

Table S1. Appearance characteristics of experimental agate samples.

Description of Appearance and Morphology of Moqi Agate Raw Stone			
Sample No.	Color	Transparency	Structure
AG-1	green	opaque	massive structure, coarse particles
AG-2	green	opaque	massive structure, coarse particles
AR-1	Brown and	Microtransparent	Dense block with obvious stripes
	red		
AR-2	interwoven	opaque	Dense block with obvious stripes
	Yellow and		
AR-3	red	opaque	Dense block with obvious stripes
	interweave		
AY-1	Red brown	opaque	Dense block with obvious stripes
	pink		
AY-2	interwoven	opaque	Massive structure, fine particles
AY-3	yellow	opaque	Massive structure, fine particles
	yellow	opaque	Massive structure, fine particles
	Reddish	Microtransparent	Blocky structure
	brown		

Table S2. Attribution of characteristic peaks of agate infrared spectrum

No. / quartz	Si-O asymmetric stretching vibration		Si-O-Si symmetric stretching vibration			Si-O bending vibration		Si-O-Si flexural vibration
α -quartz	1170	1080	800	782	698	513	462	532
Sample	1186	1086	789	773	685	—	466	532

Table S3. Calculation Data for $I_{(502)}/I_{(464)}$ [%] of Moqi agate and estimated content of plagioclase wt%

Sample No	Characteristic peak	y	y0	xc	FWH M	A	I (503) /I (465) %	Wt %	
AG-1	464	975.28	3.8997	465.45	11.3142	18820.382	6.9	21	
			1	3		05			
			503	143.36	3.8997	503.97			5.31391
AG-2	463	998.5	1	8		7	8.71	30	
			3.2986	465.42	12.8173	20738.611			
			1	6	7	44			
AR-1	464	758.32	163.66	3.2986	503.76	6.81577	1690.5827	8.78	31
			1	2		8			
			503	128.44	3.8883	502.70	6.81577		
AR-2	464	4432	1	4		9	7.89	29	
			2.7237	463.84	11.3126	1086.8087			
			3	6	8	4			
AR-3	502	3757	2.7237	503.44	6.31647	13402.438	7.89	29	
			3	6		61			
			—	—	—	—			—
AY-1	464	514.78	—	—	—	—	9.05	32	
			—	—	—	—			
			4.5484	5	9	45			
AY-2	464	1216.5	1				5.19	20	
			3061.9	-	500.27	8.29115			6745.9141
			6	4.5484	1				2
AY-3	464	4776	1				11.33	35	
			2.1133	465.87	11.7298	13402.438			
			9	9	2	8			61
AY-4	503	1271.4	2.1133	503.74	10.1949	1086.8087	5.19	20	
			4	9	1	6			4
			9	1	8	8			
AY-5	464	4776	0.9702	464.61	13.7483	8124.0192	11.33	35	
			9	1	8	8			
			503	4001	0.9702	503.07			9.74816
AY-6	464	4776	9	1			11.33	35	
			9	1					
			503	4001	0.9702	503.07			9.74816
AY-7	464	4776	9	1			11.33	35	
			9	1					
			503	4001	0.9702	503.07			9.74816
AY-8	464	4776	9	1			11.33	35	
			9	1					
			503	4001	0.9702	503.07			9.74816
AY-9	464	4776	9	1			11.33	35	
			9	1					
			503	4001	0.9702	503.07			9.74816
AY-10	464	4776	9	1			11.33	35	
			9	1					
			503	4001	0.9702	503.07			9.74816
AY-11	464	4776	9	1			11.33	35	
			9	1					
			503	4001	0.9702	503.07			9.74816
AY-12	464	4776	9	1			11.33	35	
			9	1					
			503	4001	0.9702	503.07			9.74816
AY-13	464	4776	9	1			11.33	35	
			9	1					
			503	4001	0.9702	503.07			9.74816
AY-14	464	4776	9	1			11.33	35	
			9	1					
			503	4001	0.9702	503.07			9.74816
AY-15	464	4776	9	1			11.33	35	
			9	1					
			503	4001	0.9702	503.07			9.74816
AY-16	464	4776	9	1			11.33	35	
			9	1					
			503	4001	0.9702	503.07			9.74816
AY-17	464	4776	9	1			11.33	35	
			9	1					
			503	4001	0.9702	503.07			9.74816
AY-18	464	4776	9	1			11.33	35	
			9	1					
			503	4001	0.9702	503.07			9.74816
AY-19	464	4776	9	1			11.33	35	
			9	1					
			503	4001	0.9702	503.07			9.74816
AY-20	464	4776	9	1			11.33	35	
			9	1					
			503	4001	0.9702	503.07			9.74816
AY-21	464	4776	9	1			11.33	35	
			9	1					
			503	4001	0.9702	503.07			9.74816
AY-22	464	4776	9	1			11.33	35	
			9	1					
			503	4001	0.9702	503.07			9.74816
AY-23	464	4776	9	1			11.33	35	
			9	1					
			503	4001	0.9702	503.07			9.74816
AY-24	464	4776	9	1			11.33	35	
			9	1					
			503	4001	0.9702	503.07			9.74816
AY-25	464	4776	9	1			11.33	35	
			9	1					
			503	4001	0.9702	503.07			9.74816
AY-26	464	4776	9	1			11.33	35	
			9	1					
			503	4001	0.9702	503.07			9.74816
AY-27	464	4776	9	1			11.33	35	
			9	1					
			503	4001	0.9702	503.07			9.74816
AY-28	464	4776	9	1			11.33	35	
			9	1					
			503	4001	0.9702	503.07			9.74816
AY-29	464	4776	9	1			11.33	35	
			9	1					
			503	4001	0.9702	503.07			9.74816
AY-30	464	4776	9	1			11.33	35	
			9	1					
			503	4001	0.9702	503.07			9.74816
AY-31	464	4776	9	1			11.33	35	
			9	1					
			503	4001	0.9702	503.07			9.74816
AY-32	464	4776	9	1			11.33	35	
			9	1					
			503	4001	0.9702	503.07			9.74816
AY-33	464	4776	9	1			11.33	35	
			9	1					
			503	4001	0.9702	503.07			9.74816
AY-34	464	4776	9	1			11.33	35	
			9	1					
			503	4001	0.9702	503.07			9.74816
AY-35	464	4776	9	1			11.33	35	
			9	1					
			503	4001	0.9702	503.07			9.74816
AY-36	464	4776	9	1			11.33	35	
			9	1					
			503	4001	0.9702	503.07			9.74816
AY-37	464	4776	9	1			11.33	35	
			9	1					
			503	4001	0.9702	503.07			9.74816
AY-38	464	4776	9	1			11.33	35	
			9	1					
			503	4001	0.9702	503.07			9.74816
AY-39	464	4776	9	1			11.33	35	
			9	1					
			503	4001	0.9702	503.07			9.74816
AY-40	464	4776	9	1			11.33	35	
			9	1					
			503	4001	0.9702	503.07			9.74816

