

## Design of Catalytic Adsorbents for Wastewater Treatment

Abdellah AIT EL FAKIR<sup>1,2</sup>, Amane JADA<sup>2</sup>, Zakaria ANFAR<sup>1,2,3</sup> and Nouredine EL ALEM<sup>1</sup>

<sup>1</sup>Laboratory of Materials & Environment (LME), Ibn Zohr University, Agadir, Morocco

<sup>2</sup>Institute of Materials Science of Mulhouse (IS2M), Haute Alsace University, Mulhouse, France

<sup>3</sup>Institute of Chemistry & Biology of Membranes & Nano-objects (UMR5248 CBMN), CNRS, Bordeaux University, Institut Polytechnique Bordeaux 2 rue Robert Escarpit, Pessac, France.  
(amane.jada@uha.fr)

### ABSTRACT:

Water pollution results from anthropogenic activities which generate the release in the aquatic medium of urban, agricultural or industrial pollutants having harmful ecological effects. For the remediation of these pollutants, various methods including filtration, coagulation/flocculation, reverse osmosis, chemical oxidation, photocatalytic processes, adsorption-complexation. The adsorption process, in comparison to the others methods, is commonly used in water and wastewater treatment methods, due its simplicity of design, easy operation, high efficiency, and availability of the adsorbent. Thus, in the last three decades much research have been devoted to design efficient adsorbents and catalysts for wastewater treatment and to preserve environment. In the present work, we give a general overview on the design of the adsorbents and catalysts, used in the wastewater treatment by using the adsorption process. It outlines mainly the use of carbonaceous adsorbents for organic pollutant removal. Additionally, this work discusses the advanced oxidation processes (AOP), producing highly reactive species from various peroxides, which allow total destruction of organic pollutants present in the wastewater.

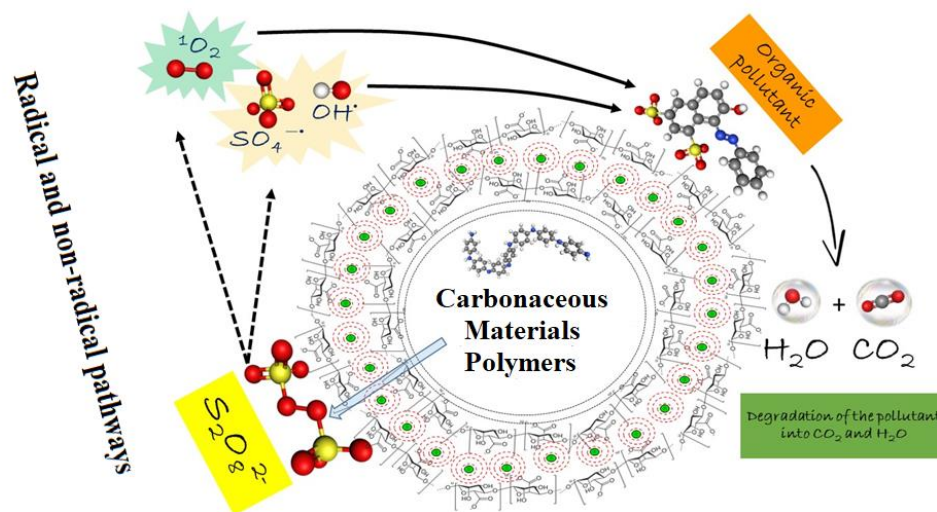


Figure 1: Alginate pearl coating carbonaceous materials [1, 2]

### References

- 1- Ait El Fakir A, Anfar Z, Enneimy M, Jada A, El Alem N (2022) Applied Catalysis B: Environmental. 300: Article number 120732
- 2- Ait El Fakir A, Anfar Z, Amedlous A, Zbair M, Hafidi Z, El Achouri M, Jada A, El Alem N (2021) Applied Catalysis B: Environmental. 286: Article number 119948