

**PHOTOCATALYTIC TREATMENT OF PRINTING WASTEWATER**

*J. Araña, A. García Asencia, C. Fernández Obeso, T. Dávila Hernández, J. A. Herrera Melián, J. M. Doña Rodríguez, E. Tello Rendón and J. Pérez Peña*

Fotocatálisis y Electroquímica Aplicada al Medio-Ambiente (FEAM). Unidad Asociada al CSIC. CIDIA (Depto. de Química), Edificio del Parque Científico Tecnológico, Campus Universitario de Tafira, 35017, Las Palmas, España. UNIVERSIDAD DE LAS PALMAS DE GRAN CANARIA. Tlf. +34-928-45-72-99, Fax + 34-928-45-73.97. Email: cidia@ulpgc.es

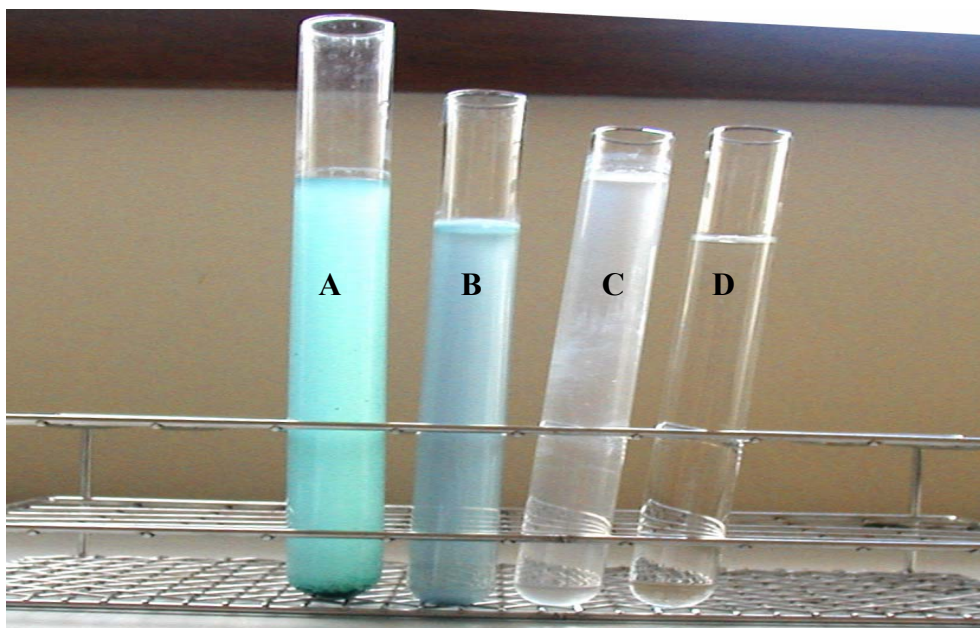
**Abstract**

Photocatalytic processes can be optimal methods for the treatment of toxic organics present in industrial wastewaters. Many studies have been conducted at lab scale obtaining highly interesting results. However, degradation experiments in solar pilot plants are less numerous [1, 2]. Some of the main drawbacks of such experiences are the varying climatic conditions with only 5-6 h of useful radiation and the fact that only low concentrations can be treated. Thus, the application of solar photocatalysis to real wastes is limited.

In the present study, the photocatalytic treatment of printing wastewater from a local newspaper has been optimised.

The samples are characterised by high concentrations of organic matter (3.000-5.000 ppm of TOC) and suspended solids and an intense blue colour (Figure 1.a.).

Due to the high TOC content, samples were pre-treated with activated carbon (AC 2 g/L) for 12 h, and filtration (primary, Figure 1b) and secondary (Figure 1c). After this, 1500 ppm of TOC remained.



**Figure 1.** a) Original sample, b) after AC + primary filtration treatment, c) after AC + secondary filtration, and d) after AC + secondary filtration + photocatalytic treatment.

Degradation experiments were carried out in batch reactors with initial TOC concentrations between 50-150 ppm and by dosing in continuous reactors with fluxes varying between 0.5-2 ppm/min. The later gave the best results (Figure 1d).



Also, the effect of other oxidising agents ( $\text{H}_2\text{O}_2$ ,  $\text{S}_2\text{O}_8^{2-}$ ) and the waste degradation by the photo-Fenton reaction was tested.

### References

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- 2.- O. Prieto, J. Feroso, Y. Nuñez, J.L. del Valle and R. Irusta, *Solar Energy*, 79, (2005), 376-383.