

Stoichiometry Effects on the Electrical Conductivity of Lithium-Manganese Spinels

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Z. Naturforsch. **54 a**, 579–584 (1999); received May 15, 1999

The electrical conductivity of lithium-manganese spinels is analyzed in samples with different starting Li cationic fraction x . Li-rich spinels, resulting from Li-Mn substitution around the stoichiometric value ($x = 0.333$), show conductivity values higher than that observed in stoichiometric LiMn_2O_4 . Besides, a conductivity drop, associated with a structural phase transition at about 290 K in LiMn_2O_4 , progressively disappears by decreasing x , while it is absent in Li-rich samples. Stoichiometry effects on the concentration of charge carriers and on the available sites for the hopping transport process are evaluated, as well as the effects due to coexisting insulating phases. The role of the Jahn-Teller effect on the conductivity behaviour of stoichiometric and Li-poor spinels is also considered.

Key words: Electrical Conductivity; Lithium Manganese Oxides; LiMn_2O_4 .