

Sintesis karakterisasi dan aktivitas fotokatalitik cr doped zno montmorillonite dengan methylene blue sebagai model polutan =  
Synthesis characterization and photocatalytic activity of cr doped zno montmorillonite on methylene blue as pollutant model

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Abstrak

Nanopartikel oksida seng (ZnO) yang diberi dopan kromium (Cr) dan penambahan 10 % montmorillonite (MMT) disintesis dengan metode kopresipitasi untuk empat variasi persen atom Cr. Nanopartikel dikarakterisasi menggunakan X-Ray Diffraction (XRD), Energy Dispersive X-Ray (EDX), Fourier Transform Infrared (FTIR), UV-Visible Diffuse Reflectance (UV-Vis) dan Electronic Spin Resonance (ESR). Pengujian aktivitas fotokatalitik dilakukan menggunakan model polutan methylene blue dengan paparan sinar UV. Penambahan montmorillonite dan dopan Cr pada ZnO dapat meningkatkan degradasi methylene blue dengan Cr doped ZnO/MMT 10 at.% menunjukkan degradasi maksimum dengan kondisi optimum dosis fotokatalis 0.7 g/L dan konsentrasi larutan 20 mg/L. Spesies dominan pada aktivitas fotokatalitik adalah hole dan OH berturut-turut.

.....Chromium (Cr) doped zinc oxide (ZnO) nanoparticles with 10% montmorillonite (MMT) addition were synthesized by co-precipitation method for four chrome atomic percentage variations. Samples were characterized by X-Ray Diffraction (XRD), Energy Dispersive X-Ray (EDX), Fourier Transform Infrared (FTIR), UV-Visible Diffuse Reflectance (UV-Vis) and Electronic Spin Resonance (ESR). Photocatalytic were evaluated using methylene blue under UV light irradiation. MMT addition and Cr dopant to ZnO nanoparticles enhance methylene blue degradation with the optimum conditions are 0.7 g/L of nanoparticle and 20 mg/L of methylene blue initial concentration. Hole and OH were identified as dominant species of photocatalytic activity.