

Zincian Staurolites from Paramirim, Bahia: an Exploration Guide to Lead-Zinc Deposits?

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During the examination of a parcel of manganian andalusites from stream sediments in the Paramirim area, a green-yellow-red pleochroic mineral was identified as zincian staurolite with exceptionally high ZnO and Li₂O-contents (11.76 and 0.80%, respectively), very low TiO₂-concentration (0.03%) and extremely low FeO-levels (0.47%). It is one of the most Zn and Li-rich natural staurolites ever described and, certainly, the one with the lowest Fe-content.

Apart from the chemistry, other crystallographic, physical and optical properties were measured (unit cell parameters: $a=7.85$, $b=16.53$, $c=5.64$; specific gravity: 3.74g/cm³; refractive indices: $n_x=1.722$, $n_y=1.729$, $n_z=1.733$, $\Delta n=0.011$; negative optical sign). Pyrophyllite, rutile and hematite were found as inclusions. UV-VIS-NIR and IR-spectras have also been recorded.

Recently, some investigations have been undertaken in order to assess the usefulness of zincian staurolites as an exploration guide. According to these studies, high ZnO (>2.0%) and low TiO₂-contents (<0.40%) are indicative of staurolite associated with Zn-rich massive sulfide deposits.

The identification of zincian staurolites in the heavy mineral fraction of stream sediments from the Paramirim area, which has a great potential for Pb-Zn mineralizations associated with the occurring metavolcano-sedimentary rock sequences, could be useful in the discovery of new deposits.

Due to its unusual chemistry, the relationship of this zincian staurolites to the associated minerals from the still unknown host rock deserves to be further investigated, in order to adequately evaluate its petrogenetic and exploratory significance.