

Table S1. Parameters for X-ray data collection of stracherite

Crystal Data	
Crystal system	trigonal
	$a = 7.0877(5)$
	$b = 7.0877(5)$
Unit cell dimensions (Å)	$c = 25.201(2)$
	$\alpha, \beta = 90^\circ \gamma = 120^\circ$
Space group	$R\bar{3}m$ (no.166)
Volume (Å ³)	1096.38(18)
Z	3
Density (calculated)	3.344 g/cm ³
Chemical formula	BaCa ₆ (SiO ₄)(PO ₄) _{1.2} (CO ₃) _{0.8} F
Crystal size (µm)	87×50×30
Experimental details	
Temperature, K	293(2)
	beamline X06DA, Swiss Light Source
Diffractometer	multi-axis goniometer PRIGo*
	PILATUS 2M-F detector
	0.70848 Å
Max. θ° -range for Data collection	32.067
Index ranges	$-8 \leq h \leq 9$
	$-10 \leq k \leq 7$
	$-27 \leq l \leq 36$
No. of measured reflections	2105
No. of unique reflections	483
No. of observed reflections ($I > 2\sigma(I)$)	483
Refinement of the structure	
No. of parameters used in refinement	46
R _{int}	0.0563
R σ	0.0401
R1 $I > 2\sigma(I)$	0.0219
R1 all Data	0.0219
wR2 on (F ²)	0.0545
GooF	1.070
$\Delta\rho$ min (-e. Å ⁻³)	0.999 close to Ba1
$\Delta\rho$ max (e. Å ⁻³)	0.713 close to Ba1

* Waltersperger et al. 2015