

Adsorption of carbon dioxide by reusing drinking water treatment plant sludge

ABSTRACT

Cost effective, easy to use and regenerate could be the desired properties of an adsorbent. Reusing of waste material as CO₂ adsorbent can be a good alternative for solving the problem of waste disposal as well. Thus, in this study, aluminium-based drinking water treatment plant sludge as carbon dioxide adsorbent was reused. The sludge collected from a local drinking water treatment plant. It was dried and characterized using scanning electron microscope-energy disperse X-ray (SEM-EDX), Fourier transform infrared spectrometer (FTIR) and thermogravimetric analysis (TGA). Investigations of the effects of temperature, flow rate, concentration of CO₂ and adsorbent dosage on CO₂ adsorption capacity were performed using a fixed bed column at a pressure of 1 bar. The maximum capacity of 32.56 mg/g was found which was higher than that of some reported adsorbents.