Effects of well-dispersed NiO on Sensor responseof SnO_2-based sensor for the detection of DPGME

안중희, 황병욱, 이수출, 김지유[1], 현승환[1], 백근영[1], 이승호[1], 박용섭[1], 이덕동, 허증수, 김재창†
경북대학교; [1]김천고등학교
(kjchang@knu.ac.kr†)

Sensing behaviors of SnO2 sensor and SnO2-based thick-film gas sensors promoted with NiO were investigated at low concentrations of di(propylene glycol) methyl ether (DPGME) in a flow system. The SnNi3 and SnNi(I)3 materials were prepared by physical mixing and impregnating SnO2 with 3wt% NiO, respectively at 0.1 ppm DPGME 350℃. The responses of SnO2, SnNi3 and SnNi(I)3 sensors were 26%, 42% and 68%, respectively. The SnO2-based sensors promoted with NiO shows higher sensor response than that of the SnO2 sensor. In particular, the SnNi(I)3 sensor shows the highest sensor response of 68% due to the dispersion effect of NiO on SnO2 suface. Furthermore, the high response of SnNi(I)3 sensor was maintained during multiple detection and recovery cycles without deactivation. We conclude that the SnNi(I)3 sensor developed in this study provides an excellent means for detecting DPGME at sub-ppm concentrations and that it satisfies sensor response and recovery requirements.