

# Abstract Submission

*T3 - Minerals, systematics, gems, collections*  
*New Minerals, Nomenclature, and Classification*

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## CRYSTAL CHEMISTRY OF THE LONDONITE-RHODIZITE SOLID SOLUTION

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Londonite and rhodizite are rare borates which mainly contain beryllium, aluminium, as well as large alkaline cations K and Cs. These large cations substitute to each other to form a complete solid solution between the two end-members: londonite,  $\text{CsBe}_4\text{Al}_4(\text{B}_{11}\text{Be})\text{O}_{28}$ , and rhodizite,  $\text{KBe}_4\text{Al}_4(\text{B}_{11}\text{Be})\text{O}_{28}$ . The 32 samples investigated herein were collected in the LTC-type granitic pegmatites located in central Madagascar; they form rhombododecahedral crystals that can reach 3 cm in diameter. The samples were investigated by single-crystal X-ray diffraction techniques (Rigaku Xcalibur diffractometer, EOS detector, MoK $\alpha$  radiation), electron microprobe (Cameca SX-100, 15 kV, 15 nA) and LA-ICP-TOF-MS. Structure refinements were performed in space group  $P-43m$ , to final  $R_1$  values between 2.64 and 6.64 %. Unit-cell parameters show significant variations:  $a = 7.291\text{--}7.326 \text{ \AA}$ , and  $V = 387.91\text{--}393.13 \text{ \AA}^3$  (with  $Z=1$ ). The structure of the londonite-rhodizite series is composed of five types of cations distributed over four different crystallographic sites. Aluminium is located at the centre of octahedral sites, whereas Be and B are located in tetrahedral coordination polyhedra. Cs and K are coordinated by 12 oxygen atoms and form polyhedra resembling large truncated tetrahedra. Within a single grain, significant compositional variations in Cs and K were observed. A positive correlation exists between Cs and the number of vacancies *pfu*, and the maximal number of vacancies *pfu* reaches 0.40, thus approaching to the new species "kenolondonite" not yet described in the literature.

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**Disclosure of Interest:** None Declared