

**PREPARATION OF MAGNETIC KAOLINITE COMPOSITE FOR  
LEAD REMOVAL IN AQUEOUS SOLUTION**

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## ABSTRACT

### PREPARATION OF MAGNETIC KAOLINITE COMPOSITE FOR LEAD REMOVAL IN AQUEOUS SOLUTION

Magnetic kaolinite composite was successfully synthesized using combination of kaolinite and iron oxide through co-precipitation method. The synthesized kaolinite-iron oxide (Kao-IO) and raw kaolinite (Kao) was characterized by using X-ray diffractometer (XRD), scanning electron microscope (SEM), and fourier-transform infrared spectroscopy ATR type (FTIR ATR). The Kao-IO composite was used to remove  $Pb^{2+}$  from aqueous solution through adsorption studies under various experimental conditions (pH, contact time, initial concentration of Pb solution, and temperature). Meanwhile the Pb desorption studies of Pb loaded Kao-IO were performed with different desorbing agents. The optimum experimental condition was achieved at pH 6, reaction time of 120 min at initial concentration ranged from 10 to 70 ppm. Kao-IO composite has higher adsorption capacity ( $30.93 \text{ mg g}^{-1}$ ) compared to Kao ( $25.04 \text{ mg g}^{-1}$ ). EDTA was the best desorbing agent with the highest desorption efficiency (39.18%). Overall, Kao-IO composite demonstrated high potential as suitable adsorbent to treat Pb contaminated water.