

<P71>

Er:LiNbO₃단결정의 melt조성과 dopant농도변화에 따른 균일성
Homogeneity of Er:LiNbO₃ single crystals with variation of starting melt
composition and dopant concentration

서 중 원, 양 우 석, 윤 대 호
성균관대학교 금속·재료공학부

LiNbO₃(LN)단결정은 electro-optic, photo-refractive, piezoelectric특성 등이 우수한 물리적 성질을 가지고 있다 이러한 성질은 결정 내의 균일성과 밀접한 관련이 있어 segregation이나 impurity 등에 의해 달라지게 되기 때문에 균일한 결정성은 매우 중요하다 본 연구에서는 고품질의 fiber 단결정을 육성하는 방법인 μ -PD법 (micro-pulling down method)을 이용하여 Er₂O₃를 첨가한 LN단결정을 성장시켰다 결정성장시 starting melt로 congruent (Li₂O₃/Nb₂O₅=48.6/51.4)조성의 LN과 stoichiometric(Li₂O₃/Nb₂O₅= 50/50)조성의 LN을 사용하였으며 Er₂O₃를 각각 1 mol% 와 3 mol% 첨가하여 c-축방향으로 성장시켰다. 성장시킨 결정을 통하여 starting melt조성과 dopant의 농도변화에 따른 LN단결정의 균일성을 연구하였다.

<P72>

Observation of Crystallographic Relationships of (Ba,Sr)TiO₃ Thin Film Prepared by
Metal-Organic Chemical Vapor Deposition on (111) Textured Pt Electrode.

Dong Chul Yoo, Jeong Yong Lee

Department of Materials Science and Engineering, Korea Advanced Institute of
Science and Technology

We have studied the crystallographic orientations of (Ba,Sr)TiO₃ (BST) thin film deposited on (111) textured Pt/SiO₂/Si substrate by metal-organic chemical vapor deposition with a transmission electron microscope. BST thin film (50nm) was fully crystallized from BST/Pt interface with our experimental condition. We found that crystallographic orientation relationships were BST $\bar{1}\bar{1}0$ || Pt $\bar{1}\bar{1}0$ and BST (110) || Pt (111) in the BST (110) grains on (111) textured Pt electrode. Moreover BST (110) grains had orientation relationships with BST (100) grains which were $[001]_{(100)\text{ grain}} || [001]_{(110)\text{ grain}}$ and $(100)_{(100)\text{ grain}} || (110)_{(110)\text{ grain}}$ at the grain boundary. Accordingly orientation relationships between BST (100) grains and (111) textured Pt electrode could be found. We could make sure these relations with high resolution images and selected area electron diffraction patterns.