9.7 cm

A POSSIBLE MECHANISM OF CHARGE TRANSPORT IN COMPLEX TRANSITION METAL OXIDES

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Group-theoretical analysis of the p-d hybridization and direct p-p hopping indicates that only a combination of both mechanisms can explain charge transport in complex transition metal oxides (eg. perovskites, garnets). The basic structural units of these crystals are MO_4 metal-oxygen tetrahedra and/or MO_6 octahedra. The p-d hybridized hole states are attached to each such cluster. The hole motion between the nearest-neighbour clusters is mediated by the p-p symmetry-permitted hole jumps, both inter- and intraband. An effective hopping Hamiltonian is obtained and employed in analysis of the temperature dependence of the jump frequency. A final result turns to be a Mott-like hopping conductivity.

13.4 cm

Subject category :

3. Transition Metals, Alloys and Compounds

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