RF sputtering 방법을 이용하여 제작한 ZnO 박막의 유독성 가스에 대한 반응 특성 연구

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Sensing properties of ZnO thin films fabricated by RF sputtering method for toxic gas

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Abstract : In this work, Ga-doped ZnO (GZO) thin films for toxic gas sensor application were deposited on low temperature co-fired ceramic (LTCC) substrates, by RF magnetron sputtering method. LTCC is one of promising materials for integration with heater, low cost production and high manufacturing yields than silicon substrate. The LTCC substrates with thickness of 400 μm werefabricated by laminating 12 greentapes which consist of alumina and glass particle in an organic binder. The GZO thin films deposited on the substrates and were analyzed by X-ray diffraction method (XRD) and field emission scanning electron microscope (FESEM). The films are well crystallized in the hexagonal (wurzite) structure with increasing thickness. The fabricated sensors showed good sensitivity and fast response time to common types of toxic gases (NOx, COx).

Key Words : gas sensor, ZnO thin film, LTCC, NOx, COx