

Triclinic liddicoatite and elbaite in growth sectors of tourmaline from Madagascar

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ABSTRACT

Crystals of liddicoatite-elbaite tourmaline from a pegmatite in Jochy, Madagascar are composed of $o\{02\bar{2}1\}$, $r\{10\bar{1}1\}$, $c\{0001\}$, $a\{11\bar{2}0\}$, and $m\{10\bar{1}0\}$ sectors, which correspond to the prominent crystal faces, respectively. Therefore, the sectors were produced during growth, not by strain after growth. The *o*, *m*, and *r* sectors of one specimen are biaxial between crossed polars [$2V(-) = 30^\circ$, 20° , and 15° , respectively] and triclinic, as indicated by X-ray diffraction. The *a* sector is optically biaxial and orthorhombic. The *c* sector is optically uniaxial and essentially trigonal as indicated by single-crystal X-ray diffraction. The *o*, *r*, and *c* sectors are of liddicoatite component, whereas the *a* sector of the one specimen corresponds to fluor-elbaite. Another crystal specimen comprises *a* and *m* sectors, which are polysynthetically twinned, resulting in striations parallel to the *c* axis on the prism faces, and of liddicoatite. All five sectors have vacancies in the X-site (Ca, Na, □).