

전도성 기판에 도입된 산화아연 나노월의 능동적 성장법과 전자소자 응용

*김동찬, **이주호, *배영숙, *최원철, *조형균, **이정용

*성균관대학교 신소재공학과, **한국과학기술원 신소재공학과

Abstract : This article reports a spontaneous method for controlling the growth mode from vertically arrayed ultra-slim MgZnO nanowires to nanowalls through the Zn random motion of seeds formed by surface phase separation by Mg injection near an evaporation temperature of Zn. The random motion of single crystal MgZnO seeds with relative Zn rich phase played a vital role in the growth of the MgZnO nanowalls. The seeds were networked with increasing Zn flux compared with Mg flux and closing to the evaporation temperature of Zn on phase separation layers. We achieved fabrication of MgZnO nanowalls on various non- and conducting substrates by this advanced growth method. The MgZnO nanowalls hydrogen sensor showed an improved sensing performance compared to the MgZnO nanowires grown under the similar conditions. Based on the microstructural characterizations, the growth procedure and models for the evolution of the structure transition from MgZnO nanowires to nanowalls on the Si substrates are proposed for phased growth times.

Key Words : MgZnO, seed layer, phase separation, nanowalls

† 교신저자) 조형균, e-mail: chohk@skku.edu, Tel:031-290-7364
주소: 경기 수원시 장안구 천천동 성균관대학교