

ABSTRAK

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Judul : Sintesis Carbon Nanopartikel (C-Dots) dengan Doping Magnesium Menggunakan Metode Pemanasan Microwave

Sintesis Carbon Nanopartikel (C-Dots) dengan metode pemanasan microwave menggunakan bahan asam sitrat, serta doping urea dan magnesium nitrat telah berhasil dibuat. C-Dots berbentuk serbuk kering berwarna hitam, namun saat dilakukan pengenceran menjadi koloid cair, warna sampel menjadi kuning. Karakteristik fisis C-Dots saat diberi sinar UV, sampel mengeluarkan pendaran dan saat diuji UV Vis, terdapat 3 titik puncak absorbansi di 275 nm, 350 nm, dan 410 nm dengan nilai absorbansi tertinggi ada pada nilai 1.5 a.u. Hasil energi gap yang dihasilkan berada antara 1.87-2.41 eV dengan perkiraan ukuran sampel ada pada rentang 2.66-3.03 nm. Variasi konsentrasi doping magnesium nitrat sedikit meningkatkan intensitas sampai pada sampel 0.75% dan nilai intensitas tertinggi dimiliki oleh sampel tersebut dengan nilai 993.59 a.u pada panjang gelombang 467 nm (biru). Dalam Spektrum FTIR teramati bahwa C-Dots memiliki gugus fungsi O-H dipermukaannya, sehingga menyebabkan C-Dots mudah larut dalam air.

Keyword : Absorbansi, Energi gap, Karakterisasi, Pendaran

ABSTRACT

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Title : *Synthesis of Carbon Nanoparticles (C-Dots) with Magnesium Doping using the Microwave Heating Method*

Synthesis of Carbon Nanoparticles (C-Dots) by microwave heating method using citric acid, as well as urea and magnesium nitrate doping has been successfully made. C-Dots are in the form of dry black powder, but when diluted into a liquid colloid, the color of the sample becomes yellow. Physical characteristics of C-Dots when exposed to UV light, the sample glows and when tested for UV Vis, there are 3 absorbance peaks at 275 nm, 350 nm, and 410 nm with the highest absorbance value being 1.5 a.u. The resulting energy gap is between 1.87-2.41 eV with the estimated sample size in the range of 2.66-3.03 nm. The variation of magnesium nitrate doping concentration slightly increased the intensity until the sample was 0.75% and the highest intensity value was owned by the sample with a value of 993.59 a.u at a wavelength of 467 nm (blue). In the FTIR spectrum, it was observed that the C-Dots have an O-H functional group on their surface, causing C-Dots to be easily soluble in water.

Keyword: Absorbance, Characterization, Energy gap, Luminescence