



INTISARI

PENGEMBANGAN SENSOR GAS AMONIA MENGGUNAKAN POLIMER KONDUKTIF *POLYANILINE*

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Amonia merupakan senyawa gas bersifat korosif dan akan berbahaya bagi manusia apabila konsentrasinya melebihi batas ambang maksimum. Penelitian ini bertujuan untuk mengevaluasi kinerja sensor gas amonia (NH_3) berbasis HCl yang didoping dengan polianilin (PANI) yang diendapkan pada *interdigitated electrodes* (IDE) Au. Untuk keperluan ini, gas NH_3 diperoleh dengan menginjeksikan NH_3 25% dalam larutan air ke dalam ruang sensor dengan menggunakan mikrosyringe liter. Konsentrasi NH_3 divariasikan dari 0 ppm (di udara) sampai 545 ppm. Sensor tersebut menunjukkan sensitivitas tinggi terhadap NH_3 sebesar 0,095% / ppm. Diketahui juga bahwa linieritasnya 0,983; batas deteksi (LOD) 57 ppm; dan batas kuantifikasi (LOQ) 172 ppm. Selanjutnya waktu respon dan waktu pemulihan masing-masing 163 dan 6 detik. Sensor juga menunjukkan selektivitas tinggi terhadap amonia, dibandingkan gas lain seperti etanol, akuades, propanol, dan benzena.

Kata-kata kunci: sensor gas, PANI-HCL, amonia (NH_3), IDE Au



ABSTRACT

THE DEVELOPMENT OF AMMONIA GAS SENSOR BASED ON POLYANILINE CONDUCTING POLYMER

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Ammonia is a gaseous compound that is corrosive and will be harmful to humans in the environment whose concentration exceeds the maximum threshold. The aim of this study is to evaluate the performance of ammonia (NH₃) gas sensors based on HCl-doped with polyaniline (PANI) deposited on Au interdigitated electrodes (IDE). For this purpose, the NH₃ gas was obtained by injecting 25% NH₃ in a water solution into the sensor chamber using a 1 μ L-microsyringe liter. The concentration of NH₃ was varied from 0 ppm (in the air) to 545 ppm. The sensor exhibited high sensitivity to NH₃ of 0.095% / ppm. It was also found that the linearity was 0.983, the limit of detection (LOD) was 57 ppm, and the limit of quantification (LOQ) was 172 ppm. Furthermore, the response and recovery times were 163 and 6 seconds, respectively. The sensors also showed high selectivity to ammonia, rather than other gases like ethanol, distilled water, propanol, and benzene.

Keywords: gas sensor, PANI-HCL, ammonia (NH₃), IDE Au