

A UNIQUE OCCURRENCE OF SELENITE IN GEODES OF BASALTS FROM RIO GRANDE DO SUL STATE, BRAZIL

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The Brazilian State of Rio Grande do Sul is famous as an important source of agate and amethyst which occur filling geodes in basalt flows of the Serra Geral Formation, a late jurassic-early cretaceous volcanic sequence of the Paraná Basin. The main deposits of amethyst are located in the Alto Uruguai region where more than 300 mine fronts occur, most of them belonging to a specific lava flow. Mining activities are carried out by local people (garimpeiros) mostly in underground horizontal galleries as well as in open pits, where cilindric geodes measuring up to 3 meters in lenght are removed from the basaltic fresh rock. The mineral sequence in the geodes are: a fine layer of microcrystalline massive quartz or agate, followed by a centimetric layer of colorless to milky quartz that show progressive color zonning to the purple amethyst variety. Late minerals are represented by calcite, gypsum and barite. Selenite, a hyalline variety of gypsum is found only in two mines in this region. The conspicuous crystals are always idiomorphic showing a prismatic to tabular habit in parallel aggregates, ranging from few centimeters to one meter of lenght. Mineralogical data based on optical microscopy, X-ray diffraction, infrared spectroscopy and X-ray fluorescence showed that the analysed minerals are pure phases crystallized at low temperature under hydrothermal conditions. The crystallization in geodes as well as the size, the clarity, transparency and the idiomorphism of the crystals indicate that this is a unique and excepcional selenite deposit in the world.