

Pezzottaite, a new mineral and gem

(supplement to 'Caesium-rich morganite from Afghanistan and Madagascar')

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Abstract: Nomenclature used to describe new pink mineral specimens from Afghanistan and Madagascar is brought up to date. Structural differences between beryl and pezzottaite are illustrated.

Keywords: Afghanistan, Cs-beryl, Madagascar, pezzottaite

What appeared to be extraordinary pink beryl with high Cs content in samples from Afghanistan and Madagascar (Hänni and Krzemnicki, 2003) has been found to be a new mineral (Laurs *et al.*, 2003). Our recent publication (op.cit.) was based on results obtained before a decision was available from the 'Commission for new minerals and new mineral names' of the International Mineralogical Association (IMA). The decision of the IMA to accept pezzottaite as a new mineral was issued on

5 September 2003 and a definitive article by Hawthorne *et al.* is expected in the *Mineralogical Record*.

Consequently the terminology used by Hänni and Krzemnicki (2003) relating to pink morganite, pink beryl or Cs-beryl should be replaced by the name pezzottaite when the Li-Cs-rich analogue of beryl is meant (see *Figure 1*). With quantitative Be and Li data from ICP-MS measurements, and lattice dimensions calculated from



Figure 1: A selection of pezzottaite crystals with characteristic tabular habit. The cut stones are from 1.5 to 3.00 ct, (the step-cut sample in the middle is 12 mm long). Pezzottaites with a dense array of fine tubes (parallel to c) are cut as cabochons and produce cat's-eyes.

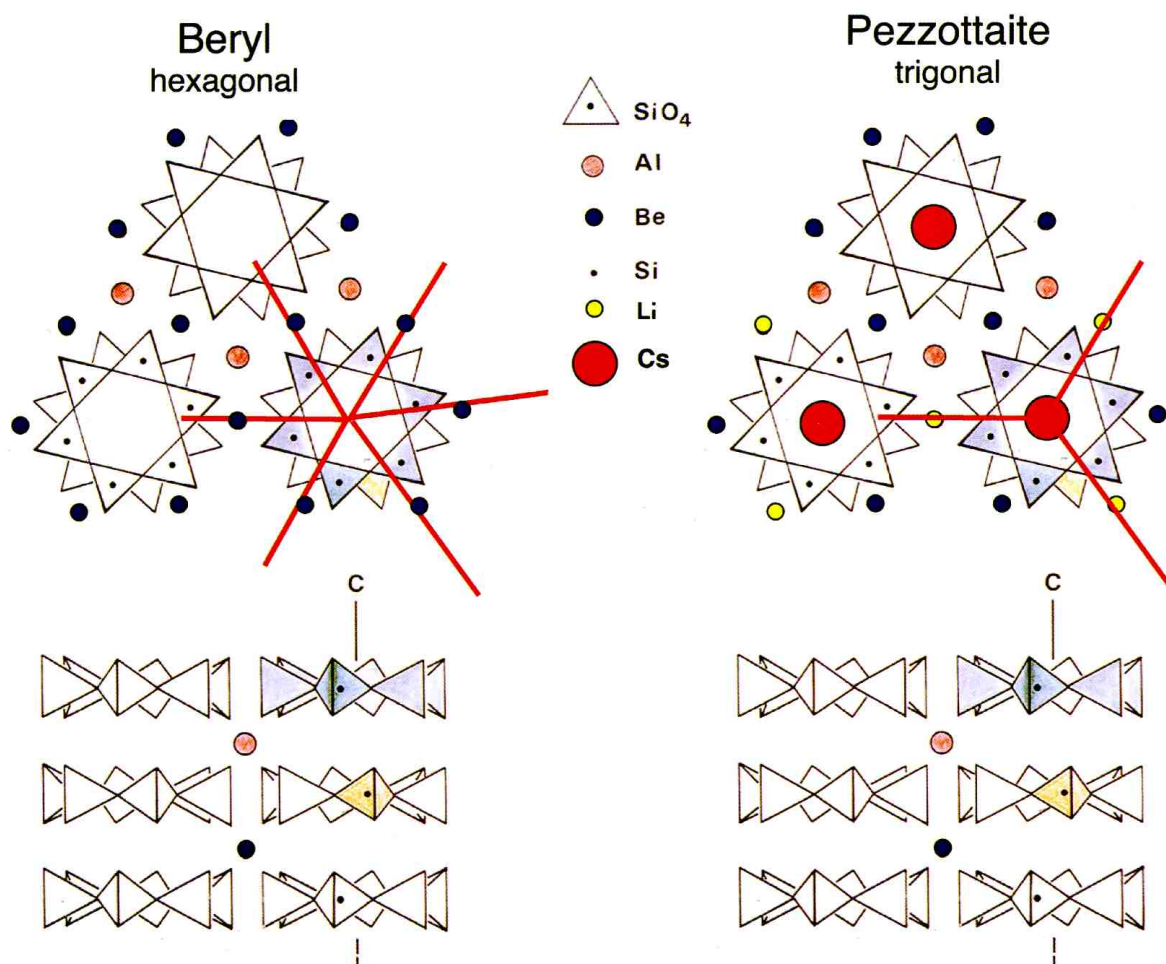


Figure 2: Schematic diagram of the crystal structures of beryl and pezzottaite. The upper parts show structures projected on a basal plane (perpendicular to c). The lower parts show a side view of the axial direction (parallel to c) with stacked Si_6O_{18} rings and cation positions. The ordered coupled substitution $\text{Be}^{2+} = \text{Li}^+ + \text{Cs}^+$ implies a trigonal symmetry for pezzottaite.

single crystal X-ray data, the space group of pezzottaite was determined as $R3c$. Although similar to the beryl structure, the systematic and symmetrical positions of the Li and Cs in the structure of these samples from Afghanistan and Madagascar justify establishment of the new mineral. The similarities and differences in structure between the two minerals are illustrated in *Figure 2*. Ongoing research will show whether or not there is solid solution between pezzottaite and beryl.

References

- Hänni, H.A. and Krzemnicki, M.S., 2003. Caesium-rich morganite from Afghanistan and Madagascar. *J. Gemm.* **28**(7), 417-29
- Hawthorne, F.C., Cooper, M.A., Simmons, W.B., Falster, A.U., Laurs, B.M., Armbruster, T., Rossman, G.R., Peretti, A., Günther, D. and Grobéty, B. (in prep.). Pezzottaite, $\text{Cs}(\text{Be}_2\text{Li})\text{Al}_2\text{Si}_6\text{O}_{18}$, a spectacular new mineral related to the beryl group, from Madagascar.
- Laurs, B.M., Simmons, W.B., Rossman, G.R., Quinn, E.P., McClure, S.F., Peretti, A., Armbruster, T., Hawthorne, F.C., Falster, A.U., Günther, D., Cooper, M.A., and Grobéty, B., 2003. Pezzottaite from Ambatovita, Madagascar: a new gem mineral. *Gems & Gemology*, **39**(4), 284-301