

# The Permittivity and AC Conductivity of the Layered Perovskite $[(\text{CH}_3)(\text{C}_6\text{H}_5)_3\text{P}]_2\text{HgI}_4$

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The dielectric permittivity and ac conductivity of bis-(Methyltriphenyl-phosphonium)<sub>2</sub>tetraiodomercurate (II),  $[(\text{CH}_3)(\text{C}_6\text{H}_5)_3\text{P}]_2\text{HgI}_4$ , has been measured in at 300–400 K and 0.11–20 kHz. The frequency dependent conductivity is interpreted in terms of the jump relaxation model, where translational and reorientational hopping takes place. The conductivity results were fitted to the law

$$\sigma = \sigma_0 + A_1(T) \omega^s + A_2(T) \omega^r, \quad \text{with } s < 1 \quad \text{and } r < 2.$$

The temperature dependence of the conductivity was fitted to two relaxation processes. The activation energies  $\Delta E_1$  and  $\Delta E_2$  are frequency dependent and lie in the ranges of 0.8 eV and 0.2 eV.  $\Delta E_1$  is associated with translational long range hopping while,  $\Delta E_2$  is associated with localized and/or reorientational hopping. PACS Nos. 76, 77.

*Key words:* AC Permittivity; AC Conductivity; Phase Transition; Dielectric measurement.