ABSTRACT

STUDY ON ADSORPTION OF Cd(II), Cu(II), AND Pb(II) BY *Spirulina* sp BIOMASS IMMOBILIZED ON SILICA MAGNETITE

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In this study, *Spirulina* sp algae biomass was immobilized on silica, specified as HAS, and silica coated with magnetite (Fe$_3$O$_4$) particle, specified as HASM, and subsequently applied to absorb Cd (II), Cu (II) and Pb (II) in solution. The adsorbents were characterized using Fourier transform infrared (FTIR) spectroscopy to identify functional group and with X-ray diffraction (XRD) to examine the structure. To investigate the adsorption capacity, a series of experiment was carried out at different pH and metal concentrations, and the residual metals in the water was determined using atomic absorption spectrophotometer (AAS). The results obtained demonstrated that the optimum pH for adsorption was 6.0, giving the adsorption capacity of 26.14; 27.63; 56.00 mg/g for Cd (II), Cu (II) and Pb (II) by HAS, and 124.89; 90.79; 90.09 mg/g, respectively, by HASM. These results evidently revealed that HASM exhibited significantly higher capacity than HAS, suggesting very important role of magnetite to enhance the adsorption capacity of the biomass investigated.

*Key words*: Adsorption, biomass, *Spirulina* sp, silica, magnetite.