

Abstract

Indialite or α -cordierite was synthesized by glass crystallization method using mainly talc and kaolin and with small amount of MgO, Al₂O₃, SiO₂ to compensate the chemical formulation of non-stoichiometric compositions of cordierite. (3MgO.1.5Al₂O₃.5SiO₂). B₂O₃, P₂O₅ and CaO was also added to decrease the melting and sintering temperature of cordierite. The glasses were pelletized and sintered from 850°C up to 1050°C. Phase compositions of both heat treated glass was quantified by X-ray powder diffraction data by the Rietveld method using TOPAS Ver 3 software. Result shows that about 60wt% of α cordierite has successfully crystallized at 850°C. Beside secondary phases (forsterite) which come from initial raw materials, phases from grinding media were also presents in the sample. The contamination was considered high since it has reacted with existence phases to form a new phase at higher temperature. Without any contamination from grinding it was expected to obtain more than 90wt% α cordierite using the same composition. © (2011) Trans Tech Publications, Switzerland.