

## 레이저 증착법을 이용한 Mn 첨가 ZnO 에피탁시 박막 성장

Epitaxial Growth of Mn-doped ZnO Thin Films on Al<sub>2</sub>O<sub>3</sub>(0001)  
Using Pulsed Laser Deposition

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Mn을 비롯한 전이금속을 ZnO에 도핑할 경우 큐리온도가 상온 이상이 되는 강자성을 발현할 수 있다는 이론적인 예측이 발표된 이래 DMS(Diluted Magnetic Semiconductor) 관점에서 이에 관련된 많은 연구들이 진행되고 있다

본 연구에서는 Al<sub>2</sub>O<sub>3</sub>(0001) 단결정 기판에 Mn 도핑 정도를 체계적으로 변화시킨 ZnO 에피탁시 박막을 레이저 증착법으로 성장 시켰다 성장된 박막은 방사광 x선 회절 분석기법을 이용하여 Mn 첨가량의 변화에 따른 박막의 구조적인 변화 거동을 정밀하게 분석하였다.

## Formation, Characterization and Application of Self-patternable PZT Thin Film

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Self-patternable lead zirconium titanate (PbZr<sub>x</sub>Ti<sub>1-x</sub>O<sub>3</sub>, PZT, x=0.52) films using photosensitive stock solution were prepared by sol-gel method. This photoresist-free PZT solution included diethanolamine as a stabilizer, ortho-nitrobenzaldehyde(NBAL) as a cross-linking agent, and ethanol as a solvent. For the development of film pattern, a wet chemical etching after UV-exposure through pattern-mask was adopted to avoid the degradation of film possibly happened during dry etching. For applying piezoelectric self-patternable PZT film to micro-mechanical detecting system, electric properties such as piezoelectric coefficient, dielectric constant, and leakage current were determined. The surface morphology and thickness of films were observed using scanning electron microscopy and the crystal orientation of films was determined by X-ray diffraction.