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Abstract for American Physical Society, New York Meeting, January 28-31, 1959.

A New Class of Ferroelectrics: Acid Selenites:* R. Pepinsky, K. Vedam,

Y. Okaya and F. Unterleitner, The Pennsylvania State University.

Optical observation of a reversible transition in potassium acid selenite has led to the dielectric examination of other acid selenites. Two new ferroelectric species have therewith been discovered: $\text{LiH}_3(\text{SeO}_3)_2$, ferroelectric at room temperature; and $\text{NaH}_3(\text{SeO}_3)_2$, ferroelectric below -75°C .

$\text{LiH}_3(\text{SeO}_3)_2$ shows well-saturated square hysteresis loops over the temperature range from -190°C to $+80^\circ\text{C}$. At room temperature the spontaneous polarization is 10.0 microcoulombs/cm², and the coercive field is 1.5kv/cm. X-ray observations reveal monoclinic symmetry, space group Pn, with $a = 6.255 \text{ \AA}$, $b = 7.899 \text{ \AA}$, $c = 5.443 \text{ \AA}$, $\beta = 105^\circ 23'$. The polar axis is perpendicular to the (001) plane. The material appears to be of practical importance.

$\text{NaH}_3(\text{SeO}_3)_2$ is not isomorphous with $\text{LiH}_3(\text{SeO}_3)_2$. In the room-temperature phase the symmetry is monoclinic, space group $\text{P}2_1/a$, with $a = 11.77 \text{ \AA}$, $b = 4.84 \text{ \AA}$, $c = 5.80 \text{ \AA}$, $\beta = 118.5^\circ$. The ferroelectric phase has triclinic symmetry (space group P1; if axes are denoted as for room-temperature phase, space group C1). The polar direction is along [310], referred to the monoclinic phase.

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