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## FAST IONIC FLUORIDE CONDUCTORS: GENERAL CRITERIA AND MODELING

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The characteristic criteria of high mobility of the  $F^-$  ions in fluorides (vacancies in the anionic sublattice, high polarizability of the cations, size difference between the host and substituting cations...) influence also the nature of the short range order inside these materials.

A model has been proposed in order to correlate in a continuous way the composition dependence of electrical properties and the progressive extension of clusterization when the substitution rate increases in a fluoride anion excess  $CaF_2$ -type solid solution of formula  $M_{1-x}M_x^{2+\alpha}F_{2+qx}$  ( $\alpha = 1, 2, 3$ ): the sum of the interstitial fluoride ions  $n_{F_{int}}$  and the sum of the vacancies in normal sites  $n_{\square}$  can be represented according to general equations  $y = \frac{mx^3 + \lambda qx}{x^2 + q}$ : the  $m$  and  $\lambda$  parameters depend on structural features, the  $q$  parameter is bound to electrical properties.