Bianca Maria Bresolin

Doctor of Philosophy in Chemical Engineering
Environmental Engineer

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Feb 2017 – Feb 2021 **Ph.D. Chemical Engineering, Lappeenranta-Lahti University of Technology, Lappeenranta, Finland.**
Synthesis and performance of metal halide perovskites as new visible light photocatalysts.

Oct 2012 – Mar 2015 **M.Sc. Environmental Engineering, Università degli studi di Padova, Padova, Italy.**
Recovery of Rare earth elements (REEs) from exhausted fluorescent lamps by hydro-metallurgic methods.

Sep 2008 – Dec 2011 **B.Sc. Civil Engineering Università degli studi di Bologna, Bologna, Italy.**
Applications of geodetic GPS equipment in precision agriculture.

Others

Qualification *License for the profession of Engineer* (July 2015, Ordine degli Ingegneri di Vicenza, Vicenza, Italy)

Languages

Mother L. **Italian**

Other **English:** Proficient user (IELTS Academic English University of Cambridge, B2)
French: Basic user
German: Beginner

Last employment

Feb 2017 – Feb 2021 ***Junior researcher, department of Separation Science, School of Engineering Science, Lappeenranta-Lahti University of Technology LUT, Finland.***
Combination of technology, natural science and engineering to address future global energy and environment challenges, to produce new applications and new scientific knowledge. My work focuses on the preparation and performance evaluation of new materials for visible-light photocatalytic applications including wastewater treatment, water splitting, etc.

Previous experiences

Research expeditions Oct. 2019 – Oct. 2020 Visiting researcher, Department of Industrial Chemistry, University of Milano, Milano, Italy.
Jan. – May 2019 Visiting researcher, Department of Industrial Engineering, University of Padova, Padova, Italy.
Feb. – Aug. 2018 / May – Sept. 2019 Visiting researcher, Department of Photocatalysis and Nanotechnology, Institute of Technical Chemistry, Leibniz University, Hannover, Germany.
May 2016 – Feb. 2017 Researcher, Fellowship, Department of Industrial Engineering, University of Padova, Padova, Italy. GRANT 2016DII059: "Application of photocatalytic processes for food preservation".

Fellowship Stage Sept. 2015 – March 2016 Technical–sales engineer, Internship, ContecAQS S.r.l., Padova, Italy. Health, Safety and Environmental consultant.

Erasmus March 2013 – Aug. 2013 Erasmus period, Environmental Technology, WUR, Wageningen, The Netherlands.

Skills and competences

Analytical instruments HPLC, GC-MS, EPR, UV-VIS, ICP, (E)SEM, TEM, XRD, XPS, FT-IR, BET, PL, TOC, TAS, electro-photochemical equipment (PEC, potentiostat, EIS etc.), magnetic analysis and biological tests.

Software Microsoft Office, design (AutoCAD, SolidWORK), programming language (Matlab, Fortrand), statistical analysis (SPSS), geotechnical and hydrological modeling (GEOStudio), modeling and processing of maps and data analysis (Surfer), customer relationship management (Zoho CRM).

Italian Legislation Tutela della salute e della sicurezza nei luoghi di lavoro (D.Lgs. 81/2008), norme in materia ambientale (D.Lgs. 152/2006 e altri), norme UNI EN ISO, 14001, sistemi di gestione UNI EN ISO 9001 e OHSAS18001, materia di contratti pubblici (D.Lgs. 163/2006), norme di valutazione rischi MMC UNI EN ISO 11228, D.Lgs. 231/2001.

Research output

Conferences *New graphene-based nanocomposite for advanced water treatment.*
GLOBAL WATER EXPO - Conference on application of appropriate technology on water and waste in international and cooperation projects. EcoMondo: the green technologies expo (Rimini, 8 Nov 2016).

Treatments on crushed powder f exhausted fluorescent lamps: evaluation of experimental parameters influencing the recovery of REEs, rare earth elements.
SUM2014: Symposium on Urban Mining (Bergamo, 19-21 May 2014).

