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## Preparation And Characterisation Of Adsorbent From Landfill Sludge

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**EXTENDED ABSTRACT**

One of the materials that can be used to produce activated carbon is sludge from municipal solid waste (MSW) in landfills. Large amount of sludge is usually generated as waste from leachate treatment process, creating sludge disposal problem. At the same time, the presence of heavy metals in the water as a result of industrial activities is a matter of concern. For these reasons, the aims of this research are to produce adsorbent from leachate treatment process sludge for copper removal and to characterise the synthesised adsorbent. The sludge was treated by physical and chemical methods and carbonised at 400, 600, and 800 °C to produce activated carbons P400, P600, P800 and C800, respectively. The adsorbents were tested onto copper solution for their capability to adsorbed copper ion. The prepared sludge adsorbent were characterised by scanning electron microscopy (SEM), energy dispersive X-ray spectrometer (EDX), N<sub>2</sub> adsorption-desorption analysis, thermogravimetric analysis (TGA), and Fourier transform infrared spectroscopy (FTIR). As a result, the highest percentage removal of copper ion was 73.04%. Thus, it was proved that sludge from MSW is a good adsorbent to remove heavy metal.

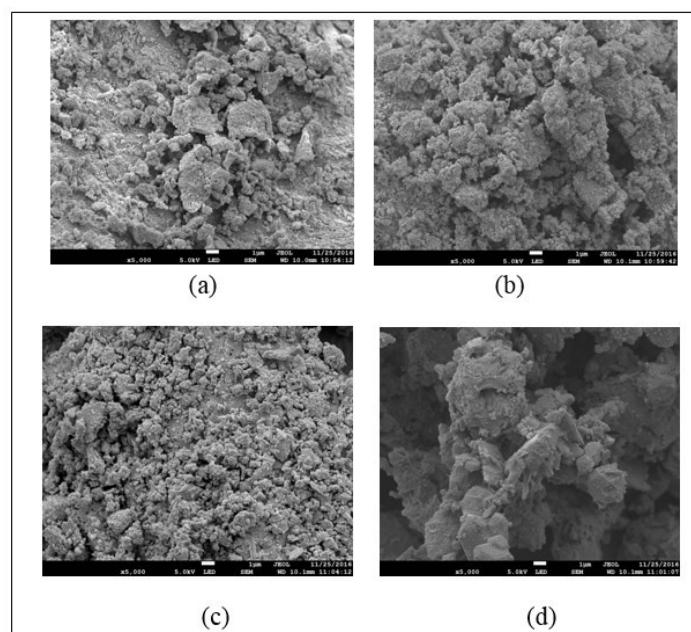


Figure 1: Surface images of (a) P400, (b) P600, (c) P800, and (d) C800 at 5000 $\times$ .

**Keywords:** Activated carbon, leachate, sludge, heavy metal, adsorbent.

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