

# Keynote Speakers

## NANOTECHNOLOGY FOR CLEANING ENVIRONMENT



### Ania CONCHI

CNRS I Research director

CEMHTI

[www.cemhti.cnrs-orleans.fr](http://www.cemhti.cnrs-orleans.fr)

#### BIOGRAPHY

she received her PhD degree in 2003 (Univ. Oviedo, Spain) and performed postdoctoral stays in USA and France. In 2009 she became Tenured Scientist at Agencia Estatal CSIC, and in 2017 she joined CNRS as Directrice de Recherche. She received the national L'Oreal-Unesco Research Fellowship "For women in Science" (2008) and the Excellence Research Award by Univ. Granada (2008). She is a grantee of the European Research Council (2016-22) and editor of Carbon journal (Elsevier) since 2022.

Current research interests focus on developing nanoporous materials for high-tech applications: water treatment (photo-/electrocatalysis), gas adsorption/separation, solar energy conversion. She is co-inventor of two patents (one transferred to industry for 2 years). She has an H-index of 47 with over 6000 citations.

#### DEGRADATION OF WATER POLLUTANTS USING ADVANCED OXIDATION PROCESSES: FROM LABORATORY TO LARGE SCALE CASE STUDIES

Current challenges in wastewater treatment are linked to the need for developing effective solutions to face emerging pollutants, capable of assuring a feasible economic upgrade of existing plants. Conventional biological treatments are assisted with tertiary processes such as adsorption on nanoporous adsorbents to improve the efficiency of the treatments. However, despite being mature technologies, the cost associated to the regeneration of the spent carbon (energy consumption, transportation) still represents a major limitation for massive implementation. On the other hand, advanced oxidation processes (e.g., based on electrochemical and photocatalytic approaches) have become an interesting alternative for the simultaneous removal and degradation of pollutants. Furthermore, when coupled with adsorption, they can also provide the on-site regeneration of the saturated adsorbents.

This communication will focus on some examples about the application of advanced electrochemical and photocatalytic oxidation processes based on nanomaterials and renewable energies, for the degradation of emerging pollutants in water. Examples will cover our research activities at lab-scale, as well as various case studies at pilot scale on the application of these technologies and materials to wastewater from industrial and treatment plant facilities origins.

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#### KEYWORDS:

Nanoporous materials; water treatment; advanced oxidation processes; electrochemistry; photocatalysis

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