

# CRYSTALLOGRAPHIC AND DIELECTRIC PROPERTIES OF FERROELECTRIC CERAMICS WITH COMPOSITIONS



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Two new oxyfluoride ferroelectric solid solutions derived from  $\text{NaNbO}_3$  and with perovskite structure have been prepared; their compositions are the followings  $\text{Na}_{1-x} \text{A}_x(\text{Nb}_{1-x} \text{Mg}_x)\text{O}_{3-3x} \text{F}_{3x}$  with  $0 \leq x \leq 0.15$  for  $\text{A} = \text{Na}$  and  $0 \leq x \leq 0.20$  for  $\text{A} = \text{K}$ . The variations of both the symmetry and the unit cell parameters have been determined at room temperature.

Ceramics have been sintered in sealed tubes in order to avoid hydrolysis at high temperature. The temperature dependences of both the permittivity  $\epsilon'_r$  and  $\tan \delta$  have been measured in the temperature and frequency ranges 100 - 800 K and  $10^2$  -  $10^5$  Hz respectively. Each material exhibits a maximum of  $\epsilon'_r$  at the Curie temperature  $T_C$ . The composition variation of  $T_C$  has been correlated with the covalency degree of the M - X bonds ( $\text{M} = \text{Nb}, \text{Mg}$  ;  $\text{X} = \text{O}, \text{F}$ ).