interdivisional Group of Catalysis of the Italian Chemical Society.
- 2012-2021 Director of INSTM Reference Centre at University of Torino.
- 2012-2016 Director of Interdepartmental Centre NIS at University of Torino.
- 2012-2015 Board member of International Acid-Base Catalysis (ABC) group
- 2008-2020 Member of "Consiglio Direttivo" of INSTM ("Consorzio Interuniversitario per la scienza e tecnologia dei materiali").
- 2003-2012 Member of the Scientific Committee of the Centre of Excellence NIS at the Un. of Torino.

### **Recent EU fundings as PI (last 5 years)**

- 2023-2027 ITN HORIZON-MSCA-DN-2021-Doctoral Network DEMO: Discovery of efficient Enzyme-like Metal Organic frameworks to activate biomethane at low temperature
- 2020-2026 ERC-Synergy Unravelling the secrets of Cu-based catalysts for C-H activation. (CUBE)
- 2019-2023 CE-SC3-NZE-2-2018 – Conversion of captured CO<sub>2</sub>, RIA. COZMOS.

