

## Linking structure and chemistry in the Schorl-Dravite series

ERICH S. BLOODAXE,<sup>1</sup> JOHN M. HUGHES,<sup>1,\*</sup> M. DARBY DYAR,<sup>2</sup> EDWARD S. GREW,<sup>3</sup>  
CHARLES V. GUIDOTTI<sup>3</sup>

AND

<sup>1</sup>Department of Geology, Miami University, Oxford, Ohio 45056, U.S.A.

<sup>2</sup>Department of Geography and Geology, Mount Holyoke College, South Hadley, Massachusetts 01075, U.S.A.

<sup>3</sup>Department of Geological Sciences, University of Maine, Orono, Maine 04469-5711, U.S.A.

### ABSTRACT

Nine tourmaline crystals for which major and minor element composition data are available have been examined by single-crystal X-ray structure refinement. The single crystals were then analyzed for major elements (by electron microprobe methods), Fe<sup>3+</sup>/Fe<sup>2+</sup> (by synchrotron micro-X-ray absorption near-edge spectroscopy), B and Li (by secondary ion mass spectrometry), and bulk H content (by uranium extraction). Despite recent claims based on chemical analyses, structure analysis suggests that no B exists in tetrahedral coordination in these samples. Analysis of cation ordering between the Y and Z octahedral sites suggests that the occurrence of an Fe<sup>2+</sup> atom on a Y octahedral site may be locally associated with the absence of Mg at both of the neighboring Z sites, as substitutions of Fe<sup>2+</sup> on Y and Mg on Z require antithetic shifts of the O6 anion. *American Mineralogist*, Volume 84, pages 922–928, 1999