

PRELIMINARY RESULTS OF MÖSSBAUER SPECTROSCOPIC STUDIES  
OF GELS OF COLLOIDAL TRIVALENT IRON

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The influence of calcination temperatures of gels of colloidal Fe<sup>3+</sup> (III) on properties of gel particles was studied in this work by Mössbauer spectroscopy. It was established that samples calcinated from 293°K to 473°K showed only quadrupole splitting whereas hyperfine magnetic effects were observable in samples treated above 498°K. With the increase of calcination temperatures the quadrupole splitted lines were reduced and the magnetically splitted became observable. Thus in samples treated above 573°K only the six hyperfine splitting lines are visible.

The above mentioned experimental data indicates that the particle sizes depend on calcination temperatures. Up to 473°K small particles are formed showing only superparamagnetic properties. In gels treated above 473°K particles of larger sizes are formed causing a transition of  $\alpha$  - Fe<sub>2</sub>O<sub>3</sub> from the superparamagnetic into the ferromagnetic state.