

BISMOCLITE FROM BRAZIL

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Palache *et al.* (1951) make reference to bismoclite and its variety daubrécite with the compositions respectively as $[\text{BiOCl}]$ and $[\text{BiO}(\text{OH})\text{Cl}]$. Only a few references are known in literature on these minerals.

Samples thought to be bismutite from Feio Pegmatite near Pedra Lavrada town of the Paraíba State in NE Brazil have been collected. The mode of occurrence of the mineral is as follows: zircon crystals studded on the borders of bismutite which has a nucleus of albite, smoky quartz and garnet; zoning with zircon on one side and on another native bismuth; and finally a third type with native bismuth flanked by albite and zircon crystals; and bismutite as patches in native bismuth (Rolf, 1946). When x -rayed they are confirmed as bismutite and one of them has shown data comparable with bismoclite (A.S.T.M. card 6-0249).

Physically the sample is white in colour, pearly in luster, and columnar in habit with a size of 4 cm \times 0.8 cm. It is somewhat earthy, soft and in part scratched by finger nail. It has a specific gravity of 7.67 ± 0.03 . Optically it is colourless, in general shaly and clayey, with a high index of refraction, and some fragments showing uniaxial negative character.

Spectrochemical analysis gave Bi as the major constituent with traces of Pb, Ni and Fe.

Two differential thermal curves, obtained for the sample with a heating rate of 20 °C/min., show only one endothermic curve between 920 and 930 °C. At 945 °C the material fused. Chukhrov *et al.* (1960) report a curve for bismoclite which shows characteristic peaks at 625–675 °C and 825–875 °C.

In the curve of bismutite from this mine two prominent endothermic reactions at 530 °C and 650 °C are noted. Beck (1950) commenting on the D.T.A. data of bismutite mentions that at 700 °C the endothermic reaction is indicative of the inversion of $\gamma\text{Bi}_2\text{O}_3$ to $\beta\text{Bi}_2\text{O}_3$. Further discussion at this stage is not possible as there is no correspondence between the data obtained and those of Chukhrov *et al.* (1960).

The mineral thus is bismoclite and is probably a result of hydrothermal alteration of native bismuth, and thus could be placed in the hydrothermal stage of pegmatite formation. It is further associated with bismutite as recorded in pegmatite near Jackals Water, Namaqualand (Palache *et al.* 1951). Rare in occurrence, it is reported for the first time

in Brazil, thus adding to the list of already known Brazilian minerals.

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