

GAS SENSING CHARACTERISTIC OF COBALT (II)-PORPHYRINS THIN FILMS PREPARED USING LANGMUIR-BLODGETT DEPOSITION TECHNIQUE

Akrajas, Muhamad Mat Salleh and Muhammad Yahaya
School of Applied Physics Faculty of Science and Technology Universiti
Kebangsaan Malaysia
43600 UKM Bangi
Selangor, Malaysia

ABSTRACT

This paper reports the study of the effect of surface morphology of cobalt (II) tetraphenyl porphyrins thin films on its sensing sensitivity toward the presence of an organic vapors; cyclohexane. The thin film was deposited on glass substrate using Langmuir-Blodgett deposition technique. The annealing process was performed to modify the thin film surface morphology. The thin films samples were annealed in several temperatures; 50, 100 and 150°C, in air atmosphere for one hour, each. The sensing sensitivity of the films samples was studied based on the change on the optical absorption characteristic upon exposure toward gas which was measured at a particular wavelength of the light source; 626 nm. It was found that the sensing sensitivity of the thin film toward a particular vapor sample depended on the surface morphology of the thin film surface. The optimum sensing sensitivity was found for the thin films with a large number of hills and valleys on the surface which was given by the as prepared thin films.

Keywords: Porphyrins, Surface Morphology, Optical sensing, Organic vapor, Langmuir-Blodgett film

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