

Sriapa Bunpet 2011: Application of Zeolite from Bagasse Ash for Dyes Removal from MoHom Textile Wastewater. Master of Science (Environmental Science and Technology), Major Field: Environmental Science and Technology, Division of Science. Thesis Advisor: Miss Prapa Sohsalam, Ph.D. 121 pages.

This work studied on the efficiency of zeolite from bagasse ash for dyes removal of Astrazon blue and Basic red 46 from synthetic wastewater by batch adsorption. The effect of operating condition such as sorbent dosage of zeolite bagasse ash, contact time, pH and concentration of dyes in synthetic wastewater were observed. The result showed that Astrazon blue removal by using zeolite from bagasse ash and standard zeolite were not different significantly. The optimum conditions of zeolite from bagasse ash and standard zeolite of 0.5 g in the synthetic wastewater of 20 mg/l of basic dye at pH of 5 could be reached to equilibrium within 30 minutes. Percentage of Astrazon blue removal by using zeolite from bagasse ash and standard zeolite were 98.95 and 98.43. The optimum conditions of basic red 46 adsorption for zeolite from bagasse ash and standard zeolite was 0.8 g in 20 mg/l of basic dye wastewater at pH 5. At this condition could be reached to equilibrium within 240 and 180 minutes for zeolite from bagasse ash and standard zeolite. Percentage of Basic red 46 removal by using zeolite from bagasse ash and standard zeolite were 89.73% and 79.23%. The adsorption isotherms of Astrazon blue and Basic red 46 fitted well with Langmuir equation at the maximum sorption capacities were 54.9 and 15.72 mg/g of zeolite. The efficiency of dye removal and COD removal of zeolite from bagasse ash by batch experimental were 76.73% and 72.41%.

Continuous adsorption was investigated for basic dyes removal from MoHom textile wastewater. The effect of operating condition such as concentration of dyes, flow rate, Hydraulic Retention Time and sorbent dosage in fixed bed column were investigated. The result showed that the optimum condition of the fixed bed reactor was 42 g of zeolite from bagasse ash and concentration of dyes 2 mg/l through column fixed bed at flow rate of 0.9 l/hr. Percentage of basic dyes removal was 78.77%. The efficiency of dye removal and COD removal of zeolite from bagasse ash by continuous experimental were 56.97% and 86.05%.

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Thesis Advisor's signature