

## **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 [ $2V(-) = 30^\circ$ ,  $20^\circ$ , and  $15^\circ$ , 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, □).