Growth of YAG Single Crystals by Flux Method(Chemistry)

The spectrum shows that ordering of evaporated particles develops, if the deposition rate becomes smaller. The crystallization has been identified and analyzed by differential scanning calorimetry in the temperature range from 70°C to 160°C, and also by optical microscope measurement. The result indicates that the activation energy for the crystallization is closely related to the deposition rate.

Chemistry

Growth of YAG Single Crystals by Flux Method

Isamu SHINDO and Hiroshi KOMATSU

Yogyo-Kyokai-Shi (J. Ceram. Assoc. Jap.), **85** (1977), 380.

The growth of YAG single crystals by the slow cooling method using a PbO-PbF_2-B_2O_3 mixed flux was investigated.

(1) The solubilities of YAG in PbO, PbF_2 and PbO-PbF_2-B_2O_3 were determined by the weight loss method in the temperature range from 800 to 1300°C. It is shown that the PbO-PbF_2-B_2O_3 mixed flux gave the largest solubility gradient but that PbO flux gave the maximum yield of YAG crystals.

(2) The growth experiments were made at constant cooling rates of 1.3, 2.6, 5.2 and 10.4°C/h where the vertical temperature gradient along the crucible was varied from 0 to 15°C/cm. The optimum growth conditions were as follows; temperature gradient: >6°C/cm, cooling rate: <2.6°C/h and soaking temperature: >1300°C.

(3) The grown crystals composed of {110} with rare appearance of {211}. Observation of the growth sector of etched crystals revealed that {110} developed at the early stage of growth.

(4) It is reported by previous investigators that the grown crystals dissolve in this flux system below 950°C, but no significant dissolution was observed in the solubility measurements and also in the growth process by slow cooling down to 850°C.

The Structure of No_3^- in Molten Monovalent Metal Nitrates by Pulsed Neutron Diffraction

Kenji SUZUKI and Yoshiaki FUKUSHIMA

Z. Naturforsch., **32a** (1977), 1438.

The structure factor of molten monovalent metal nitrates was measured over a wide range of scattering vectors by time-of-flight pulsed neutron diffraction using epithermal neutrons generated from an electron LINAC. It is found that the NO_3^- ion forms an isosceles triangle in molten $LiNO_3$, $AgNO_3$ and $TlNO_3$, and a regular triangle in molten $NaNO_3$, KNO_3, $RbNO_3$ and $CsNO_3$.