PZT ceramic is a typical piezoelectric ceramic being commercialized in a large scale. The Curie temperature ranges from 250 to 450°C depending on composition and the dielectric constant is 250 - 400, which indicates a appropriate pyroelectric material.

Evaluation of each crystal is as follows at the present.

(1) Lithium niobate ($LiNbO_3$)

Single zone crystal growth method is designed for $LiNbO_3$ to apply the DC electric field to crystal at the final stage of crystal growth, utilizing the nature of similar melting point to Curie temp. By this method, air bubble and subgrain are greatly reduced and the optical quality becomes high.

(2) Lithium Tantalate ($LiTaO_3$)

The crystal for surface elasticity wave element becomes blown or yellow because of Pt-Rh crucible being used. These colors are not an obstacle for the use of pyroelectric application. The use of 99.9% level raw material leads a satisfactory property of crystal.

(3) Strontium Barium - Niobate ($Sr_{1-x}BaxNb_5D_{15}$)

The crystal growth from molten liquid of congruent composition gives as high qulity crystal of striation-free, core-free and 10/cm of transition density.

(4) Lead Germanate ($Pb_5Ge_3O_{11}$)

Following points should be considered for growth of high quality crystal: (a) to mix and crush raw material with through care, (b) even heating with small temperature slope, (c) only one usage of molten composition, (d) not to raise temperature above 800°C, (e) grow under other atmosphere than oxygen such as argon, and (f) crystal growing rate not exceeding 4 mm/hour.

4. Polymer Film (PVF_2 etc.)

Research for piezoelectric and pyroelectric properties for organic polymer film had been made on biopolymers such as cellulose and collagen, but since Kawai found that a big piezoelectricity exists in polyvinylidene fluoride (PVF_2), researches have been shifted to this polymer. Researches for piezoelectric/pyroelectric elements of PVF_2 are underway from the features peculiar to polymer film such as flexibility, thin film and possible large area.