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Livro de Resumos

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Livro de Resumos



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CARBON NANOFIBERS PREPARED FROM LDPE FOR CATALYTIC WET PEROXIDE OXIDATION OF PARACETAMOL

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ABSTRACT

Plastic solid waste (PSW) is a strong concern, as there is still a great fraction being sent to landfills (around 25% in EU), mainly plastic used for packaging purposes, such as low-density polyethylene (LDPE). The high content of elemental carbon in plastics (for example, LDPE consists of 85.6% of carbon) makes them alternative precursors for synthesis of carbon-based materials, such as carbon nanotubes and nanofibers (CNTs and CNFs, respectively). On the other hand, catalytic wet peroxide oxidation (CWPO) is a wastewater treatment process that uses hydrogen peroxide to generate strong oxidizing species, hydroxyl radicals, through the action of a suitable catalyst, commonly composed by a metal phase. More recently, metal-free catalysts are the trend on CWPO, as they avoid a series of issues, such as metal leaching and catalyst deactivation. Purified CNTs and CNFs fall in the category of metal-free materials. Thus, in this work, CNFs were synthesized from LDPE, used as carbon source. The obtained CNFs were purified to remove the metal particles from its structure, and both pristine and purified catalysts were tested in the CWPO of paracetamol (PCM), considered as model micropollutant, to compare their activity towards the removal



of pollutant, total organic carbon (TOC) and efficiency of hydrogen peroxide consumption.

Keywords: metal-free carbon-based materials, Catalytic wet peroxide oxidation, paracetamol.

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