

**MINERAL CHEMISTRY OF THE SANCLERLÂNDIA IRON METEORITE-BRAZIL**E. Valentin<sup>1</sup>, F. A. Cuadros<sup>1</sup>, B. Buhn<sup>1</sup>, M. Matteini<sup>1</sup>, N. Hauser<sup>1</sup><sup>1</sup>Geosciences Institute-University of Brasilia-Brazil (UnB) E-mail: eduardovalentindossantos@gmail.com

**Introduction:** The Sanclerlândia iron meteorite (SIM) was found in 1971 [1] close to Sanclerlândia city, Goiás State (Brazil). On the basis of kamacite bandwidth measurements, the SIM was classified as a medium octahedrite (1.0 mm) having 92.52% Fe, 7.47% Ni, 18.6 ppm Ga, 36.4 ppm Ge and 7.1 ppm Ir [2], thus belonging to the IIIAB category [3][4]. This is the first time that mineral chemistry analyses of the SIM are reported. The main focus of this work lies on the chemical characterization of kamacite and taenite with different textural relationships as well as other minerals in SIM.

**Method:** SE and BSE images of a polished section of the SIM were systematically acquired while EDS analyses were made on selected minerals and features of interest. The mineral chemistry analyses were performed using a JEOL JXA-8230 EPMA equipped with five WDS spectrometers at the EPMA Laboratory of the University of Brasilia. The implemented analytical conditions were 20kV of acceleration voltage and 20nA of beam current. The counting time for all the elements at peak and background were 10 and 5 seconds, respectively.

**Results:** More than hundred analyses were carried out on kamacite, taenite, schreibersite, troilite and daubréelite. Kamacite occurs as thick bands and is the main responsible for the Widmanstätten pattern observed in macroscale. This mineral is characterized by 92.51 wt.% Fe, 6.86 wt.% Ni, 0.52 wt.% Co and 0.09 wt.% P. Taenite occurs both as lamellar and triangular-shaped interstitial grains, with the former having 83.91 wt.% Fe, 15.14 wt.% Ni and 0.48 wt.% Co. Triangular-shaped taenite crystals have a composition consisting of 69.29 wt.% Fe, 29.76 wt.% Ni and 0.16 wt.% Co. Schreibersite occurs along fractures, up to 250 µm in length and is characterized by 49.95 wt.% Fe, 37.14 wt.% Ni, 13.58 wt.% P and 0.12 wt.% Co. Troilite forms isolate grains up to 1 mm in diameter having 62.92 wt.% Fe, 36.20 wt.% S and 0.51 wt.% Cr. Daubréelite occurs as exsolution lamellae within in troilite crystals, having a composition characterized by 43.33 wt.% S, 35.39 wt.% Cr, 20.66 wt.% Fe, 0.19 wt.% Pb and 0.10 wt.% Mo. Small amounts of Ag (~0.11 wt. %) were found in daubréelite, whereas this element was absent in troilite. Positive correlations between Co and Fe and negative ones between Co and Ni were observed in taenite, kamacite and schreibersite. Kamacite displays small amounts of P, while this feature is not clear in taenite. Future work based on Mössbauer spectroscopy may help to understand and characterize better the SIM.

**References:** [1] Ribeiro M. R. and Rodrigues A. P. 1972. *BoL Mineral. Recife* 2, 75. [2] Kracher A. et al. 1980. *Geochimica et Cosmochimica Acta* 44:773. [3] Meteoritical Bulletin, 58, *Meteoritics* 15:235-240 (1980) [4] Grady M. M. 2000. *Catalogue of Meteorites*, 5<sup>th</sup> Edition, Cambridge Univ. Press, Edinburgh, UK.