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EDITORIAL

New challenges in the application of advanced oxidation processes

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The 2nd Summer School on "Environmental Applications of Advanced Oxidation Processes (AOPs)" organized by "European PhD School on AOPs" jointly with the NEREUS (COST Action ES1403) (http://www.nereus-cost.eu/) Summer School on "Advanced Treatment Technologies and Contaminants of Emerging Concern" was held in Porto, Portugal, July 10–14, 2017, and chaired by Prof. Adrián M. T. Silva, Prof. Despo Fatta-Kassinos, Prof. Luigi Rizzo, and Dr. Vítor J.P. Vilar. More than 130 scientists (including 65 Ph. D. researchers) and professionals from 21 countries attended the School.

The Summer School program included the following: (i) a section devoted to PhD students ("Floor to PhD Students") where they had the opportunity to introduce themselves and their work, as well as to meet experts from the School; (ii) a special session on "Contaminants of emerging concern and antibiotic resistance control in water by AOPs"; (iii) lectures on complementary skills; (iv) a workshop on advanced treatments delivered by School scientific members and international experts; and (v) a technical-social visit.

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The "European PhD School on AOPs" (AOPs School), founded in June 2014 by a group of European scientists from different Universities and Research Institutes, promotes the higher education of young researchers in the environmental applications of AOPs (www.aops-school.com). Currently, the School includes 53 Scientific Committee (SC) members from 14 different European Countries. The Summer School is among the initiatives organized for School PhD candidates (which can attend for free), but other PhD students, MSc students, postdoctoral researchers, and professionals are also welcome.

This special issue of *Environmental Science and Pollution Research* contains a selection of 11 papers presented at the Summer School. The topics include new photocatalytic materials as well as environmental remediation/disinfection of water, wastewater, and air, using different AOPs.

The guest editors would like to thank all the authors for the innovative scientific contributions to this special issue, the reviewers whose comments and suggestions were extremely important to achieve high-quality papers, as well as the institutions and companies that sponsored the Summer School.

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Vítor J.P. Vilar is a principal researcher in the Laboratory of Separation and Reaction Engineering-Laboratory of Catalysis and Materials (LSRE-LCM), Faculty of Engineering, University of Porto (FEUP), since 2014. He earned his BSc in Chemical Engineering from the Faculty of Engineering of the University of Porto (FEUP) in 2001. He completed his PhD in Chemical Engineering at FEUP in 2006, in Environmental Technologies. In 2014, he was awarded a three-year "Special Visiting Researcher" grant, at the Federal University of Santa Catarina, Brazil, sponsored by the Brazilian *Ciência Sem Fronteiras* program. He is currently an editor on Environmental Science and Pollution Research (ESPR) Journal (Springer). He has participated as a committee member or as a program chair in nine international conferences on environmental engineering, delivering 38 plenary/keynote/invited lectures at international conferences and scientific institutions. He is a member of the EU COST Action ES1403UK (NEREUS) and European Ph.D. School on AOPs and president of the Iberoamerican Conference on Advanced Oxidation Technologies (CIPOA). His research interest focuses on the environmental assessment and monitoring of surface waters and environmental-friendly technologies for pollution control, particularly in the application of advanced oxidation processes and electrochemical oxidation processes for water and air treatment, integration of physical, chemical, biological, and membrane processes for the treatment of recalcitrant wastewaters, valorization of natural materials for separation and recovery of heavy metals, oil and grease, soil remediation, process integration & intensification, water/waste recycling, & valorization. He is the author and co-author of more than 400 scientific publications, including 3 conference books, 10 book chapters, 3 editorials, 155 papers in peer-reviewed international scientific periodicals (h index 34 and > 3600 citations), 8 papers in national scientific periodicals, more than 200 contributions in conference proceedings, and a co-inventor of 1 patent, receiving 8 prizes in total. He participated in different R&D projects (5 international, 16 national, and 3 contracts with private companies). He has mentored 14 researchers, 21 master students, 18 Ph.D. students, and 27 postdoctoral researchers.

Adrián M.T. Silva graduated in Chemical Engineering by the Faculty of Sciences and Technology – University of Coimbra, and received the Ph.D. diploma at the same Faculty in April 2005. He is a member of the Associate Laboratory LSRE-LCM since 2006 and Assistant Professor at the Department of Chemical Engineering, Faculty of Engineering – University of Porto (FEUP) since January 2018. His research activities are focused on the preparation and characterization of nano- and macro-structured materials for reaction and separation engineering. Many of the investigated applications are in the field of environmental catalysis, including different advanced oxidation technologies, such as photocatalysis, catalytic wet (air/peroxide) oxidation, Fenton process, catalytic ozonation, and their combination. He was scientific FEUP responsible in 12 R&D projects and team member in more than 20 R&D projects. He co-authored more than 450 publications, including more than 15 book publications (books, book chapters, and articles in book series with peer review), more than 140 scientific papers in peer-reviewed ISI indexed international journals (h index 34 and > 3500 citations), and more than 300 communications in national and international conferences. He has supervised more than 25 Ph.D. and postdoctoral researchers. Regularly, he organizes scientific conferences (more than 20 until now) and events for dissemination of science to the society. He is a promoter of a company created in 2008, specialized in water and wastewater treatment, and co-inventor of 2 patents. He was recently awarded with two prizes from the Portuguese Chemical Society (SPQ) and one from the Ibero-American Federation of Catalysis Societies (FISOCAT), from a total of 10 prizes. He is an Associate Editor of Applied Catalysis B: Environmental (Elsevier), Scientific Committee Member of the "European PhD School on Advanced Oxidation processes" and Management Committee Member of "COST Action NEREUS."

Luigi Rizzo is an Associate Professor in Sanitary and Environmental Engineering at Department of Civil Engineering, University of Salerno (Italy). He is a Coordinator of the "European PhD School on Advanced Oxidation processes" (www.aops-school.com) and leader of Working Group 4 in COST Action "ES1403: New and emerging challenges and opportunities in wastewater reuse (NEREUS)." He is an external expert of European Commission "Scientific Committee on Health, Environmental and Emerging risks (SCHEER)" and he was (03/2013–03/2016) member of the European Commission Scientific Committee SCENIHR. He is an editor (associate editor from 10/2011 to 02/2013) of "Water Science and Technology" journal (IWA publishing) (since 03/2013) and editorial board member for Heliyon journal (Elsevier) (since 07/2016). From 2007 to 2014, he was visiting professor in the context of Erasmus program in 6 European Universities; moreover, he was (09/2008–02/2009) visiting scientist at Plataforma Solar de Almeria (Spain) and (07/2005 and 11/2004–12/2004) at "Water Chemistry Laboratory," University of Wisconsin Madison (USA). He was/is a coordinator, principal investigator, and investigator in 13 (2 ongoing) national and 12 (4 ongoing) international research projects. His main research interest is water/wastewater treatment by advanced oxidation processes and in particular tertiary treatment of urban wastewater for controlling the release of contaminants of emerging concern as well as the spread of antibiotic resistance into the environment. He published 110 papers: 68 in "peer review indexed journals," 23 in proceedings of international conferences, 14 book chapters, and 5 in proceedings of national conferences (2962 citations and 25 h-index in SCOPUS). He is a co-editor of 3 books.