

Adachiite**CaFe₃Al₆(Si₅AlO₁₈)(BO₃)₃(OH)₃(OH)**

Crystal Data: Hexagonal. *Point Group:* 3*m*. Crystals are hexagonal prismatic, to 2 cm.

Physical Properties: *Cleavage:* n.d. *Fracture:* n.d. *Tenacity:* n.d. *Hardness* = 7
D(meas.) = n.d. D(calc.) = 3.228

Optical Properties: Transparent. *Color:* Brownish purple to bluish purple, black (massive aggregates). *Streak:* n.d. *Luster:* n.d. *Pleochroism:* Strong, *O* = dark green to dark blue, *E* = brownish yellow.

Optical Class: Uniaxial (-). $\omega = 1.674(2)$ $\varepsilon = 1.644(2)$

Cell Data: *Space Group:* R3*m*. $a = 15.9290(2)$ $c = 7.1830(1)$ $Z = 3$

X-ray Powder Pattern: Kiura mine, Saiki City, Oita Prefecture, Japan.
2.584 (100), 4.002 (65), 2.043 (52), 4.225 (40), 4.9602 (34), 3.4553 (34), 2.9027 (33)

Chemistry:	(1)	(2)
Na ₂ O	0.84	
CaO	3.34	5.24
MgO	2.32	
FeO	11.90	20.15
B ₂ O ₃	10.09	9.77
Al ₂ O ₃	36.70	33.37
TiO ₂	0.46	
SiO ₂	29.79	28.09
<u>H₂O</u>	<u>3.10</u>	<u>3.37</u>
Total	98.54	100.00

(1) Kiura mine, Japan; average of 13 electron microprobe analyses, H₂O calculated from stoichiometry, OH⁻ confirmed by IR spectroscopy, Fe²⁺ estimated from structural analysis; corresponding to $^X(\text{Ca}_{0.62}\text{Na}_{0.28}\square_{0.10})_{\Sigma=1.00}^Y(\text{Fe}_{1.58}\text{Al}_{0.81}\text{Mg}_{0.55}\text{Ti}_{0.06})_{\Sigma=3.00}^Z(\text{Al}_{5.81}\text{Fe}_{0.14}\text{Mg}_{0.05})_{\Sigma=6.00}^T(\text{Si}_{5.15}\text{Al}_{0.85})_{\Sigma=6.00}\text{O}_{18}\text{B}_{3.01}\text{O}_9^W(\text{OH})_3[(\text{OH})_{0.56}\text{O}_{0.44}]_{\Sigma=1.00}$. (2) CaFe₃Al₆(Si₅AlO₁₈)(BO₃)₃(OH)₃(OH).

Mineral Group: Tourmaline group.

Occurrence: In a hydrothermal vein that cuts a lateritic metamorphic emery (corundum and hercynite) deposit.

Association: Margarite, chlorite, diaspore, schorl.

Distribution: From the Nabagasako adit, Kiura mine, Saiki City, Oita Prefecture, Japan.

Name: Honors Tomio Adachi (b. 1923), an amateur mineralogist.

Type Material: National Museum of Nature and Science, Tsukuba, Japan (NSM-M43748).

References: (1) Nishio-Hamane, D., T. Minakawa, J-i. Yamaura, T. Oyama, M. Ohnishi, and N. Shimobayashi (2014) Adachiite, a Si-poor member of the tourmaline supergroup from the Kiura mine, Oita Prefecture, Japan. *Journal of Mineralogical and Petrological Sciences*, 109, 74-78. (2) (2015) *Amer. Mineral.*, 100, 334 (abs. ref. 1).