



# Green approaches for materials, wastes, and effluents treatment

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Knowledge of natural and anthropogenic sources of environmental pollutants has emerged as a requirement that goes beyond the state borders to reach a global dimension. Thus, numerous studies have been directed toward the implementation of new technologies in various environmental cleanup programs (Agrawal et al. 2019; Awasthi et al. 2019; Hare et al. 2019; Mani et al. 2019; Mishra et al. 2019; Zainith et al. 2019). These are green approaches that may elucidate different eco-friendly methods for sustainable management and cleanup of the environment. On the other hands, effluents discharge into municipal sewers by mining, metallurgy, electroplating, electronics, textile, nuclear, and other industrial effluents have become serious threats to the receiving environment. Therefore, controlling those effluents is of outmost importance (Yang et al. 2013; Sdiri et al. 2018; Sdiri 2018). A number of technologies have been developed for the removal and recovery of various pollutants including filtration, chemical precipitation, ion exchange, adsorption, electrodeposition, and membrane systems (Kesraoui et al. 2016; Othmani et al. 2017). Within the same framework, various bio- and eco-materials have been used for the removal of toxic pollutants from aqueous solutions by adsorption technique (Maaloul

et al. 2017, 2019). Further studies were undertaken to remove dyeing pollutants by the implementation of advanced cost-effective and green methods (Mittal et al. 2009; Saleh and Gupta 2011; Saravanan et al. 2013, 2016; Ben Arfi et al. 2017, 2019; Sadaf et al. 2019).

Strategies and pollution management tools are of great importance for stakeholders and decision-makers. Sustainable development has become a slogan for both developed and developing countries; it is now becoming a prerequisite for the appropriations granted to the countries. If the credit will contribute to the sustainable development, it will be easily granted because the progress of a nation is conditioned by the sustainable development indices (Sdiri et al. 2016).

Special attention was given to the sustainable development as a main topic of the current integrated environment management meeting. The success of a new advanced technique applied for the treatment of water, ground, and air can be highly efficient if it considers sustainable development indices. Thus, in all the processes of water treatment take account, the aspect of the sustainable development is of significant positive impact on the environment (Muga and Mihelcic 2008).

Recycling and managing wastewaters are fundamentally important for supporting the economy of water resources and therefore contribute to the efficient management of such scarce resources.

The 3rd International Conference on Integrated Environmental Management for Sustainable Development (ICIEM 2018) has been successfully held from May 2 to 5, 2018, in Sousse, Tunisia. More than 300 participants attended this event to share new findings and discuss the potential applications of such new processes that can be turned out to viable technique for sustainable development. A good and transparent work of selection has been undertaken to choose papers to inclusion in this special issue. The intense and fruitful exchange between the present researchers clearly showed their common concern to address the problem of waste and remediation together. Few problems may be specific to a given region, but similarity in the diagnosis as well as the remediation approaches demonstrated that the scientific community is in charge of bringing solutions for sustainable environmental protection.

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This special issue of *Environmental Science and Pollution Research* is a collection of the best papers initially presented at the 3rd ICIEM; it offers up-to-date scientific research and findings carried out all over the world to protect and preserve the environment. All of the publications retained in the journal treated mechanisms of purification and recycling wastes in order to establish a viable technique that would be of great importance for developing water treatment and environmental processes. The main idea was to share the environmental impacts and the negative effects of human activities on the environment; recent achievements of researchers acting within the region for remediation, protection, and smart management of our natural resources. If our chaotic human activities are negatively impacting the main environmental components, then it is the duty of scientists to find out the right green approaches to prevent, educate, and create real hope for the forthcoming generations.

Beyond the presented results, our meeting was a great occasion of launching new collaborative actions and new networks to better face the challenges and handle the risks for our resources and human being.

So, we are really grateful for researchers who attended this edition of ICIEM; congratulations for the authors with published papers. Overall, the selected articles provide interesting aspects related to environmental awareness, assessment, remediation, and improvement, which are constructive for the strategic green solutions for wastes and effluents treatments.

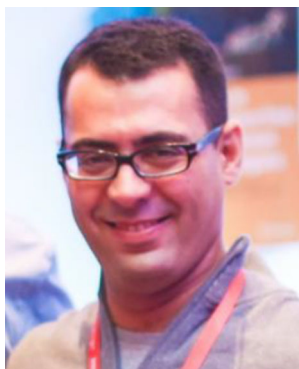
Finally, we also wish to thank the scientific committee and all the reviewers for their valuable comments. Our thanks go to the Springer team for supporting the publication of these papers. Doctor Philippe Garrigues, Editor in chief of Environmental Sciences and Pollution Research, and the editorial team are acknowledged for their endless help during the review process of this special issue.

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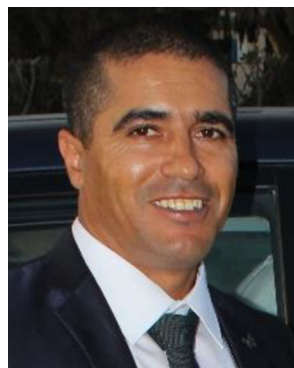
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