

TRIDYMITE FROM CHINGA ATAXITE. R. BARTOSCHEWITZ¹ and D. ACKERMAN², ¹ BML, Lehmweg 53, D-38518 Gifhorn, Germany (Bartoschewitz.Meteorite-Lab@t-online.de), ² Inst. für Geowissenschaften der Univ., Olshausenstr. 40, D-24098 Kiel, Germany

Tridymite in iron meteorites are known from IVA and IIE meteorites [1]. Now it was firstly discovered in an ataxite, the anomalous IVB iron Chinga.

Numerous Chinga fragments of totally several hundreds kilograms were found since 1913. Specially in the last decade many fragments were found and brought into the meteorite collections world-wide. Thousands of cuts were prepared, but silicate inclusions are still not mentioned. So it was very surprising to find a silicate inclusion after cutting a 2.5 kg Chinga piece.

The 5 x 1.5 mm yellow-white tabular inclusion was recognized as tridymite crystal. It is embedded in daubreelite and troilite (0.1 – 0.3 mm), that is separated from the metal-phase by a 3 µm taenite rim. The surrounding metal meets structurally the common striped plessite phase [2].

Microprobe measurements with an Cameca Camebase Microbeam 15 kV 15nA were made on 2 separated tridymite grains. The composition of Chinga tridymite meets those of IVA irons, with tendency to the low silicate bearing octahedrites Gibeon and Bishop Canyon (Bishop) in Na₂O and FeO, while Al₂O₃ meets the range from the low silicate bearing IVAs to the high-silicated Steinbach (Steinb.) and Sao Joao Nepomuceno (S.J.N.) [3,4]:

| wt-% | Al ₂ O ₃ | FeO | MgO | Na ₂ O |
|---------|--------------------------------|-----------|-----------|-------------------|
| Chinga | 0.02-0.5 | 0.2-1.0 | 0.05-0.09 | < 0.03 |
| Gibeon | 0.04 | 0.1-0.36 | < 0.03 | ~ 0.03 |
| Bishop | 0.02 | 0.39 | < 0.03 | ~ 0.03 |
| Steinb. | 0.23-0.29 | 0.07-0.08 | < 0.05 | > 0.16 |
| S.J.N. | 0.31-0.33 | 0.12-0.20 | < 0.03 | > 0.18 |

References: [1] BUCHWALD V.F. (1975) *Handbook of Iron Meteorites*. Univ. California Press, Berkeley, Calif. 1418pp. [2] B.V. TERTICHNAYA and V.P. SEMENENKO (1996) The mineralogy of the ancient ataxite Chinga (IVB anomalous). *Meteoritics and Planetary Science*, **31**, A141. [3] F. ULFF-MÖLLER et al. (1995) Magmatic activity on the IVA parent body: Evidence from silicate-bearing iron meteorites. *Geochimica et Cosmochimica Acta*, **59**, 4713-4728. [4] E.R.D. SCOTT, H. HAACK and T.J. MCCOY (1996) Core crystallisation and silicate-metal mixing in the parent body of IVA iron and stony iron meteorites. *Geochimica et Cosmochimica Acta*, **60**, 1615-1631.