Penyisihan Fenodengan kombinasi proses Adsorpsi dan Fotokatalisis menggunakan Karbon Aktif dan TiO2

Abstrak

The integration of adsorption and photocatalysis process is considered to have a better prospect in handling of organic wastes. The combination of catalyst consisting of Ti0; photocatalyst and active carbon (AC) adsorbent has been evaluated to treat a phenol waste. Preparation of catalyst was conducted by evaporating all dilution of TiO; slurry, which has been mired with the granular of active carbon at a temperature of l00"C and calcined at a temperature of 400"C. SiO; which obtained from TEOS solutions was added to prevent a falling off TiO;]rom AC support Characterization of BET was conducted to find out the surf/'ace area as well as pore size of the catalyst. Activity test of the catalyst material was done by conducting of 30 ppm phenol solution in annular Pyrex glass reactor that surrounded by 3 U V lamps, which have the total illumination intensity of I 44 ,UW/ml. The phenol solution was continuously poured in the reactor with rate of 35 ml/min for about 8 hours. The phenol concentration was analyzed with spectrophotometer at wavelength of500 nm. The optimum condition of this domination was reached by using a catalyst of Ti0/SiO;/AC with composition of 2.4:0.047:97.5 (weight ratio), and succeeded in eliminating of 30 ppm phenol with 100 % conversion.