

BATCH ADSORPTION PROCESS OF DYE USING COAL FIRED BOTTOM ASH



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LAPORAN AKHIR PENYELIDIKAN 'BATCH ADSORPTION PROCESS OF DYE USING COAL FIRED BOTTOM ASH'

Merujuk kepada perkara di atas, bersama-sama ini disertakan 4 (empat) naskah Laporan Akhir Penyelidikan beserta 1 (satu) CD bertajuk 'Batch Adsorption Process of Dye Using Coal Fired Bottom Ash' oleh kumpulan Penyelidik dari Fakulti Kejuruteraan Kimia untuk makluman pihak tuan.

Sekian, terima kasih.

Yang benar,



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ABSTRACT

Batch adsorption study of methylene blue (MB) from aqueous solution was performed to evaluate the feasibility of coal fired bottom ash (BA) as an adsorbent. The initial concentration of MB was varied between 20 - 500 mg/L while the adsorbent dosage and the volume of MB solution were fixed at 5 g and 200 mL, respectively. The initial and final concentration of MB was analyzed using the UV-Vis spectrophotometer (Perkin Elmer, Lambda 25) at maximum wavelength of 664 nm. At equilibrium stage, the maximum percentage removal of MB was about 99.3% for initial MB concentration of 20 ppm. It can be observed that the percentage removal of MB increased as the initial concentration of MB increases. In addition, the equilibrium adsorption result was found to give good agreement with Langmuir isotherm. It was also observed that the adsorptive characteristic of bottom ash was enhanced by the acid-based activation. The maximum adsorption capacity of HCl-treated BA for removal of MB was 14.93 mg/g, which was four times higher than the adsorption capacity of untreated BA. Therefore this results show that BA is an attractive alternative to be utilized as adsorbent for removal of dye.

Keywords: bottom ash, adsorption, methylene blue