ABSTRAK

ADITYA ANDI SAPUTRO. Sintesis Zeolit X Dari Bauksit dan Terapannya Sebagai Katalis Fenton Untuk Menguraikan *Methylene Orange*. Di bawah bimbingan **YUSMANIAR, ARIF RAHMAN.**

Katalis Fenton Zeolit X telah berhasil disintesis dengan adanya bukti data XRD dan FTIR. Katalis fenton zeolit X disiapkan dalam berbagai kondisi untuk degradasi *methylene orange*; yaitu dengan H_2O_2 dan lampu UV; Zeolit x dengan H_2O_2; hanya Zeolit X; Bauksit dengan H_2O_2 dan lampu UV; Bauksit dengan H_2O_2; hanya Bauksit. Konsentrasi awal methylene orange saat uji aktifitas 65.4 ppm dan konsentrasi H_2O_2 0.02 M. Efektifitas maksimum degradasi fotokatalis H_2O_2-Zeolit X hasil sintesis mencapai 99%. Efektifitas kadar besi maksimum hingga menit ke-50. Hasil karakterisasi FTIR fotokatalis H_2O_2-Zeolit X hasil sintesis hanya menunjukkan satu puncak dan cenderung mengalami gaya adsorpsi fisika. Hasil XRD fotokatalis H_2O_2-Zeolit X hasil sintesis mengalami kerusakan pada pH 3. Morfologi permukaan fotokatalis H_2O_2-Zeolit X hasil sintesis terdeteksi bentuk octahedral yang merupakan ciri khas zeolit x (*faujasit*) dan terkontaminasi logam Mg dan Au. Semua model kinetika reaksi pada penelitian ini adalah pseudo orde dua. Mekanisme reaksi dinamakan reaksi fenton yang disebabkan perpaduan antara peroksida dengan ion besi (Fe).

Kata kunci: *Fotokatalis H_2O_2-Zeolit X, Zeolit X, fenton, Methylene Orange*

ABSTRACT

ADITYA ANDI SAPUTRO. Zeolite X Synthesis from Bauxite and Its Applied as a Fenton Catalyst to Decompose Methylene Orange. Under supervised by **YUSMANIAR, ARIF RAHMAN.**

The X Zeolite of Fenton catalyst was successfully synthesized by the XRD and FTIR data evidence. Fenton zeolite X catalyst was prepared in various conditions for degradation of methylene orange; namely with H_2O_2 and UV lights; Zeolite x with H_2O_2; only Zeolite X; Bauxite with H_2O_2 and UV lights; Bauxite with H_2O_2; only bauxite. The initial concentration of methylene orange during the activity test was 65.4 ppm and H_2O_2 concentration 0.02 M. The maximum effectiveness of the synthesis of photocatalyst of H_2O_2-Zeolite X synthesized reached 99%. Maximum effectiveness of iron levels up to 50 minutes. The results of FTIR photocatalyst characterization of H_2O_2-Zeolite X synthesized only showed one peak and tended to experience physical adsorption forces. The results of synthesis XRD photocatalyst H_2O_2-Zeolite X were damaged at pH 3. The surface morphology of the synthesized H_2O_2-Zeolite X was detected by octahedral form which is characteristic of zeolite x (faujasite) and it contaminated with Mg and Au metals. All reaction kinetic models in this study are pseudo second order. The reaction mechanism is called a fenton reaction caused by a combination of peroxide and iron (Fe) ions.

Keywords: *Photocatalyst of H_2O_2-Zeolite X, Zeolite X, Fenton, Methylene Orange*