

## Rubicline, a new feldspar from San Piero in Campo, Elba, Italy

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### ABSTRACT

The rubidium analogue of microcline, rubicline,  $(\text{Rb,K})\text{AlSi}_3\text{O}_8$ , ideally  $\text{RbAlSi}_3\text{O}_8$ , was found in a pollucite-bearing rare-element pegmatite at San Piero in Campo, Elba, Italy. Rubicline is the first mineral with rubidium as an essential constituent. It occurs as abundant but small ( $\leq 50 \mu\text{m}$ ) rounded grains in 1–2 cm wide veins of rubidian microcline ( $\pm$  albite, muscovite, quartz, and apatite) that crosscut pollucite. Rubicline is brittle, transparent, and colorless. Refractive indices are slightly higher than those of the host microcline. The birefringence is low (1st order gray interference colors), and crystals are apparently untwinned. In thin and polished sections, cleavage passes through both the host microcline and grains of rubicline; by analogy with microcline, the cleavage is  $\{001\}$  perfect and  $\{010\}$  good. Determination of additional physical properties is hindered by an average grain size of  $20 \mu\text{m}$ , heterogeneous composition, and structural coherency of rubicline with the enveloping microcline. Rubicline is triclinic, probable space group  $P\bar{1}$ , with  $a = 8.81(3)$ ,  $b = 13.01(3)$ ,  $c = 7.18(4) \text{ \AA}$ ,  $\alpha = 90.3(1)$ ,  $\beta = 115.7(3)$ ,  $\gamma = 88.2(1)^\circ$ ,  $V = 741 \text{ \AA}^3$ ,  $Z = 4$ , and axial ratios  $a:b:c$  of 0.677:1:0.577 (calculated from electron-diffraction data). Chemical analysis by electron microprobe gave 58.68  $\text{SiO}_2$ , 16.48  $\text{Al}_2\text{O}_3$ , 6.23  $\text{K}_2\text{O}$ , 17.47  $\text{Rb}_2\text{O}$ , 0.92  $\text{Cs}_2\text{O}$ , 0.12  $\text{Fe}_2\text{O}_3$ , sum 99.90 wt% and the formula  $(\text{Rb}_{0.574}\text{K}_{0.407}\text{Cs}_{0.020})_{\Sigma 1.001}(\text{Al}_{0.993}\text{Fe}_{0.005})\text{Si}_{3.001}\text{O}_8$ . Rubicline is, in many cases, structurally coherent with the host microcline; it formed by exsolution from a (K,Na,Rb)-enriched precursor, followed possibly by fluid-induced modification.