

**Lattice Constants of High Cordierite Containing  $\text{TiO}_2$  or  $\text{ZnO}$**   
 Hiroyuki IKAWA, Kunio SATO\*, Masaharu SUZUKI\*\*, Kazuyori URABE and Shigekazu UDAGAWA, *Yogyo-Kyokai-Shi*, **94**, 452-53 (1986) — The increase in lattice constants of high cordierite on doping with  $\text{ZnO}$  or  $\text{TiO}_2$  were investigated. Gahnite was an impurity crystalline phase when cordierite glasses doped with  $\text{ZnO}$  were crystallized by heating at  $1050^\circ\text{C}$  for 48 h. Just a trace of gahnite was detected when 1.5 wt% of  $\text{ZnO}$  was added, but it increased with increased amount of the dopant. The unit cell volume of high cordierite increased on doping with  $\text{ZnO}$  up to 3 wt%, however, the volume did not increase on further doping. Rutile was one of the impurities when  $\text{TiO}_2$  was added to the cordierite glass. In this case, however, solubility limit of  $\text{TiO}_2$  in high cordierite was not so well defined as for the case of  $\text{ZnO}$ . That is, the unit cell volume of high cordierite increased continuously with increasing amount of  $\text{TiO}_2$  up to 9 wt%, although the rate of increase in unit cell volume diminished with increased doping. Some differences in crystal chemistry between  $\text{Zn}^{2+}$  and  $\text{Ti}^{4+}$  ions were considered to be responsible for the observed difference. 1 fig., 1 table, 11 refs. [H. I.]

Department of Inorganic Materials, Faculty of Engineering,  
 Tokyo Institute of Technology

12-1, Ookayama 2-chome, Meguro-ku, Tokyo 152

\*Now with Sumitomo Cement Co., Ltd.

\*\*Now with Denki Kagaku Kogyo Co. Ltd.