

## FERRO-FERRI-NYBØITE FROM MONT SAINT-HILAIRE, QUÉBEC, CANADA: CORRECTION

AARON J. LUSSIER, FRANK C. HAWTHORNE<sup>§</sup>, YASSIR A. ABDU, AND NEIL A. BALL

*Department of Geological Sciences, University of Manitoba, Winnipeg, Manitoba, R3T 2N2, Canada*

KIMBERLY T. TAIT, MALCOLM E. BACK, AND ANTHONY H. STEEDE

*Department of Natural History, Royal Ontario Museum, 100 Queens Park, Toronto, Ontario M5S 2C6, Canada*

REBECCA TAYLOR AND ANDREW M. McDONALD

*Department of Earth Sciences, Laurentian University, Sudbury, Ontario P3E 2C6, Canada*

### ABSTRACT

The chemical composition and chemical formula for ferro-ferri-nybøite given by Lussier *et al.* (2014) are wrong due to incorporation of errors during preparation of the paper. The data given in the original IMA submission are correct and are given here: SiO<sub>2</sub> 47.06, TiO<sub>2</sub> 0.50, Al<sub>2</sub>O<sub>3</sub> 3.16, Fe<sub>2</sub>O<sub>3</sub> 12.43, FeO 22.37, (Fe<sub>tot</sub> = 33.56), MnO 2.18, ZnO 0.06, MgO 0.23, CaO 1.03, Na<sub>2</sub>O 8.15, K<sub>2</sub>O 1.72, F 0.84, H<sub>2</sub>O<sub>calc</sub> 1.50, O ≡ F -0.35 sum 100.88 wt.%. The formula unit, calculated on the basis of 24 (O + OH + F) with (OH + F) = 2 *apfu*, is (Na<sub>0.67</sub>K<sub>0.35</sub>)(Na<sub>1.83</sub>Ca<sub>0.17</sub>)(Mg<sub>0.05</sub>Fe<sup>2+</sup><sub>2.96</sub>Mn<sub>0.29</sub>Zn<sub>0.01</sub>Al<sub>0.03</sub>Fe<sup>3+</sup><sub>1.48</sub>Ti<sub>0.06</sub>)(Si<sub>7.44</sub>Al<sub>0.56</sub>)O<sub>22</sub>(OH<sub>1.58</sub>F<sub>0.42</sub>).

**Keywords:** ferro-ferri-nybøite, new amphibole, Mont Saint-Hilaire, Canada, corrected chemical composition and formula.

### INTRODUCTION

Lussier *et al.* (2014) reported on a new amphibole species from the Poudrette quarry, Mont Saint-Hilaire, La Vallée-du-Richelieu RCM, Montérégie (formerly Rouville County), Québec, Canada: ferro-ferri-nybøite, ideally NaNa<sub>2</sub>(Fe<sup>2+</sup><sub>3</sub>Fe<sup>3+</sup><sub>2</sub>)(Si<sub>7</sub>Al)O<sub>22</sub>(OH)<sub>2</sub>. Unfortunately, the chemical composition reported had two errors that crept in during preparation of the manuscript: (1) the Fe<sup>3+</sup>/(Fe<sup>2+</sup> + Fe<sup>3+</sup>) ratio reported is wrong; the correct value is 0.333(4); (2) additional chemical analyses were incorporated into the chemical composition, changing it from the original reported composition. The correct chemical composition was given in the original IMA submission, and is reported here in Table 1. The corresponding chemical formula is as follows: (Na<sub>0.67</sub>K<sub>0.35</sub>)(Na<sub>1.83</sub>Ca<sub>0.17</sub>)(Mg<sub>0.05</sub>Fe<sup>2+</sup><sub>2.96</sub>Mn<sub>0.29</sub>Zn<sub>0.01</sub>Al<sub>0.03</sub>Fe<sup>3+</sup><sub>1.48</sub>Ti<sub>0.06</sub>)(Si<sub>7.44</sub>Al<sub>0.56</sub>)O<sub>22</sub>(OH<sub>1.58</sub>F<sub>0.42</sub>). The site populations need very minor modification and the new values are given in Table 2. The compositional

TABLE 1. CHEMICAL COMPOSITION (wt.%) OF FERRO-FERRI-NYBØITE

|                                |        |
|--------------------------------|--------|
| SiO <sub>2</sub>               | 47.06  |
| TiO <sub>2</sub>               | 0.50   |
| Al <sub>2</sub> O <sub>3</sub> | 3.16   |
| Fe <sub>2</sub> O <sub>3</sub> | 12.43  |
| FeO                            | 22.37  |
| MnO                            | 2.18   |
| ZnO                            | 0.06   |
| MgO                            | 0.23   |
| CaO                            | 1.03   |
| Na <sub>2</sub> O              | 8.15   |
| K <sub>2</sub> O               | 1.72   |
| H <sub>2</sub> O               | 1.50   |
| F                              | 0.84   |
| -O=F                           | -0.35  |
| Total                          | 100.88 |

