

FABRICATION AND CHARACTERIZATION OF RHODAMINE DYE BASED COLORIMETRIC TEXTILE SENSOR FOR ACIDIC GAS DETECTION

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The growth of chemical industries has increased probability of accidents related to dangerous chemicals. Various chemicals produced in chemical industries, such as hydrochloric acid, hydrofluoric acid and methyl isocyanate are extremely toxic, causing severe damage to human body. In particular, gaseous chemicals are more dangerous due to their high diffusion rate and colourless spread. Therefore, it is necessary to detect and visualize gaseous chemical leaks quickly so that workers can easily recognize it. In this study, to detect hazardous gaseous strong acids immediately with naked eyes, we synthesized halochromic rhodamine dye and fabricated colorimetric textile sensors by incorporating the dye into textiles. The rhodamine dye was applied to nylon6 and polyester fabrics in the way of dyeing and printing and the acidic gas sensitivity of textile sensors were tested with 300 ppm of hydrochloric acid. Both of the dyed or printed fabrics showed fast and reversible color change under acidic condition. From these results, the fabricated textile sensor can be promising candidate as a strong acid gas detector useful for a wide range of application.

Biography

Young Ki Park has completed his MS from Dankook University. He is the Researcher of Korea Institute of Industrial Technology, Smart Textiles R&D group. He has published more than 6 papers in reputed journals.

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