

## **Electronic phase separation and unusual isotope effects in La<sub>2-x</sub> Sr<sub>x</sub> CuO<sub>4</sub> observed by electron paramagnetic resonance**

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### **Abstract**

We review the results of our recent studies of La<sub>2-x</sub> Sr<sub>x</sub> CuO<sub>4</sub> cuprate superconductor using electron paramagnetic resonance (EPR). It is shown that the EPR of Mn<sup>2+</sup> doped into La<sub>2-x</sub> Sr<sub>x</sub> CuO<sub>4</sub> (LSCO) provides an unique microscopic information concerning the magnetic, electronic and lattice properties of cuprates. The main conclusions followed from these experiments are discussed. Most attention is given to important and highly debated questions, such as the role of the lattice, electron-phonon interaction, polaron formation and microscopic electronic phase separation in cuprates. © 2007 Springer-Verlag Berlin Heidelberg.

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