CURRICUL VITAE PROF. MARCELLA BINI

Prof. Marcella Bini
Full-time Associate Professor in Chemistry at Chemistry Department, Physical Chemistry Section (SSD CHIM/02), University of Pavia
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EDUCATION

School of Specialization in "Science and Technologies of Materials" – University of Pavia, 1998. Thesis "Structural study from powders in Material Science"
PhD in Chemical Sciences – University of Pavia, 1996. Thesis "Synthesis, structure and properties of lithium and manganese ternary oxides"
Degree in *Chemistry* – University of Pavia, 1992. Thesis "Study of the interaction of beta-cyclodextrin-water".

EMPLOYMENT HISTORY

2015-current	Associate Professor, SSD CHIM/02, Chemistry Department, Physical Chemistry Section, University of Pavia
2002-2015	Full time Researcher at the Chemistry Department, Physical Chemistry Section, University of Pavia
1998-2002	Graduate Technician at the Chemistry Department, Physical Chemistry Section, University of Pavia

TEACHING ACTIVITIES

2024-. She holds the module "Biophysics and Biocompatibility of Materials" of the course "Electronics and technology of materials applied to medicine" for the Bachelor in Cardiocirculatory Pathophysiology and Cardiovascular Perfusion Techniques
2016-current. She holds the "Physical Chemistry Laboratory III" for the Master degree in Chemistry
2014-current. She holds the "Characterization techniques of materials" for the Master degree in Chemistry
2013-current. She holds the "Introduction to the Material Science" course for the Bachelor in Chemistry (currently Introduction to the material Science with Laboratory)
2005-current. She holds the "Biomaterials" course for the Advanced Biotechnology and Bio-engineering Master Degrees

SUPERVISION OF STUDENTS

Prof. Marcella Bini supervised PhD students, several students of the Bachelor in Chemistry (compilation theses) and many students of the Master Degrees in Chemistry, Material Science Curriculum, Advanced Biotechnology and Bioengineering (experimental theses).

RESEARCH ACTIVITY

The research activity of Prof. Marcella Bini concerns the synthesis and the physico-chemical and electrochemical characterization of ceramic materials for applications in electrochemical devices (Li/Na ion batteries, fuel cells, sensors).
She extensively studied the Li-Mn-O system, in particular $LiMn_2O_4$ pure and doped, which has application as cathode material. Recently her scientific activity has been dedicated to materials such as $LiFePO_4$, $Li_2(Fe, Mn)SiO_4$, $FeNb_{11}O_{29}$, $ZnFe_2O_4$ pure or doped with transition metals, all of interest as cathode or anode materials in lithium batteries. She also dealt with solid electrolytes, such as Li garnet, particularly promising for the replacement of the classic liquid electrolytes in batteries. Even more recently, she started to study cathode materials for NIBs, in particular the layered polymorphs.
She also studies biomaterials and drug delivery systems based on inorganic systems such as hydroxyapatites and layered double hydroxides for the release of poorly water soluble active principles.

INSTITUTIONAL RESPONSIBILITIES

2019-current	Vice President of the Biotechnological Sciences Teaching Council
2014-current	She represents the Chemistry Department in the Technical Scientific Committee of the COR (Centro per l'Orientamento) of the University of Pavia
2013-current	Member of the "Commissione Paritetica" of the Chemistry Department
2007-current	Delegate for the Chemistry Degree at the COR (Centro per l'Orientamento) Institution of University of Pavia

ORGANISATION OF SCIENTIFIC MEETINGS

2014. She was part of the Organizing Committee of the 1st European Crystallography School (ECS1), Pavia 28 August-6 September 2014
2013. She was part of the Local organizing Committee of the National Conference of the Electrochemistry Division "GEI 2013, Italian Electrochemistry days", Pavia 22-27 September 2013

GRANTS

Principal investigator of the project

- Grant N° 2011-0325 from Fondazione Cariplo (2012-2014): "New electrolyte and electrode materials for thin-film lithium microbatteries".

OTHER ACTIVITIES

Prof. Bini is a reviewer for many peer-reviewed international journals: Electrochimica Acta, Journal of Solid State Chemistry, Journal of Inorganic and Organometallic Polymers and Materials, J. of Solid State Electrochemistry, Materials, Nanomaterials, Inorganics, Energy, Materials Chemistry and Physics, Journal of Materials Science: Materials in Electronics, Ceramics International and many others.
She is Member of the Editorial Board of Applied Sciences (MDPI) and Associate Editor for Frontiers in Material, Energy Materials board

BIBLIOGRAPHIC DATA (SOURCE GOOGLE SCHOLAR May 2024)

110 scientific publications on peer-reviewed international journals
3 invited book chapters
h-index=33
Citations=3391

Participation at several national and international conferences.

INVITED SPEAKER

2023. Operando XRD as an essential tool to unravel the electrochemical mechanisms of $FeNb_{11}O_{29}$, anode for LIBs. Workshop *BatSynch: the Battery Challenge at Synchrotrons*", Grignano (Trieste), November 29 th - 30th 2023

RECENT PUBLICATIONS

- M. Bini. FeNb11O29 and related niobate anodes for fast charging lithium-ion batteries: a review. J. Solid State Electrochem (Special Issue "Fast charging of LiBs - materials aspects and theoretical considerations") (2024), https://doi.org/10.1007/s10008-024-05847-0
- V. Friuli, L. Maggi, G. Bruni, F. Caso, M. Bini. Hydroxyapatite nanorods based drug delivery systems for Bumetanide and Meloxicam, poorly water soluble active principles. Nanomaterials (Special Issue "Nanoparticles in Drug Delivery Applications"), (2024), 14, 113. https://doi.org/10.3390/nano14010113
- D. Spada, M. Ambrosetti, M. C. Mozzati, B. Albini, P. Galinetto, A. Cini, M. Fittipaldi, M. Bini. Understanding the electrochemical features of $ZnFe_2O_4$, anode for LIBs, by deepening its physico-chemical properties. Mat. Res. Bull (2023), 160, 112132, doi.org/10.1016/j.materresbull.2022.112132
- D. Spada, M. Aramini, M. Fittipaldi, A. Cini, M. Fracchia, P. Ghigna, A. Girella, C. Milanese, M. Bini. Spectroscopic techniques and DFT calculations to highlight the effect of Fe3+ on the properties of FeNb11O29, anode material for Lithium-ion Batteries. J. Phys Chem C, (2022) 126, 4698-4709; doi: 10.1021/acs.jpcc.1c10573
- B. Albini, S. Restelli, M. Ambrosetti, M. Bini, F. D'Amico, M.C. Mozzati, P. Galinetto. Raman spectroscopy in pure and doped zinc ferrites nanoparticles. J. Materials Science: Materials in Electronics, (2023), 34, 1030, doi.org/10.1007/s10854-023-10464-0