PENGARUH AKTIVASI DAN MODIFIKASI GRANULA ZEOLIT ALAM MENGGUNAKAN SENYAWA FOTOKATALIS TIO2 PADA ADSORPSI LIMBAH ZAT WARNA TEKSTIL

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ABSTRACT

This research is experimental research in a chemistry laboratory which aims to reduce dye pollutant contamination in textile industry waste using the column adsorption method with a natural material, namely zeolite which has been activated and then modified with the photocatalytic compound TiO2. Modification of the zeolite with TiO2 was carried out to increase the adsorption capacity of the zeolite on dye waste, because the TiO2 compound is expected to reduce the dye into a harmless compound under ultra violet light radiation. In this research, natural zeolites were first characterized using X-Ray Diffraction analysis to confirm the starting material. After that, the natural zeolite is crushed to granule size. The zeolite is then activated using a mineral acid solution. Zeolite granules act as carriers which are later coated with TiO2 using a deep coating technique. The success of TiO2 coating on zeolite granules was confirmed by SEM-EDX analysis. TiO2 modified zeolite granules were used as an adsorbent in column adsorption with simulated textile dye influenza with varying flow rates. The effectiveness of dye adsorption is determined by measuring the concentration of the column adsorption effluent using a UV Vis spectrophotometer and comparing it with the initial concentration. Based on the research results, it can be concluded that the natural zeolite used belongs to the modernite group. The results of the adsorption effectiveness test on methylene blue dye showed that HCl-activated and TiO2-modified zeolite granules had better adsorption capabilities than HCl-activated and unactivated zeolite.

Kata Kunci: *zeolit, limbah zat warna tekstil, TiO2, adsorpsi*