ADSORPSI AMOKSISILIN MENGGUNAKAN KOMPOSIT Ag_2O-CuO/KARBON AKTIF TANDAN KOSONG KELAPA SAWIT

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INTI SARI

Telah dilakukan penelitian tentang komposit Ag_2O-CuO/Karbon aktif dimana bahan dasar karbon aktif berasal dari tandan kosong kelapa sawit. Sintesis komposit dengan metode hidrotermal pada suhu 300 ^oC. Hasil sintesis kemudian dilakukan karakterisasi dengan FTIR, XRD, SEM, dan GSA. Hasil karakterisasi XRD, FTIR, SEM dan GSA menunjukkan bahwa karbon aktif diidentifikasi memiliki fase amorf dengan struktur *simple cubic* dan komposit Ag_2O-CuO/Karbon Aktif memiliki struktur *simple cubic* serta ukuran kristal 37,991; 32,523; 24,959; 23,407; dan 21,692 nm. Spektra komposit memiliki gugus fungsi Ag-O dan Cu-O yang membuktikan bahwa Ag_2O dan CuO berhasil disintesis pada komposit. Konsentrasi karbon (C) pada karbon aktif sebesar 34,24%, dan komposit Ag_2O-CuO/Karbon Aktif persentase unsur perak (Ag) 14,80% dan unsur tembaga (Cu) 23,80%. Karbon aktif memiliki luas permukaan 37,025 m^2/g sedangkan komposit Ag_2O-CuO/Karbon Aktif memiliki luas permukaan 138,067 m^2/g dengan memiliki kurva isoterm tipe I dan tipe IV dengan dominan berukuran mikropori. Adsorpsi amoksisilin berhasil dilakukan dengan komposit Ag_2O-CuO/Karbon aktif. Adsorpsi berjalan optimum dan maksimal pada pH 2, konsentrasi amoksisilin 700 ppm, massa 0,3 gram pada waktu kontak 60 menit dan persentase adsorpsi tertinggi yaitu 79,789% dengan mengikuti isoterm Langmuir dan pseudo orde 2.

Kata Kunci: Karbon aktif, nanopartikel, komposit, adsorpsi, amoksisilin.

ADSORPTION OF AMOXICILLIN USING Ag_2O-CuO/ACTIVATED CARBON COMPOSITES FROM OIL PALM EMPTY FRUIT BUNCH

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ABSTRACT

Research has been carried out on Ag_2O-CuO/Activated carbon composites where the basic ingredient of activated carbon comes from empty fruit bunches of oil palm. The composite was synthesized using the hydrothermal method at a temperature of 300 ^{o}C. The results of the synthesis were characterized by FTIR, XRD, SEM, and GSA. The results of XRD, FTIR, SEM and GSA characterization showed that activated carbon was identified as having an amorphous phase with a *simple cubic* and Ag_2O-CuO/Activated Carbon composites had a *simple cubic* and a crystal size of 37.991; 32,523; 24,959; 23,407; and 21,692 nm. The composite spectra had Ag-O and Cu-O functional groups which proved that Ag_2O and CuO were successfully synthesized in the composite. The concentration of carbon (C) on activated carbon was 34.24%, and the Ag_2O-CuO/Activated Carbon composite had a percentage of silver (Ag) 14.80% and copper (Cu) 23.80%. Activated carbon has a surface area of 37,025 m^2/g while the Ag_2O-CuO /Activated Carbon composite has a total surface area of 138.067 m^2/g by having a type I and type IV isotherm curve with a dominant micropore size. Amoxicillin adsorption was successfully carried out with Ag_2O-CuO/Activated carbon composites. The optimum and maximum adsorption composites were at pH 2, the concentration of amoksisilin was 700 ppm, the mass was 0.3 grams at a contact time of 60 minutes and the highest adsorption percentage was 79.789% by following the Langmuir isotherm and pseudo second order.

Keywords: Activated carbon, nanoparticles, composites, adsorption, amoksisilin.