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Aluminium phthalocyanine chloride thin films for temperature sensing

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Abstract

This study presents the fabrication and temperature sensing properties of sensors based on aluminium phthalocyanine chloride (AlPcCl) thin films. To fabricate the sensors, 50-nm-thick electrodes with 50-μm gaps between them are deposited on glass substrates. AlPcCl thin films with thickness of 50-100 nm are deposited in the gap between electrodes by thermal evaporation. The resistance of the sensors decreases with increasing thickness and the annealing at 100 degrees C results in an increase in the initial resistance of sensors up to 24%. The sensing mechanism is based on the change in resistance with temperature. For temperature varying from 25 degrees C to 80 degrees C, the change in resistance is up to 60%. Simulation is carried out and results obtained coincide with experimental data with an error of +/-1%.

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