

KINETIC AND THERMODYNAMIC ASPECTS OF COADSORPTION OF ANTIBIOTICS ONTO ACTIVATED CARBON FIBERS

Ana Claudia Pina^{1,2}, Nestor Tancredi¹, Conchi O. Ania², Alejandro Amaya¹

¹ *Área Fisicoquímica, DETEMA, Facultad de Química, Udelar, Montevideo, Uruguay*

² *CEMHTI (UPR 3079), CNRS, Univ. Orléans, 45071 Orléans, France*

*corresponding author email: acpina@fq.edu.uy

Short Abstract

Pharmaceuticals constitute a wide group of organic compounds that are among the most important emerging contaminants. In this group, antibiotics are of great importance due to their capacity to prevail in aquatic environments as a result of their slow degradation speed. Therefore, they have become a major concern owing to the risk, associated with their presence, of bioaccumulation in the environment generating antimicrobial resistance. Unfortunately, traces of these drugs reach the watercourses as consequence of the ineffectiveness of the effluent treatments, or directly due to the lack of these. Adsorption onto activated carbon fibers (ACF) is among the technologies that are capable of treating this kind of pollutants.

This work studies the kinetics and thermodynamics associated with the competitive adsorption of antibiotics onto ACF using two pharmaceuticals (e.g., metronidazole and sulfamethoxazole) as pollutants. As adsorbent we have selected an activated carbon fiber obtained from a renewable source. Data showed that this material is a suitable one for the adsorption of both compounds under competitive conditions.