

## **Crystal Growth of Chromium (4+) Ion Doped Yttrium Aluminum Garnet**

**Y.M. Yu\*, S.J. Jeong and J.C. Koh**

**Crystal Growth Lab., Korea Research Institute of Chemical  
Technology, PO Box 107, Yuseong, Taejon 305-600, Korea**

Four valence of Chromium ion doped Yttrium Aluminum Garnet crystals were grown by Floating Zone and Czochralski methods. Changes of valence for Chromium (3+) ion to Chromium (4+) were achieved by substitution of Yttrium ion in dodecahedral site to Calcium and by substitution of Aluminum in octahedral site to Magnesium. Growth conditions for high quality of crystals were investigated. Grown crystals were cut and polished and then observed various types of defects. Characterizations by means of measurement of density and lattice parameter as a function of solidification fraction were performed. Results of Q-switching test using grown crystals were also reported.