Magnetic properties of new copper polychalcogenides

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The subject of our particular interest are the three stable phases derived from pseudobinary system SrO-Cu0, *i.e.* $SrCuO_2$, Sr_2CuO_3 and $Sr_{14}Cu_{24}O_{41}$ compounds. $SrCuO_2$, Sr_2CuO_3 materials belong to a group of quasi-one-dimensional compounds with the "infinite-chain" type structure whereas $Sr_{14}Cu_{24}O_{41}$ is a member of a family of two-leg ladder type materials. They all crystallize in the orthorhombic symmetry for ambient pressure technology (LP phases).

In this paper the results of a study of the influence of different physical conditions on the electronic properties and EPR signals of these materials are described and discussed.

All compounds are semiconductors with small activation energy ($E_a \approx 0{,}21$ eV) as it was shown with their temperature dependences of resistivity. In addition for $SrCuO_2$ (LP phases) the phase transition at $T_p = 220$ K was observed with $E_a \approx 0{,}2$ eV above T_p and $E_a \approx 0{,}15$ eV below T_p. Electron paramagnetic resonance demonstrate in particular for $SrCuO_2$ and Sr_2CuO_3 a strong influence of air and water.

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