

Admixel zeolit HDTMA-Br teradsolubilisasi polimetil metakrilat (PMMA) untuk demulsifikasi dan adsorpsi minyak solar dalam air = Zeolite admicelle HDTMA-Br adsolubilized polymethyl methacrylate (PPMA) for the diesel oil demulsification and adsorption within water / Qurrota Ayun

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Abstrak

Adsorpsi merupakan salah satu metoda yang dapat digunakan untuk menangani masalah limbah emulsi minyak solar. Pada penelitian ini digunakan adsorben admixel zeolit HDTMA-Br teradsolubilisasi polimetil metakrilat (PMMA) untuk demulsifikasi dan adsorpsi solar. Kondisi optimum pembuatan model limbah emulsi solar adalah konsentrasi SDS 0,002 M, perbandingan minyak : air yaitu $5 \times 10^{-4}:1$, kecepatan pengadukan 450 rpm selama 15 menit. Hasil uji kestabilan emulsi minyak dalam air dengan turbidimeter didapatkan nilai turbiditas 388 NTU dan uji ukuran partikel dengan PSA didapatkan 337,9 nm. Pembuatan adsorben zeolit admixel-PMMA dilakukan dengan melalui tahapan: adsorpsi surfaktan HDTMA-Br pada permukaan zeolit membentuk admixel, mengadsolubilisasikan monomer metil metakrilat (MMA) ke dalam admixel dan polimerisasi MMA dengan menambahkan inisiator kalium persulfat ($K_2S_2O_8$). Keberhasilan pembentukan zeolit admixel-PMMA tersebut dibuktikan dengan spektrofotometer FTIR. Analisis kuantitatif adsorpsi minyak solar oleh zeolit admixel-PMMA digunakan metode ekstraksi gravimetri dan adsorpsi SDS menggunakan spektrofotometer UV-Vis. Kondisi optimum adsorpsi adalah massa adsorben 0,6 gram, waktu pengadukan 45 menit dan pH 7,3. Kapasitas adsorpsi optimum untuk solar adalah 97,46 mg/gram dan untuk SDS $16,52 \times 10^{-4}$ mmol/L. Adsorption and demulsification is the one solution to handle waste diesel oil emulsion. Therefore, in this research, applications of zeolite admicelle HDTMA - Br adsolubilized polymethyl methacrylate (PMMA) for demulsification and adsorption waste of diesel oil emulsion. The optimum condition of fuel emulsion waste include of SDS concentration of 0.002 M, the variation ratio of oil:water is $5 \times 10^{-4}:1$, stirring 450 rpm for 15 minute. Result of stabilized emulsion with turbidimeter is 388 NTU as amount of turbidity and 337,9 nm of particle test with PSA. Making adsorption zeolite admicelle-PMMA through the stages of HDTMA-Br surfactant adsorption on the surface of the zeolite, adsolubilized methyl methacrylate monomer into the zeolite admicelle and polymerization initiator admicelle by adding calium persulfate ($K_2S_2O_8$). The success of the modifications proved by FTIR spectrophotometer showed that the spectrum of PMMA has appeared on zeolite admicelle-PMMA. The efficiency of zeolite admicelle PMMA forming was proven by FTIR spectrophotometer. On the other hand, quantitative analysis of fuel emulsion adsorption by zeolit was using gravimeter extraction method while SDS adsorption was using UV-Vis spectrophotometer. The optimum condition of adsorption are 0,6 gram adsorbent mass, 45 minutes agitation time and pH 7,3. Optimum adsorption capacity of fuel is 97,46 mg/gram and $16,52 \times 10^{-4}$ mmol/L for SDS.