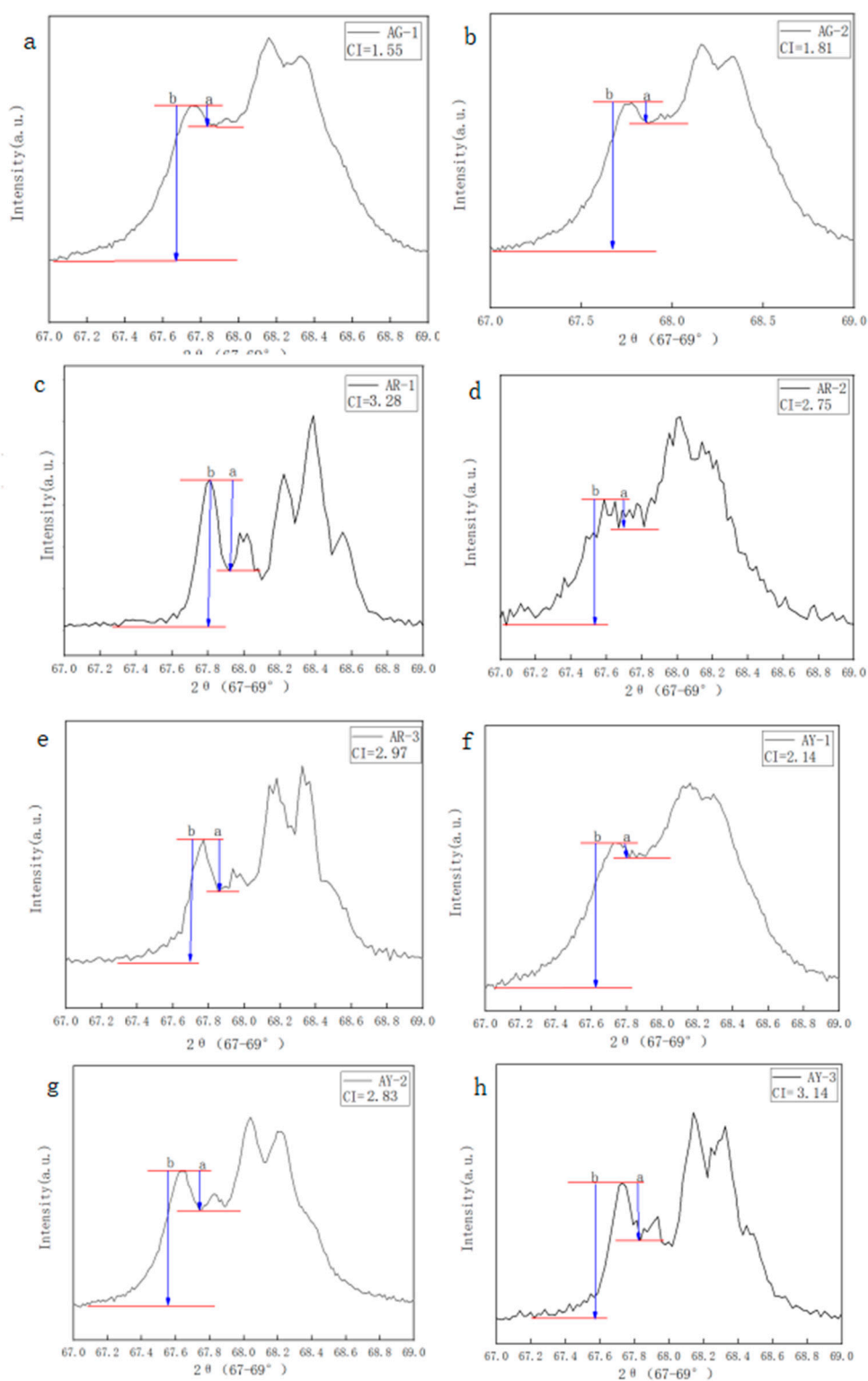


Figure S1. The five-finger Peak in the $67-69^\circ$ of Moqi Agate (a-h respectively stands for AG-1~AG-2, AR-1~AR-3, and AY-1~AY-3) .