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interesting to perform a systematic study of the effect of the Mg substitution on to the Ni-ferrite.

Electrical conductivity and dielectric measurements have been performed for $Ni_{1-x}Mg_xFe_2O_4$ (x=0; 0.17; 0.34; 0.5; 0.64; 0.83; 1) sintered at 1200°C/2h. The activation energy for the grain and grain boundary conduction and its variation with the Mg degree of substitution has been investigated. The conduction mechanism was found to be due to the hopping of both electrons and holes. The high-temperature dependence of conductivity shows a change of slope that is attributed to the hole hopping in tetrahedral sites of ferrite. Since the activation energy for the dielectric relaxation is almost equal to that of dc-conductivity, the mechanisms of electrical conduction and of the dielectric polarization are similar. The anomalous frequency dependence of the real part of permittivity can be explained on the basis of hopping of both electrons and holes. The electrical modulus analysis shows the non-Debye nature of the Mg-doped Ni ferrites.

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P.87	**Electrophysical properties of high-Tc (1-x)$BaTiO_3$-x{Na,K}$_{0.5}Bi_{0.5}TiO_3$ ceramics**
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Positive temperature coefficient of resistance (PTCR) effect occurs in semiconducting barium titanate in the temperature range above the Curie temperature (T_C = 120°C). Substitution of Ba^{2+} ions with Pb^{2+} leads to an increase in Curie temperature. However lead-containing materials are toxic. It is important to develop lead-free PTCR materials with high T_C (>120°C). It is known that the addition of $\{Na,K\}_{0.5}Bi_{0.5}TiO_3$ to $BaTiO_3$ materials shifts T_C towards higher temperature. Therefore the purpose of this work is to study the electrophysical properties of (1-x)$BaTiO_3$-x$\{Na,K\}_{0.5}Bi_{0.5}TiO_3$ solid solutions.

Samples of (1-x)$BaTiO_3$-x$\{Na,K\}_{0.5}Bi_{0.5}TiO_3$ system were prepared by the solid-state reaction technique. Phase composition and crystal structure were investigated by X-ray powder diffractometry. The permittivity and dielectric loss tangent were investigated in wide frequency and temperature ranges. An investigation of the influence of grain regions on the PTCR effect using impedance spectroscopy in (1-x)$BaTiO_3$-x$\{Na,K\}_{0.5}Bi_{0.5}TiO_3$ was carried out. It has been found that in (1-x)$BaTiO_3$-x$\{Na,K\}_{0.5}Bi_{0.5}TiO_3$ system the grain boundary and the outer layer region make a contribution to the PTCR effect. With increasing x, the values of P_{max} and P_{min} were observed to increase due to the growth of potential barrier at grain boundaries. The resistance of potassium-containing samples is higher as compared with lead-containing ones. The resistance and PTCR jump in sodium-containing system are similar to those in lead-containing system, and these materials can be used in practice as current limiters and temperature controllers.

P.88	**Hydroxyapatite nanostructure's dielectric and piezoelectric properties**
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Hydroxyapatite (HAP) is the main mineral component of tooth enamel and bone. Special interest is connected with the physical properties of the nanosized HAP, because it grows as nanosized platelets at nucleation sites on a protein template. Recently, it were shown that HAP dielectric properties provides the large surface charge storage, that is important