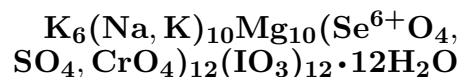


# Carlosruizite



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**Crystal Data:** Hexagonal. *Point Group:*  $\bar{3} 2/m$ . As thin pseudorhombohedral platy {0001} crystals with hexagonal outline, modified by  $\{10\bar{1}2\}$ , to  $< 200 \mu\text{m}$ .

**Physical Properties:** *Cleavage:* On  $\{11\bar{2}0\}$ , likely, visible on SEM images. *Tenacity:* Brittle. Hardness = 2–3 D(meas.) = n.d. D(calc.) = 3.400 Slowly soluble in  $\text{H}_2\text{O}$ .

**Optical Properties:** Transparent. *Color:* Colorless to pale yellow. *Luster:* Vitreous. *Optical Class:* Uniaxial (-).  $\omega = 1.655(3)$   $\epsilon = 1.642(1)$

**Cell Data:** *Space Group:*  $P\bar{3}c1$ .  $a = 9.5901(8)$   $c = 27.56(2)$   $Z = 1$

**X-ray Powder Pattern:** Zapiga, Chile.

3.561 (100), 3.058 (39), 2.717 (39), 3.082 (32), 13.75 (30), 7.10 (20), 3.974 (16)

## Chemistry:

	(1)
$\text{SO}_3$	7.9
$\text{SeO}_3$	19.0
$\text{CrO}_3$	2.5
$\text{I}_2\text{O}_5$	45.6
$\text{MgO}$	9.2
$\text{Na}_2\text{O}$	4.7
$\text{K}_2\text{O}$	6.7
$\text{H}_2\text{O}$	n.d.
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Total	95.6

(1) Zapiga, Chile; by electron microprobe, average of ten analyses, amounts thought low due to decay in electron beam,  $\text{H}_2\text{O}$  confirmed by crystal-structure analysis; corresponds to  $\text{K}_{6.2}\text{Na}_{6.7}\text{Mg}_{10.0}[(\text{Se}^{6+}\text{O}_4)_{6.6}(\text{SO}_4)_{4.3}(\text{CrO}_4)_{1.1}]_{\Sigma=12.0}(\text{IO}_3)_{12.0} \cdot 12\text{H}_2\text{O}$ .

**Polymorphism & Series:** Forms a series with fuenzalidaite.

**Occurrence:** A rare constituent of nitrate ores.

**Association:** Iquiqueite, nitratine, halite, darapskite, and residues containing dietzeite, brüggenite, tarapacaite, lopezite, ulexite, probertite, and gypsum after leaching in water.

**Distribution:** Probably from near Zapiga, Tarapacá, Chile.

**Name:** Honors Carlos Ruiz F. (1916–), first Director of the Chilean Geological Survey.

**Type Material:** n.d.

**References:** (1) Konnert, J.A., H.T. Evans, Jr., J.J. McGee, and G.E. Ericksen (1994) Mineralogical studies of the nitrate deposits of Chile: VII. Two new saline minerals with the composition  $\text{K}_6(\text{Na}, \text{K})_4\text{Na}_6\text{Mg}_{10}(\text{XO}_4)_{12}(\text{IO}_3)_{12} \cdot 12\text{H}_2\text{O}$ : fuenzalidaite ( $\text{X} = \text{S}$ ) and carlosruizite ( $\text{X} = \text{Se}$ ). *Amer. Mineral.*, 79, 1003–1008.