

<b>NAME. &amp; FACULTY</b>		<b>TITLE</b>			
Graduate School of Science and Technology Advanced Materials Science and Technology Akihiro Iida, Kazuyoshi Uematsu, Kenji Toda, Mineo Sato		Low Temperature Growth of Potassium Niobate Single Crystal			
<b>FIELD</b>	<b>IT</b>	<b>NANO</b>	<b>BIO · LIFE</b>	<b>ENVIRO · ENERGY</b>	<b>OTHERS</b>

**ABSTRACT** Lead included ceramics are considered as one of the hazardous substances that should be restricted. The potassium niobate  $\text{KNbO}_3$  is a promising candidate for many lead-free piezoelectric devices due to its large electro mechanical coupling coefficients and high Curie temperature. However, high temperature and large scale equipments are required for growth of  $\text{KNbO}_3$  single crystal, because  $\text{KNbO}_3$  melts incongruently and has two phase transformations. In this study, we present new processes for low temperature growth of  $\text{KNbO}_3$  single crystal using layered perovskite template precursor,  $\text{K}_2\text{NbO}_3\text{F}$ .

In previous our study, interlayer K and F are easily eliminated from  $\text{K}_2\text{NbO}_3\text{F}$  by stirring in water. In this study,  $\text{KNbO}_3$  single crystal was successfully grown using template precursor at low temperature. On this process,  $\text{KN}$  single crystal has unique plate morphology.

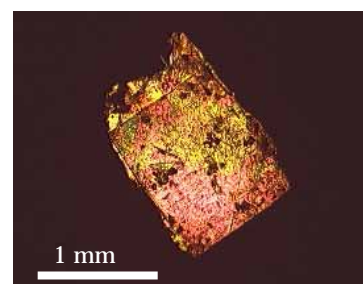


Fig. Polarization microscope photograph of single crystal sintered on this process.

**Flow Chart for Strategic Partnership University-Industry-Government to be Developed**

