

## Marco Panizza

Full Professor

### EDUCATION AND TRAINING

1997

**Degree in Chemical Engineering**

Electrode materials for the application of electrochemical technologies in the treatment of industrial wastewater – 110/110 cum laude  
University of Genoa – Genoa – IT

2001

**PhD in Chemistry for Engineering**

Electrochemical oxidation of organic substances for the treatment of industrial effluents  
University of Genoa – Genoa – IT

### PROFESSIONAL HISTORY

2001 – 2005

**Postdoctoral Fellow**

University of Genoa – Genoa – IT

2005 – 2014

**Permanent Researcher – Scientific Disciplinary Sector: CHIM/07**

University of Genoa – Genoa – IT

2014 – 2019

**Associate Professor – SSD CHIM/07**

University of Genoa – Genoa – IT

2019 – Present

**Full Professor – SSD CHIM/07**

University of Genoa – Genoa – IT

### ACADEMIC APPOINTMENTS

2019 – 2025

**Study Program Coordinator**

Coordinator of the Bachelor's and Master's Degree Programs in Chemical and Process Engineering  
University of Genoa – Genoa – IT

## EXPERIENCE

### MAIN SEMINARS

2006

M. Panizza, R. Ricotti, G. Cerisola, "Electrochemical oxidation of synthetic dyes"  
ISE 2006, Edinburgh, 27 August – 1 September 2006 (Invited lecture)

2006

M. Panizza et al., "Electrochemical Processes for the Degradation of Synthetic Dyes"  
XXII Congress of the Italian Chemical Society, Florence, 10–15 September 2006 (Invited lecture)

2019

M. Panizza, D. Clematis, "Past and present of electrochemical treatment of organic pollutants"  
Italian Electrochemistry Days, Padua, 8–12 September 2019 (Invited lecture)

### SCIENTIFIC RESPONSIBILITY FOR RESEARCH PROJECTS ACCEPTED FOR FUNDING ON THE BASIS OF COMPETITIVE CALLS INVOLVING PEER REVIEW

2018 POR FESR LIGURIA 2014-2020 – AXIS 1 "Research and Innovation (OT1)", ACTION 1.2.4, in collaboration with POSEICO Spa  
"Study and definition of the battery pack aimed at optimization, efficiency, and reduction of weight and volume. Instrumental evaluation of the characteristics of different batteries"

2011 MIUR Program Law 297

"Study of technologies for the large-scale generation of hydrogen from renewable sources for land-marine transport and distributed generation"

2011 University Research Project

"Characterization of electrode materials for the electrochemical oxidation of effluents containing organic compounds"

2010 University Research Project

"Production and use of hydrogen in high-temperature fuel cells"

### TEACHING OR RESEARCH POSITIONS (FELLOWSHIPS) AT FOREIGN UNIVERSITIES AND RESEARCH INSTITUTES

2009

Visiting Professor at Université Paris-Est Marne-la-Vallée (France)

### EDITORSHIP OR PARTICIPATION IN EDITORIAL BOARDS OF JOURNALS, PUBLISHING SERIES, ENCYCLOPAEDIAS AND TREATISES

2009 Guest Editor of the Journal of Applied Electrochemistry, Vol. 39 (11)

Member of the Editorial Board of "The Open Hydrology Journal" (Bentham Open, ISSN 1874-3781)

Member of the Editorial Board of "Research & Reviews in Electrochemistry" (ISSN: 0974-7540)

#### PRIZES AND ACCOLADES FOR SCIENTIFIC ACTIVITY, INCLUDING MEMBERSHIP OF ACADEMIES

**2002** Award from the Italian Chemical Society – “Oronzio De Nora Foundation” for PhD Thesis  
Thesis: “Electrochemical oxidation of organic substances for the treatment of industrial effluents”

**2005** Award from the International Society of Electrochemistry (ISE) – Oronzio De Nora Foundation on “Electrochemical Technology and Engineering”  
Research on “innovative electrode materials and electrocatalysis for the electrochemical incineration of organic pollutants in aqueous solution”

#### OTHER EXPERIENCES

Since the XXXIII cycle: Member of the Academic Board of the PhD Program in Civil, Chemical and Environmental Engineering, DICCA, University of Genoa

PhD Student Supervision:

**Cycle XXX** – Lin Chen – PhD in Chemical and Materials Science and Technologies, Curriculum: Nanochemistry (IIT)  
Thesis: “Investigation of Inorganic Nanocrystals as Electrode Material for Lithium and Sodium Ion Batteries”

**Cycle XXXI** – Davide Clematis – PhD in Civil, Chemical and Environmental Engineering, Curriculum: Chemical, Materials and Process Engineering  
Thesis: “Among old materials and different approaches to enhance stability and electrochemical activity of Solid Oxide Cells”

**Cycle XXXVIII** – Ekaterina Skolotneva – PhD in Civil, Chemical and Environmental Engineering, Curriculum: Chemical, Materials and Process Engineering

## Interessi di ricerca

#### Advanced Electrochemical Oxidation Processes:

In this field, the research activities are primarily focused on evaluating the electrocatalytic properties of various electrode materials, both traditional (platinum, Dimensionally Stable Anodes, lead dioxide) and innovative (boron-doped diamond anodes, gas diffusion cathodes), for the electrochemical treatment of wastewater containing toxic organic compounds. Numerous synthetic solutions containing aromatic compounds (phenol, naphthol, chlorophenol, herbicides, dyes, etc.) as well as real effluents from chemical industries, landfills, and olive mills have been successfully treated.

#### Mathematical Modeling of Electrochemical Oxidation of Organic Pollutants:

Theoretical models, validated by experimental data, have been developed to predict the evolution of organic load and current efficiencies during electrochemical treatments of organic pollutants. These models also allow estimation of specific energy consumption and can serve as a tool for calculating the required electrode area during the design of electrochemical reactors.

**Study of Electrolytes and Electrode Materials for High-Temperature Fuel Cells:**

In the field of high-temperature fuel cells, electrochemical techniques have been used to study the electrode processes occurring in solid oxide fuel cells (SOFC) and molten carbonate fuel cells (MCFC), as well as high protonic and anionic conductivity electrolytes and the composition of cathode materials for SOFCs. The data obtained enabled the construction of both single anode-supported fuel cells and fuel cell stacks.