

Removal of organic dyes from wastewater using heteroatom doped carbon

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Removal of organic dyes from water bodies is one of the current hot issues due to its negative impact on the aquatic ecosystems. Adsorption is a simple but effective method to achieve this goal. In this work, we report the synthesis of N/S/O-doped carbon from a heteroatom laden-dye and its adsorption properties. A simple carbonizing reaction is used to prepare N/S/O-doped carbon and it is characterized using XPS, FTIR, TGA, SEM, and BET. Its performance is evaluated using a batch adsorption experiment involving methyl blue-spiked water. Isotherm results show that the Sips model fits the experimental data the best and the adsorption follows a pseudo-second-order kinetic. pH 5.5 is found to be ideal for maximum adsorption and equilibrium is achieved in less than 10 min.