

**SINTESIS DAN KARAKTERISASI SIFAT OPTIK
NANOPARTIKEL DIELEKTRIK YANG DILAPISI
NANOPARTIKEL EMAS**

SKRIPSI



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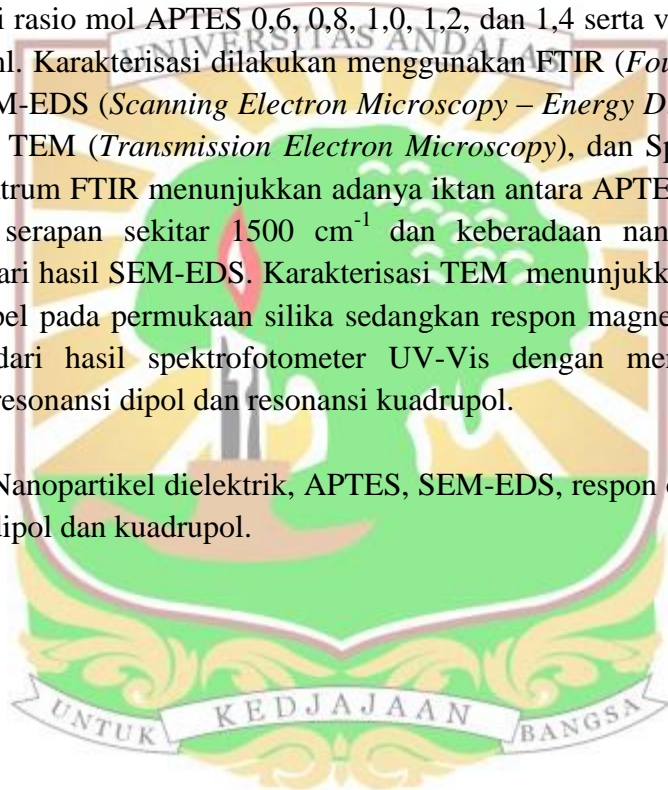
2018

SINTESIS DAN KARAKTERISASI SIFAT OPTIK NANOPARTIKEL DIELEKTRIK YANG DILAPISI NANOPARTIKEL EMAS

ABSTRAK

Telah dilakukan sintesis dan karakterisasi struktural dan sifat optik nanopartikel dielektrik yang dilapisi nanopartikel emas. Sintesis dilakukan pada suhu 95 °C dengan variasi rasio mol APTES 0,6, 0,8, 1,0, 1,2, dan 1,4 serta variasi Au 0,05, 0,1, dan 0,2 ml. Karakterisasi dilakukan menggunakan FTIR (*Fourier Transform Infrared*), SEM-EDS (*Scanning Electron Microscopy – Energy Dispersive X-Ray Spectroscopy*), TEM (*Transmission Electron Microscopy*), dan Spektrofotometer UV-Vis. Spektrum FTIR menunjukkan adanya ikatan antara APTES dengan silika pada daerah serapan sekitar 1500 cm^{-1} dan keberadaan nanopartikel emas ditunjukkan dari hasil SEM-EDS. Karakterisasi TEM menunjukkan nanopartikel emas menempel pada permukaan silika sedangkan respon magnetik dari sampel ditunjukkan dari hasil spektrofotometer UV-Vis dengan menunjukkan dua puncak yaitu resonansi dipol dan resonansi kuadropol.

Kata kunci: Nanopartikel dielektrik, APTES, SEM-EDS, respon optik, resonansi dipol dan kuadropol.



SYNTHESIS AND CHARACTERIZATION OF OPTICAL PROPERTIES OF DIELECTRIC NANOPARTICLES THAT ARE COATED IN GOLD NANOPARTICLES

ABSTRACT

Synthesis and optical as well as structural characterization of dielectric nanoparticles coated with gold nanoparticles have been performed. The synthesis was carried out at 95°C by varying of mole ratio APTES concentration that were 0,6, 0,8, 1,0, 1,2, and 1,4 and varying Au concentration that were 0.05, 0.1, and 0.2 ml. Characterization was performed using FTIR (Fourier Transform Infrared), SEM-EDS (Scanning Electron Microscopy - Energy Dispersive X-Ray Spectroscopy), TEM (Transmission Electron Microscopy, and UV-Vis Spectrophotometer. The FTIR spectra indicate that APTES and silica are chemically bound as indicated by absorption in the region of 1500 cm⁻¹ and the presence of gold nanoparticles is shown from SEM-EDS results. The TEM image shows that gold nanoparticles are attached on to the silica surface. The magnetic response of the samples is shown from the UV-Vis spectrophotometer by the appearance of the two peaks of that correspond to dipole and quadrupole resonances.

Keywords: Dielectric nanoparticles, APTES, SEM-EDS, optical response, dipole resonance and quadrupole resonance.

