Special Session: Novel materials, technologies and systems for water and wastewater treatment and management

Special Session Chairs:

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Brief Description and topics:

Water is a critical resource of vital importance. In several places around the world there are several problems concerning clean water availability. There are various techniques that have been developed during the last decades for the better treatment of water and wastewater and/or for more economically viable treatment. Examples include new materials acting as catalysts for advanced oxidation processes, for membrane technologies and for adsorption processes, magnetic particles with reactants for contaminants' removal and others. The emergence of nanotechnology has provided new insight for solutions in classical areas providing more efficient solutions, among other technologies that have arisen.

The problem of clean water is also related to the monitoring of water resources through extended network of sensors where data analysis based on novel methodologies such as non-linear time series analysis and complex network analysis can play an important role for identification and prevention.

In both above areas apart from the experimental and field case studies an important amount of research concerning numerical modeling is in a phase of development for the design of more efficient procedures and products.

Both fundamental and applied studies for water and wastewater treatment are of interest to this session.

Indicative Topics of the special session:

Papers are welcome in the following indicative fields:

- Novel technologies for the removal of contaminants

- Membrane filtration technologies

- Membrane separation technologies

- Advanced oxidation processes

- Adsorption processes

- Carbon nanotubes, graphene based materials as new means in water treatment

- Technologies and systems for desalination

- Technologies and systems for water and wastewater disinfection

- Technologies for efficient monitoring of water/wastewater treatment (e.g. sensors)

- Numerical modeling of water cleaning issues at all scales (macro, meso, micro)

- Time series and dynamical system tools for analysis of data

Special issues

Selected papers after review will be included in thematic special issues in international journals