

Fabrication of Liquid Contactable Colorimetric Sensor Array in PDMS Film for Gas Detection

신동인, 이명구, 김영민, 이기라[†], 임성현
성균관대학교
(yigira@skku.edu[†])

A colorimetric sensor array has attracted significant attention owing to the detecting capability of expeditious and accurate chemical gas such as bacteria biomarkers.[1-2] However, chemically compound detection in aqueous solution is inherently challenging due to leakage of dyes from spot array or interference.[3]

Herein, we report a liquid contactable colorimetric sensor array in PDMS film for gas detection through gas diffusion from contacted liquid. The sensor array consists of three different chemically responsive dyes, which can response after exposure to carbon dioxide (CO₂), amine (-NH₂-), and thiol compound (-SH). The ink spots dissolved in solvent are aligned by pin-printer on PDMS polymer substrate. We used two different PDMS film layer in order to trap ink spot arrays and protect from liquid permeation respectively, allowing gas to being diffused into film. We have also checked color change of spot arrays when the sensor is exposed to aqueous analyte solution.