<sup>§</sup> Corresponding author e-mail address: frank\_hawthorne@umanitoba.ca

TABLE 2. SITE POPULATIONS (*apfu*) FOR FERRO-FERRI-NYBØITE

| Site | Site population ( <i>apfu</i> )                                   | Site scattering ( <i>epfu</i> ) |            |
|------|---|---------------------------------|------------|
|      |   | refined                         | calculated |
| T(1) | 3.44 Si + 0.56 Al   |                                 |            |
| T(2) | 4 Si  |                                 |            |
| M(1) | 1.80 Fe <sup>2+</sup> + 0.20 Mn                                   | 51.3(2)                         | 51.8       |
| M(2) | 0.39 Fe <sup>2+</sup> + 1.52 Fe <sup>3+</sup> + 0.03 Al + 0.06 Ti | 51.2(2)                         | 51.4       |
| M(3) | 0.85 Fe <sup>2+</sup> + 0.10 Mn + 0.05 Mg                         | 24.7(1)                         | 25.2       |
| M(4) | 1.83 Na + 0.17 Ca   | 23.2(2)                         | 23.6       |
| A    | 0.67 Na + 0.35 K  | 12.4(6)                         | 14.0       |
| O(3) | 1.58 (OH) + 0.42 F  | 15.5                            | 16.4       |

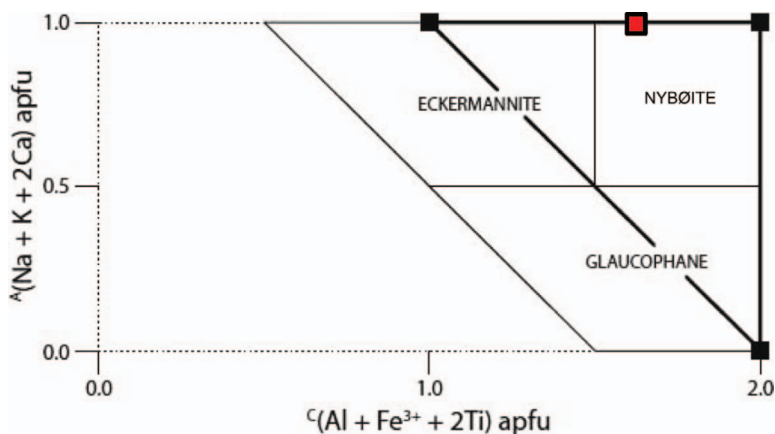


FIG. 1. The compositional fields for sodium amphiboles with  ${}^B(\text{Na} + \text{Li}) / \Sigma\text{B} \geq 0.75$ ,  ${}^B\text{Na} / \Sigma\text{B} > {}^B\text{Li} / \Sigma\text{B}$  (see Hawthorne *et al.* 2012 for more details). The composition of holotype ferro-ferri-nybøite is shown by the red square.

field of nybøite is shown in Figure 1 (from Hawthorne *et al.* 2012), together with the position of holotype ferro-ferri-nybøite.

#### ACKNOWLEDGMENTS

We thank Scott Ercit and Andrew Locock for bringing this error to our attention. FCH is responsible and apologizes to the other authors and the readers.

#### REFERENCES

HAWTHORNE, F.C., OBERTI, R., HARLOW, G.E., MARESCH, W., MARTIN, R.F., SCHUMACHER, J.C., & WELCH, M.D. (2012)

Nomenclature of the amphibole super-group. *American Mineralogist* **97**, 2031–2048.

LUSSIER, A.J., HAWTHORNE, F.C., ABDU, Y.A., BALL, N.A., TAIT, K.T., BACK, M.E., STEEDE, A.H., TAYLOR, R., & McDONALD, A.M. (2014) Ferro-ferri-nybøite,  $\text{NaNa}_2(\text{Fe}^{2+}_3\text{Fe}^{3+}_2)(\text{Si}_7\text{Al})\text{O}_{22}(\text{OH})_2$ , a new clinoamphibole from Mont Saint-Hilaire, Québec, Canada: Description and crystal structure. *Canadian Mineralogist* **52**, 1019–1026.

Received January 27, 2017. Revised manuscript accepted March 14, 2017.