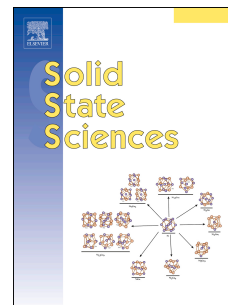


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Advantage of low-temperature hydrothermal synthesis to grow stoichiometric crednerite crystals

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**Advantage of low-temperature hydrothermal synthesis to grow stoichiometric crednerite crystals.**M. Poienar<sup>1\*</sup>, C. Martin<sup>2</sup>, O.I. Lebedev<sup>2</sup> and A. Maignan<sup>2</sup>

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**Abstract**

This work reports a new approach for the growth of stoichiometric crednerite  $\text{CuMnO}_2$  crystals. The hydrothermal reaction, starting from soluble metal sulphates as precursors, is assisted by ethylene glycol and the formation of crednerite is found to depend strongly on pH and temperature. This method allows obtaining small hexagonal platelets with the larger dimension about 1.0-1.5  $\mu\text{m}$  and with a composition characterized by a Cu/Mn ratio of 1. Thus, these crystals differ from the needle-like millimetric ones obtained by the flux technique for which the composition departs from the expected one and is close to  $\text{Cu}_{1.04}\text{Mn}_{0.96}$ . This monitoring of the cationic composition in crednerite, using hydrothermal synthesis, is important as the Cu/Mn ratio controls the low temperature antiferromagnetic ground-state.

**Keywords:** hydrothermal synthesis, crednerite, structural and magnetic properties.

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