

Table S1. The top ten intensity X-ray diffraction peak positions of topaz samples W-1, Y-1, B-2, BR-1

	2-Theta (degree)			
	W-1	Y-1	B-2	BR-1
1	30.5	30.5	30.5	30.6
2	28.0	27.9	28.0	28.0
3	43.0	24.1	38.2	43.1
4	24.2	43.0	24.2	24.2
5	38.2	38.1	43.0	38.2
6	29.5	29.4	66.9	65.9
7	65.9	65.8	29.5	29.5
8	66.9	49.0	65.9	49.2
9	69.3	66.9	48.8	55.0
10	48.8	48.7	69.3	67.0

Table S2. Assignment of Infrared spectra of topaz

Infrared peak positions (cm ⁻¹)	Peak assignments ^{24,25,26}
426,474,491,507,565	Al-O-Si bending vibration
715	Si-O symmetrical stretching vibration
895	Al-O stretching vibration
914,932,989	Si-O-Si antisymmetric stretching vibration
3652	-OH symmetrical stretching vibration

Table S3. Assignment of Raman spectra of topaz

Raman peak positions (cm ⁻¹)	Peak assignments ^{2,27,28,29}
240, 267, 287, 520, 936	various Si-O vibration modes in [SiO ₄]
332,358,403,456	stretching and bending modes of [AlO ₆] coupled with the bending modes of [SiO ₄]
856	vibrational coupling of [SiO ₄] between asymmetric and symmetric stretching modes
3649	-OH stretching vibration

Figure S1. (a) Infrared reflection spectra of topaz samples (400 cm⁻¹-1200 cm⁻¹); (b) Infrared reflection spectra of topaz samples (3200 cm⁻¹-4000 cm⁻¹).

