

Elbaite, $\text{Na}(\text{Al}_{1.5}\text{Li}_{1.5})\text{Al}_6(\text{BO}_3)_3\text{Si}_6\text{O}_{18}(\text{OH})_4$

Elbaite

Bosi F, Agrosi G, Lucchesi S, Melchiorre G, Scandale E

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Mn-tourmaline from island of Elba (Italy): Crystal chemistry.

15.9055 15.9055 7.1270 90 90 120 R3m

| atom | x | y | z | Wyckoff |
|------|---------|---------|---------|---------|
| NaX | 0 | 0 | 0.23267 | 3a |
| AlY | 0.12318 | 0.06159 | 0.62744 | 9b |
| AlZ | 0.29758 | 0.26086 | 0.61151 | 18c |
| B | 0.10969 | 0.21938 | 0.45457 | 9b |
| SiT | 0.19192 | 0.18996 | 0 | 18c |
| O1 | 0 | 0 | 0.78262 | 3a |
| O2 | 0.06091 | 0.12182 | 0.48293 | 9b |
| O3 | 0.26857 | 0.13429 | 0.50990 | 9b |
| O4 | 0.09335 | 0.18670 | 0.07149 | 9b |
| O5 | 0.18670 | 0.09335 | 0.09304 | 9b |
| O6 | 0.19695 | 0.18684 | 0.77565 | 18c |
| O7 | 0.28554 | 0.28578 | 0.08043 | 18c |
| O8 | 0.20989 | 0.27071 | 0.44137 | 18c |
| H3 | 0.2664 | 0.1332 | 0.3818 | 9b |

$$(5 \times 18c) + (7 \times 9b) + (2 \times 3a)$$

**Raman Active
Modes**

| WP | A ₁ | A ₂ | E |
|-----|----------------|----------------|---|
| 18c | 3 | · | 6 |
| 9b | 2 | · | 3 |
| 3a | 1 | · | 1 |

Total number of modes:

$$31A_1 + 53E = 84$$