Development of micropollutants finition treatments for waste waters

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Abstract:

In recent decades, environmental pollution by the excessive presence of refractory organic pollutants in wastewater from domestic uses or industries is a serious environmental scourge [1]. Some of these compounds are recognized as capable of causing carcinogenic and mutagenic effects and interfering with the hormonal system of living beings. Among the pollutants commonly detected in industrial discharges are organic dyes, organochlorines, phenolic compounds, PFAS, etc [2].. Faced with this situation, several countries have been forced to set strict legislative and normative constraints towards manufacturers for the protection of the environment. Thus, the major challenge for industries is to find an effective and inexpensive technique to reduce the level of pollution to the threshold accepted by the legislation before any discharge into the environment.

To overcome these problems, efficient and ecological treatment strategies have been developed. Among which is the application of advanced oxidation processes (AOPs), which are based on the production of hydroxyl radicals, very reactive and strongly oxidizing species. These processes include heterogeneous photocatalysis under UV and/or visible light [3-4], homogeneous phase chemical oxidation processes: H_2O_2/Fe^{2+} (Fenton's reagent) [5], O_3/OH^- (ozonation) [6]; photochemical processes [5, 7]; electrochemical processes [8]… However, although effective for the mineralization of most organic pollutants, these processes require an external energy input (electric or magnetic) and consequently a relatively high cost for a strong mineralization of the pollutant. Attention was subsequently focused on the use of new adsorbents based on abundant natural materials. This is the case for clays [9]. The interest given in recent years to the study of clays by many laboratories around the world is justified by their abundance in nature, the importance of the specific surfaces they develop, the presence of surface charges and especially the exchangeability of the interfoliar cations. So New Hybrid Materials having multiple pollutant removal properties can be of great interest to treat this micropollution [10].

Keywords: Micropollutants – Waste waters – Advanced oxidation processes – Adsorption – Hybrid materials

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Biography:

Stéphanie D. Lambert obtained her master's degree in chemical engineering and

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Photograph

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