

REEXAMINATION OF CHINGA METEORITE USING MÖSSBAUER SPECTROSCOPY WITH HIGH VELOCITY RESOLUTION: PRELIMINARY RESULTS.

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Introduction: Iron meteorite Chinga was classified as ataxite (IVB) with about 16.8 wt.% of Ni. Previous Mössbauer study of Chinga meteorite [1] showed the presence of three phases such as α_2 -Fe(Ni, Co) (martensite with about 19.6 at.% of Ni), α -Fe(Ni, Co) (kamacite with about 4.8 at.% of Ni) and γ -FeNi (tetraenaite with 50 at.% of Ni). Recently new possibilities of Mössbauer spectroscopy with high velocity resolution in meteorites studies were showed [2–4]. Therefore, reexamination of Chinga meteorite using this technique was started.

Experimental: Metal of Chinga meteorite was prepared as powder and measured at room temperature using high stable, precision and sensitive Mössbauer spectrometer SM-2201 (see [2–4]) in 4096 channels.

Results and Discussion: High velocity resolution Mössbauer spectrum of Chinga meteorite (4096 channels) is shown in Fig. 1. The best fit demonstrated more than three sextets as in previous study [1]. New results may be explained as the presence of martensite α_2 -Fe(Ni, Co) with different Ni content (sextets 1 and 2 with $H_{\text{eff}}=354$ and 344 kOe), kamacite α -Fe(Ni, Co) (sextet 3 with $H_{\text{eff}}=335$ kOe), taenite γ -Fe(Ni, Co) with different Ni content (sextets 4 and 5 with $H_{\text{eff}}=326$ and 313 kOe) and tetraenaite γ -FeNi (sextet 6 with $H_{\text{eff}}=295$ kOe).

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References: [1] Oshtrakh M. I. et al. 2004. *Hyperfine Interact.* 158:365–370. [2] Zhiganova E. V. et al. 2007. *Phys. Stat. Sol. (a)* 204:1185–1191. [3] Petrova E. V. et al. 2008. *J. Phys. Chem. Sol.* in press. [4] Oshtrakh M. I. et al. 2008. *Meteoritics & Planetary Science* in press.

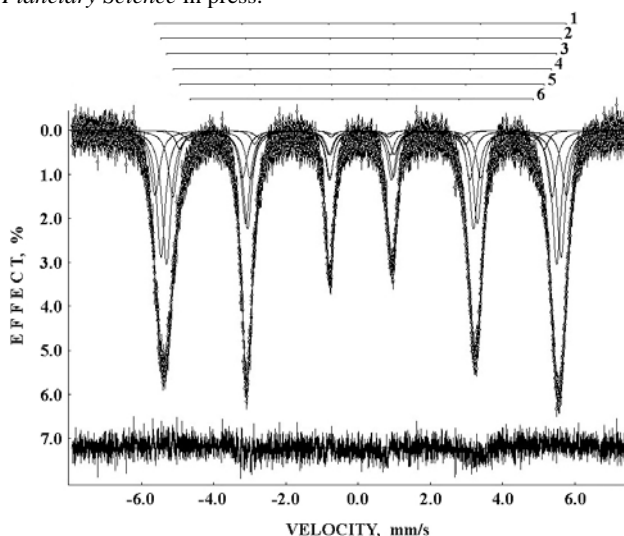


Figure 1. Mössbauer spectrum of Chinga meteorite with high velocity resolution.