Adsorption Properties of Activated Carbons and Ordered Mesoporous Materials from Organic Pollutants in Aqueous Systems

On the basis of the studies performed, the activated carbons (AC) prepared from recycled PET, by chemical activation with KOH (PET-2-700), can be successfully used on the removal of MCPA and MB from aqueous medium. In order to improve the pollutant adsorption capacity removal, the PET-2-700 was submitted to different post treatment. The oxidised AC (PET-2-700HN) exhibits an increase on the MB adsorption capacity but show a MCPA decrease adsorption removal. The PET-2-700 was submitted to different reduction post treatments. The high temperature treatment, PET-2-700T, was not favourable for increasing the MB or MCPA adsorption capacity. However the PET-2-700N and the PET-2-700U show a significant increase on the MCPA adsorption capacity. The results prove the influence of chemical characteristics of the AC on the MB and MCPA removal.

The MB and MCPA adsorption isotherm were analyzed according to the Langmuir and Freundlich models, and calculated parameters reflect with good accuracy the experimental data and are in agreement between them.