Iron@Activated carbon fiber composites for removal of agricultural defensive

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Activated carbon (AC) is one of the most used materials as adsorbent world wild. It has been used for centuries to cleaning drinking water and in the last decades for waste water treatment and purification process in the industry. Nowadays, new pollutants are present in the water that is classified as third generation pollutant. The AC doesn't show high adsorption efficiency for third generation pollutant. Activated carbon fiber (ACF) present more efficient to removal third generation pollutant including agricultural defensive.

This work has, as objective, the use of ACF produced from PAN textile fiber associated with iron oxide nanoparticles to evaluate the removal of Diuron (a systemic herbicide used in the control of weeds) in aqueous medium. The tests were conducted in a batch at 25ºC, obtaining 73% removal of Diuron with adsorptive capacity of 43 mg g^{-1}, this combined adsorbent demonstrated efficiency in the Diuron adsorption process. The iron oxide incorporated in the ACF has magnetic phase and this was used as separation technique of the adsorbate/adsorbent, through external magnetic field. The iron@ACF constitutes an excellent alternative to be used as an adsorbent material of high efficiency and relative low cost.