Publications

Recent progresses on metal halide perovskite-based material as potential photocatalyst.
Catalysts, 2020, vol. 10, issue 6, pp. 709.

$Cs_3Bi_2I_9$/g-C_3N_4 as a new binary photocatalyst for efficient visible-light photocatalytic processes.
Separation and Purification Technology, 2020, pp. 117320.

Anchoring lead-free halide Cs3Bi2I9 perovskite on UV100–TiO_2 for enhanced photocatalytic performance.
Solar Energy Materials & Solar Cells, 2020, vol. 204, pp. 110214.

Pb-Free $Cs_3Bi_2I_9$ Perovskite as a Visible-Light-Active Photocatalyst for Organic Pollutant Degradation.
Nanomaterials, 2020, vol. 763, pp. 1-13.

Sono-photocatalytic degradation of sodium diclofenac using low power ultrasound and micro sized TiO_2.
Ultrasonics – Sonochemistry, 2020, vol. 67, pp. 105123.

Methylammonium iodo-bismuthate perovskite $(CH_3NH_3)_3Bi_2I_9$ as new effective visible light-responsive photocatalyst for degradation of environment pollutants.
Journal of Photochemistry & Photobiology A: Chemistry, 2019, vol. 376, pp. 116-126.

An Emerging Visible-Light Organic–Inorganic Hybrid Perovskite for Photocatalytic Applications.
Nanomaterials, 2020, vol. 10, issue 115, pp. 1-17.

Digitally Printed AgNPs Doped TiO_2 on Commercial Porcelain-Grès Tiles: Synergistic Effects and Continuous Photocatalytic Antibacterial Activity.
Surfaces, 2020, vol. 3, issue 1, pp. 11–25.

Multifunctional Epoxy/Nanocomposites Based on Natural Moroccan Clays with High Antimicrobial Activity: Morphological, Thermal and Mechanical Properties.
Journal of Nanomaterials, 2019, vol. 12, ID. 2810901, pp. 1-12.

Quantum Dot Size Effect on the Frontier Molecular Orbital Energies in the Presence of Different Aquatic Environmental Ligands.
Environmental Processes, 2018, vol. 5, pp. 879–894.

Research supervision and leadership experience

2019 Thesis supervisor: B.Sc. in Environmental Engineering, University of Padova.
Synthesis, characterization, and photocatalytic activity of a new perovskite/carbon nitrile composite.

2019-2020 Leadership in research groups of Industrial Chemistry, University of Milan.
B.Sc. theses supervision: *doped Kronos TiO_2 for photocatalytic Diclofenac degradation, Bismuth oxide-based photocatalysts for air purification.*

M.Sc. theses supervision: *floating materials for photocatalytic water treatment; mixed VOCs industrial-based photodegradation; high temperature, industrial-based synthesis and performance of new modified Kronos TiO_2 for NOx photodegradation; new modified-Kronos TiO_2 for NOx visible-light photocatalytic degradation; new material for diclofenac-polluted wastewater treatments.*

Teaching Merits

Pedagogical training Training credits in anthropo-psycho-pedagogical disciplines and teaching methodologies and technologies, 6 March 2019. University for foreign people Dante Alighieri, Reggio di Calabria.

Other Environmetal Education Course, 6 June 2019, Legambiente Vicenza, Legambiente Verona.

References

Prof. Detlef Bahnemann, Technische Chemie, Leibniz Universität Hannover, Germany.
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Prof. Paolo Sgarbossa, Department of Industrial Engineering, University of Padova, Italy.
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Prof. Tuomo Sainio, Chemical Separations and Purification Science, Lappeenranta-Lathi University of Technology, Finland.
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Prof. Mika Sillanpää, Department of Civil and Environmental Engineering at the Florida International University, Miami, United States. mikaesillanpaa@gmail.com