



## Adsorption and oxidation of dye and tetracycline over hydrothermally synthesized polyresorcinol – ferrite nanoparticles

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Received 24 March 2020; Accepted 28 September 2020

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### ABSTRACT

This study focuses on developing an efficient material that integrates high adsorption performances of dye and antibiotics as well as effective oxidation activity of it. Herein, we report a facile method to synthesize polyresorcinol@CoFe<sub>2</sub>O<sub>4</sub> via a one-step hydrothermally route. The prepared composite possesses multifunctional performance for methylene blue (MB) and tetracycline (TC) removal with appropriate magnetic separation operation and significant removal ability with an adsorption capacity of 51.48 and 28.16 mg g<sup>-1</sup>, respectively. Meanwhile, the aforementioned composite exhibits a high oxidation activity toward MB and TC molecules where the adsorption capacity increases to 1,723 and 120 mg g<sup>-1</sup>. Also, the application of Box–Behnken design with response surface methodology for optimizing effective factors was performed.

*Keywords:* CoFe<sub>2</sub>O<sub>4</sub>; Multifunctional; Polyresorcinol; Dye; Tetracycline

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