SENG OKSIDA (ZnO) SEBAGAI FOTOKATALIS PADA PROSES DEGRADASI SENYAWA BIRU METILEN

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ABSTRACT

A research aimed to study the influence of ZnO white powder on photodegradation of methylene blue using Merkuri lamp (λ = 365 nm) as light source have been reached. A suspension of ZnO (40 mg) mixed with 25 mL of methylene blue solution (initial concentration of 0.015 mM) then was illuminated for 60 minutes showed degradation and quantum yield amounting 23.84% and 3.55 molecules photon^{-1}, respectively. These results mean that by using ZnO as photocatalyst there is about four times efficiency than the one without ZnO either in case of time consumed or the number of photon applied. In kinetic study, it has been observed that such semiconductor-catalyzed photochemical reaction obeys the first order rule where rate constant and half time consecutively were 0.0029 minute^{-1} and 231 minutes.

Keywords : *photodegradation, photocatalyst, quantum yield, semiconductor, photochemical reaction.*

KESIMPULAN

Fotodegradasi senyawa biru metilen dalam pelarut air dengan sumber sinar dari lampu Merkuri (λ = 365 nm) dapat ditingkatkan efisiensi waktu dan penggunaan sumber energinya hingga mencapai empat kali lipat apabila ZnO digunakan sebagai fotokatalis. Proses ini mematuhi kinetika reaksi orde I dengan nilai rendemen kuantum yang lebih besar dari satu sehingga membuktikan bahwa ini merupakan reaksi fotokimia terkatalisis.

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