



Molecular dynamics and electrical conductivity of $(C_3N_2H_5)_5Bi_2Cl_{11}$.

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The proton dynamics and the imidazolium cation molecular motions of $(C_3N_2H_5)_5Bi_2Cl_{11}$ have been studied by means of CW 1H NMR analysis in a wide range of temperatures. The results have been correlated with the ones obtained by means of the electric conductivity measurements. It was found that conductivity rapidly increases at the temperature of 227 K which corresponds to the onset of reorientational motion of the imidazole ring. The imidazolium cation reorientations are accompanied by a chemical exchange and proton diffusion in the hydrogen bonds even at temperatures much lower than that of the transition to the superionic phase ($T = 293$ K). It indicates that a favoured type of conductivity in the compound studied is the protonic one. This result demonstrates that the nature of the electric conduction in ICB is fairly well explained in the framework of the Grottuss type diffusion mechanism of proton transport.

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