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Crystal-structure refinement of a rubidian cesian phlogopite

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ABSTRACT

The crystal structure of a rubidian cesian phlogopite-1*M* from pegmatite exocontacts at Red Cross Lake, Manitoba, monoclinic, $a = 5.343(1)$, $b = 9.247(2)$, $c = 10.397(3)$ Å, $\beta = 100.04(2)°$, $V = 505.8(2)$ Å^3, has been refined to an *R* index of 4.5% based on 519 observed reflections measured with graphite-monochromated Mo*K*a X-radiation on an automated four-circle diffractometer. The crystal used in the collection of the X-ray intensity data was also analyzed by electron microprobe, giving the unit formula $(K_{0.46}Rb_{0.28}Cs_{0.23})(Mg_{1.20}Fe_{1.00}Al_{0.38}Li_{0.34}Mn_{0.04}Ti_{0.04})(Si_{2.91}Al_{1.09})O_{10}[(OH)_{1.55}F_{0.45}]$. The interlayer site, X, contains large amounts of Rb and Cs, and cell dimensions and the <X-O> distance are in accord with data from synthetic Rb and Cs phlogopites and plutonic phlogopites. The interlayer coordination is much more regular in rubidian cesian phologopite than in other trioctahedral micas, defining a trend of increasing regularity with increasing interlayer-cation size.