

MINERALOGY AND PETROLOGY OF TWO GERMAN H5 CHONDRITES – OESEDE AND WERNIGERODE.

R. Bartoschewitz¹, P. Appel², B. Mader². ¹Lehmweg 53, D-38518 Giffhorn. E-mail: Bartoschewitz.Meteorite-Lab@t-online.de. ² Institut für Geowissenschaften der Universität, Olshausenstr. 40, D-24098 Kiel.

Most of the German meteorites are poorly investigated. Here we present new mineralogical and petrological data of the Oesede and Wernigerode H5 chondrites.

Microprobe measurements were performed with a JEOL JXA 8900 R microprobe at the University of Kiel on the thin sections from the Institut für Planetologie at the University of Münster (Oesede PL08006) and from the Senckenberg Museum in Frankfurt (Wernigerode).

The **Oesede** meteorite, one stone of 3.6 kg, fell close to Kloster Oesede (near to Osnabrück) on the frozen ground on December 30th, 1927 [1].

Oesede shows a recrystallized transparent matrix with some sharp delineated PO, PP, POP, BO, BP, GOP, RP and complex BO-PP-GO chondrules and chondrule fragments.

Olivine shows Fa18.5 (17.7-18.9; n=30), CaO 0.03 wt.%, Cr₂O₃ <0.05 wt.%, and sharp extinction and irregular fractures. Ca-poor pyroxene with Fs16.4 (Fs15.9-16.7Wo0.9-1.8; n=26) sharp extinction and irregular to planar fractures. Fe-Mg-silicates have Fe/Mn- and Fe/Mg-ratios of 30.8 and 0.22, respectively. Feldspar (An10-16Or9-5) occur as 2-100 µm partly isotropic grains. The kamacite/taenite-ratio is about 4. Kamacite contains 3.7-8.2 wt.% Ni and 0.6-0.9 wt.% Co, while taenite shows 15-23 wt.% Ni and 0.6-0.9 wt.% Co. Troilite contains <0.1 wt.% Ni and up to 0.1 wt.% Co. Accessory minerals are chromite (Al₂O₃ 6.2-7.6, TiO₂ 1.2-1.9, MgO 2.9-5.7, MnO 0.7-1.0; all wt.%) and whitlockite poecilitic in chromite.

Fe,Ni metal shows partly weak oxidation rims and no oxidation veins are observed. Its magnetic susceptibility (log χ) is $5.20 \times 10^{-9} \text{ cm}^3/\text{g}$.

The **Wernigerode** meteorite, one stone of 24.3 g, was discovered on an attic under a broken roof in 1970 [2]. That roof was already damaged by influences during World War II. Unfortunately the finder is not able to remember where the house was situated in Wernigerode at Harz Mountains [3].

Wernigerode shows a recrystallized transparent matrix with some sharp delineated PO, PP, BO, GO, GOP, and RP chondrules and chondrule fragments.

Olivine shows Fa17.5 (17.3-17.7; n=2), CaO 0.05 wt.%, Cr₂O₃ <0.02 wt.%, and weak undulatory extinction and irregular fractures. Ca-poor pyroxene with Fs15.7 (Fs15.1-16.9Wo1.0-1.9; n=11) shows undulatory extinction and irregular to planar fractures. The composition of Ca-pyroxene is En41Wo41 (n=1). Fe-Mg-silicates have Fe/Mn- and Fe/Mg-ratios of 23 and 0.19, respectively. Feldspar composition is An45Or3. The kamacite/taenite-ratio is about 1. Kamacite contains 5.7-6.5 wt.% Ni and 0.6 wt.% Co, while taenite shows 29-44 wt.% Ni and 0.2-0.3 wt.% Co, and tetraetaenite 49 wt.% Ni and 0.2 wt.% Co. Troilite contains <0.3 wt.% Ni and <0.03 wt.% Co. Accessory mineral is chromite (Al₂O₃ 6.7, TiO₂ 1.4, MgO 3.9, MnO 1.1; all wt.%).

Fe,Ni metal shows partly weak oxidation rims and no oxidation veins are observed. Its magnetic susceptibility (log χ) is $5.33 \times 10^{-9} \text{ cm}^3/\text{g}$.

References: [1] Busz K. 1929. *Veröffentl. Naturwiss. Verein Osnabrück* 21: 13-17. [2] Russell S. S. et al. 2002. *Meteorit. Planet. Sci.*37:A157-A184. [3] Dietrich M. and Kurz M. 2003: pers. communication.