

Acetone detection at room temperature by chemical sensors based on PVDF/Al₂O₃ composite

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Detecting and measuring acetone concentrations in the workplace or human body are necessary for our safety and health. When the concentration of acetone in air is higher than 10,000 ppm, people may develop a headache and fatigue. Chemical sensors play a vital role in detecting the presence of hazardous and poisonous gases in the atmosphere. In the present work, a thick film of composite was prepared by using PVDF and Al₂O₃ (PVDAI). Then, the composite's chemical sensing behaviour for acetone vapours were tested by measuring the resistance change of the composite at room temperature. An increase in resistance has been observed with a response time of about ten seconds. The PVDF/Al₂O₃ (PVDAI) composites were characterized by using PXRD, FTIR and SEM. The results show that the thick film of PVDAI composite can function as a very good gas sensor for acetone vapours.

Keywords: PVDF, polymer composite, Al₂O₃, FTIR, acetone.