

Afternoon, June 26, 2017 (Monday)

Time: 15:50~17:20

Venue: Room QR504, Choi Kai Yau Building

Session 2: 6 presentations- Topic: “Materials Chemistry and Chemical Engineering”

Session Chair: Prof. Yonghui Deng

M0023 Presentation 5 (16:50~17:05)

Low-cost Growth of Magnesium Doped Gallium Nitride Thin Films by Sol-Gel Spin Coating Method

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Abstract— Low-cost sol-gel spin coating growth of magnesium (Mg) doped gallium nitride (GaN) thin films with different concentrations of Mg was reported. The effects of the Mg concentration on the structural, surface morphology, elemental compositions, lattice vibrational, and electrical properties of the deposited films were investigated. X-ray diffraction results show that the Mg-doped samples have wurtzite structure with preferred orientation of GaN(002). The crystallite size decreases and the surface of the films with pits/pores were formed, while the crystalline quality of the films degraded as the Mg concentration increases from 2% to 6. %. All the Raman active phonon modes of the wurtzite GaN were observed while a broad peak attributed to the Mg-related lattice vibrational mode was detected at 669 cm^{-1} . Hall effect results show that the resistivity of the thin films decreases while the hole concentration and hall mobility of thin films increases as the concentration of the Mg increases.