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Phase separation and Jahn-Teller effect in spinels SUNMOG YEO, The Department of Physics, Rutgers University Piscataway NJ 08854 USA, Y. HORIBE, S. MORI, Dept. of Materials Science, Osaka Profecture Univ.1-1 Gakuen-cho, Sakai-Shi Osaka 599-8531, Japan, C.H. CHEN, Center for Condensed Matter Sciences, National Taiwan University. 1 Roosevelt Road, Section 4 Taipei 106, Taiwan, S. GUHA, S-W. CHEONG, The Department of Physics, Rutgers University Piscataway NJ 08854 USA — Inter-relationship between phase separation and the Jahn-Teller effect has been investigated in various spinel compounds containing Cu2+ and Mn3+ ions. We have employed comprehensive experiments of resistivity and magnetic susceptibility measurements, x-ray diffraction, and TEM. Particular attention was given to study the evolution of physical properties with the substitution of non Jahn-Teller ions to the Jahn-Teller-active Cu or Mn sites. The results of x-ray and TEM clearly show nanometer-scale chemical/structural phase separation and our phase diagram demonstrates a close relationship between phase separation and the Jahn-Teller effect.

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