INTRODUCTION TO JAPANESE MINERALS

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22. Kawazulite $B_{12}Te_2S$

Crystal system. Rhombohedral.
Possible space group. $R\bar{3}m$–D^5_{3d}, $R3m$–D^5_{3v} or $R32$–D^7_3.
Unit cell. a_0 4.24Å, c_0 29.66Å.
Z. 3.
Pleochroism. Pinkish creamy white to white with creamy tint.
Anisotropism. The colour changes from reddish brown-gray to gray.
Reflectivity. 45–50%.
Colour. Silver to tin white.
Lustre. Metallic.
Streak. Light steel gray, lighter than tetradymite.

Fig. 26. Kawazulite, Kawazu mine, Shizuoka Prefecture (SAKURAI Collection) ×3.0.

Cleavage. (0001) perfect, flexible.
Hardness. 1.5.
Chemical composition. Electron probe analysis gave Bi 55.4, Te 31.9, Se 9.9, S 0.1 = 97.3%.
Specific gravity. >7.5 (meas.), 8.08 (calc.). Scratching and polishing hardness are lower than those of tellurium.
Occurrence. The mineral occurs as very thin foils reaching 4 mm across, 50μ in maximum thickness in a quartz vein of Kawazu mine, Shizuoka Prefecture, Japan. Microscopical hexagonal patterns of the basal plane are observed. It is associated with a small amount of selenium-bearing tellurium.
Name. The name is for the locality, Kawazu mine.
Remarks. This is the selenium analogue of tetradymite, with which it probably forms an isomorphous series. The mineral was originally studied by A. KATO in 1968. The name was approved by the Commission on New Minerals and Mineral Names, IMA. But full report has not yet been published.

23. Kōzulite $(Na, K, Ca)_3(Mn, Mg, Fe^{3+}, Al)_5Si_8O_{22}(OH, F)_2$

Crystal system. Monoclinic.
Space group. $C2/m$–C_{2h}^3.
Unit cell. a_0 9.91±0.02Å, b_0 18.11±0.04Å, c_0 5.30±0.02Å; β 104.6°±0.1°.
Z. 2.
Crystal habit. Short prismatic to bladed crystals with the principal faces b(010), m(110) and r(011).
Refractive indices. α 1.685, β 1.717 (mean), γ 1.720, δ 0.035.
Optic axial angle. 2V(−) 34–36°.
Extinction angle. $c \wedge X = 25°$.
Dispersion. Very weak, probably $r > v$.
Absorption. Z>Y>X.
Pleochroism. X yellow brown, Y reddish brown, Z dark brown.
Colour. Reddish black (Pl. 2a).
Lustre. Vitreous.
Streak. Light purplish brown.
Cleavage. (110) perfect.
Hardness. 5.
Specific gravity. 3.30 (meas.), 3.36 (calc.).
Chemical composition. SiO_2 51.38, TiO_2 none, Al_2O_3 1.69, Fe_2O_3 2.85, FeO none, MnO 27.96, ZnO 0.03, MgO 2.71, CaO 1.12, BaO none, Na_2O 8.41, K_2O 1.36, $H_2O(+)$ 2.10, $H_2O(-)$ 0.06, F 0.08 = 99.75 (O = F_2 0.03) = 99.72%.
Occurrence. The mineral occurs as banded aggregates of prismatic to bladed crystals up to 3.5×2.0×1.5 mm in size, in the bedded manganese deposit of Tanohata mine, Iwate Prefecture, Japan, in the highly metamorphosed Cretaceous quartzites by the intrusion of granodiorite. Associated minerals are rhodonite, manganiferous aegirine and quartz.
Name. The name is for the late S. KŌZU (1880–1955), Professor of Tohoku University who made distinguished contributions to the study of rock-forming minerals.
Remarks. Kōzulite belongs to the alkali amphibole group in which Mn^{2+} is the predominant cation of the Y-position.