



SYNTHESIS OF MESOPOROUS CARBONS FROM HYDROLYSABLE TANNINS WITHOUT ALDEHYDES

Vanessa Fierro, Eduardo Monsivais-Rocha, Alain Celzard,

Institut Jean Lamour, UMR 7198 CNRS and Université de Lorraine, Épinal, France

* Presenting author's e-mail: vanessa.fierro@univ-lorraine.fr

Tara tannins are hydrolysable tannins, which are rich in pyrogalllic acid. The goal of this study was to synthesize mesoporous carbons by the surfactant-water-assisted mechanochemical mesostructuration (SWAMM) method from Tara tannin (TT), which is very different from Mimosa tannin (MT) used so far. Therefore, the synthesis conditions had to be drastically changed, different proportions Pluronic F127, acid solutions were necessary, and aldehydes, used as crosslinkers, considerably improved mesostructuration.

An alternative and greener synthesis route was also explored to prepare mesoporous carbons from TT without using aldehydes; we successfully used MT as crosslinker of TT and we prepared carbons materials with high mesopore and micropore volume. The effect of the addition of the MT:TT weight ratio on the carbon yield, pore texture and composition was studied. These materials were used for the efficient and fast adsorption of ciprofloxacin and norfloxacin antibiotics from aqueous solution. Adsorption kinetics of both antibiotics were faster on TT-derived carbons than those measured with MT-derived mesoporous carbons due to the fact that TT-derived carbons have higher mesoporous volumes that facilitate the access to the microporous surface.