

FABRICATION AND CHARACTERIZATION OF DIMETHINE DYE BASED COLORIMETRIC TEXTILE SENSOR FOR ALKALINE GAS DETECTION

Jee Young Lim, Young Ki Park, Woosung Lee and Yoon Cheol Park

Korea Institute of Industrial Technology (KITECH), Korea

The accidents caused by hazardous chemicals have potential dangers everywhere in the industry. Occasionally, chemical-related accidents lead to fire and explosion, which damage not only environment but also human life seriously. Especially, accidents caused by gaseous chemicals are highly dangerous due to high spread rate and invisibility of the gas. Therefore, it is important to prevent chemical accidents in advance by detecting and treating them early in the accident. In this research, to detect harmful strong alkali gas immediately with naked eyes, we synthesized pH sensitive dimethine dye and fabricated textile sensors by incorporating the dye into textiles. The nylon6 and polyester fabrics were selected to apply dyeing and printing method respectively, and the sensitivity to alkaline gas was tested with 400 ppm of ammonia gas. Both of the dyed or printed fabrics showed definite and reversible colour change when the alkaline gas was injected directly. From the results, it should be promising candidate as a colorimetric textile sensor for alkaline gas detection.

Biography

Jee Young Lim has completed his MS from Chonbuk National University. He is the Researcher of Korea Institute of Industrial Technology, Smart Textiles R&D group. He has published more than 7 papers in reputed journals.

specialg@kitech.re.kr