# Carbon-containing Cu- and Mo-based catalysts for the photodegradation of Yellow 5

Paula Muñoz-Flores[a,b,c]*, Juan Matos[a,c,]*, Po S. Poon[a], Alicia Gomis-Berenguer[d], Conchi O. Ania[d]

[a] Hyb&Car Group, Biorefinery Department, Technological Development Unit (UDT), University of Concepcion, Coronel, Chile

[b] Faculty of Engineering, University of Concepcion, Concepcion, Chile

[c] Millennium Nuclei on Catalytic Processes towards Sustainable Chemistry (CSC), Chile

[d] POR2E Group, CEMHTI CNRS (UPR3079), Univ. Orléans, 45071, Orléans, France

Nowadays, heterogeneous photocatalysis has been presented as a solar technology able to mitigate water pollution by the elimination of organic contaminants. Up to now, $TiO_2$ is the best photocatalyst but it is mainly photoactive under UV irradiation, so its use is limited because the solar spectrum contains ca. 5-8 % of UV light. The seek of photocatalysts with visible-light activity become a largely investigated topic. This work explores the use of solar radiation for the treatment of wastewater using Cu- and Mo-based photocatalysts, modified with a carbon component obtained from agricultural waste. Photocatalysts were prepared by a solvothermal method using copper acetylacetonate, ammonium heptamolybdate and furfural (widely used in the biorefinery industry for the production of fuels and chemicals) as precursors. Yellow 5, an artificial colorant used in the food industry, was chosen as recalcitrant pollutant. The photocatalysts were deeply characterized using various techniques (e.g., gas adsorption, XRD, diffuse reflectance spectrophotometry), and used for the degradation assays under simulated solar light. Data showed excellent conversion of the dye at low catalyst loading (ca. 0.25 g/L) for the Cu-based catalysts, as compared to Mo-based catalysts (ca. 10-20 %). Furthermore, the latter showed an important lixiviation during the photocatalytic runs. The catalysts containing both metals also presented a high conversion (as the Cu-based one) and strong lixiviation of the Mo component.

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