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Certificate information

Object for certification is a polished fragment of Chinga meteorite with daubreelite-troilite lamellar aggregates.

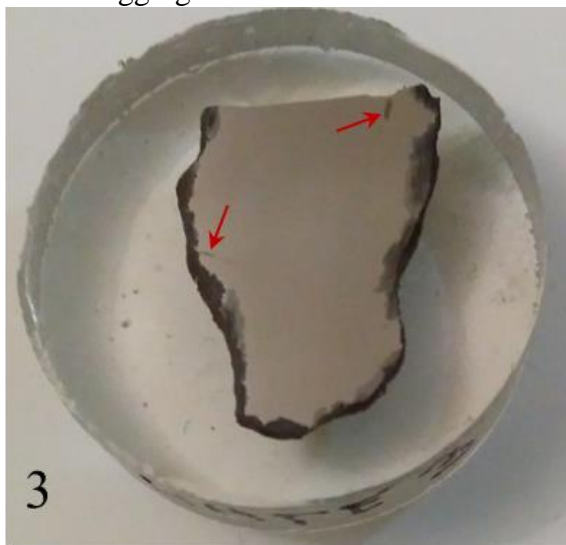


Fig.1. Photo of certified specimen.

Similar polished tablet from the same meteorite fragment stored in scientific collection of Fersman Mineralogical Museum (number FMM_FN174).

This certificate was written by Pavel Plechov from Fersman Mineralogical Museum. Original version of the certificate could be downloaded from Fersman Mineralogical Museum WWW-server (File FMM_Certificate_2018-33-3).

Results

Iron meteorite Chinga was classified as ataxite IVB with bulk composition (in wt.%): Fe -82,8, Ni - 16,6, Co - 0,55, P - 0,05 [Schauddy et al.,1972]. The main mineral in the Chinga meteorite is plessite.

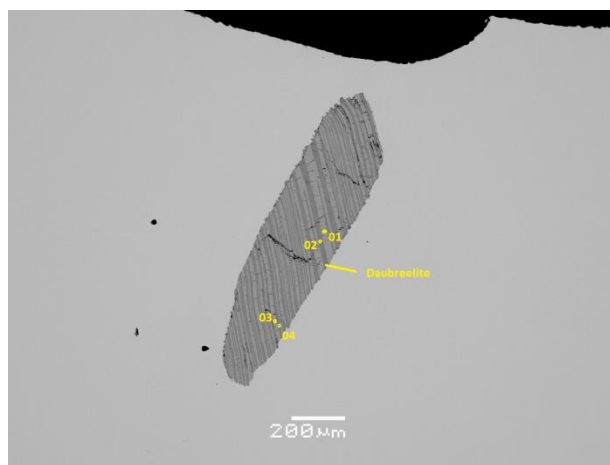


Fig.2 Daubreelite-troilite lamellar aggregate in plessite matrix.

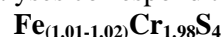
Table 1. Microprobe analyses in studied specimen

No	Phase	Fe	Mn	Cr	Ni	Co	V	S	Total
1	Troilite	60.77	b.d.l.	1.1	0.21	0.23	0.44	35.94	98.69
2	daubreelite	19.01	0.66	34.81	b.d.l.	b.d.l.	b.d.l.	43.42	97.9
3	Troilite	60.43	0.08	1.33	b.d.l.	0.33	0.43	35.94	98.54
4	daubreelite	19.1	0.62	34.5	b.d.l.	b.d.l.	0.09	43	97.31

Comments: all values in wt.% of elements, b.d.l. – below detection limit

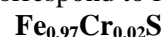
There are 2 daubreelite-troilite lamellar aggregates in this specimen (Shown by red arrows in Fig.1) well distinguishable by the eyes. Both have elongated shape, approximately 3 mm length and 0.2-0.3 mm width.

Daubreelite analyses correspond to formulae



and very close to ideal formulae of daubreelite (FeCr_2S_4). These daubreelite analyses contain small amounts of Mn (up to 0.66 wt.% - see Tabl.1).

Troilite analyses correspond to formulae



Impurity of Cr for troilite and excess of Fe in daubreelite are typical for daubreelite-troilite aggregates.

Literature

- Buchner, E., Schmieder, M., Kurat, G., Brandstätter, F., Kramar, U., Ntaflos, T., & Kröcher, J. (2012). Buddha from space—An ancient object of art made of a Chinga iron meteorite fragment. *Meteoritics & Planetary Science*, 47(9), 1491-1501.
- Schaudy, R., Watson, J. T., & Buchwald, V. F. (1972). The chemical classification of iron meteorites. VI. A reinvestigation of irons with Ge concentration lower than 1 ppm. *Icarus*, 17(1), 174-192.

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