

[Supplementary material]

Burnt jade sacrifices in the Chinese Neolithic: the Liangzhu cemetery at Sidun

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Table S1. The characteristic peaks (400–1200cm⁻¹) of FT-IR spectra for the samples from Sidun. Note that intensity is expressed as: vs = very strong; s = strong; m=medium; w = weak; sh = shoulder; and 0 = sometimes hidden.

Standard characteristic peaks		M3:5			M3:76&88			M3:57	M3:86&94	
		Tube (<i>cong</i>)			Disc (<i>bi</i>)			Axe (<i>yue</i>)	Axe (<i>yue</i>)	
Tremolite	Diopside	Deep green	Pale brown	White	Green	Brown	White	Green	Pale green	White
1141–1151 (m)		1152			1151			1144		
1118–1122 (0-w)		1119								
1080–1090 (0-m)								1090		
	1070–1090 (vs)						1071			
1057–1060 (0-w)					1059			1060		
1037–1043 (s)		1040	1040	1040	1039	1040	1038	1039	1037	1041
1015–1020 (0-sh)										
	1003–1005 (0-s)			1005		1005	1003			1005

989–998 (vs)		993			989			996	996	
	963–968 (0-vs)									
950–962 (0-vs)		962	955			950			950	956
	925–930 (w-vs)									
915–918 (s)		916	916		918	911		919	918	919
	863–890 (vs)		863	863		870	872			869
754–760 (m)		757	757		760	756		758	756	
722–725 (0-sh)		723			723			722		
682–686 (m)		682	682		685			684		
	670–672 (0-s)			671			672			
658–660 (0-sh)		658			660			659		
637–641 (0-w)		640			641			641		
	632–634 (m-s)			634			633			
538–544 (m-s)		543			542	535		542		
509–512 (m-s)		510			510			510		
	507–519 (s-vs)		510	507			509		509	
496–498 (0-sh)		498			498					
	469–488 (s-vs)			469		470	471		469	469
450–462 (m-vs)		457	457		457			458	461	
	432 (0-m)								453	
415–418 (w-m)		415	415		418	418		417	417	
	407–409 (w-m)			407			408			

Table S2. Average temperatures from the short timeframe burning experiment.

Sample	D1	D2	D3	D4	D5	D6	D7
Burning time (min)	5	10	15	20	30	40	50
Average temperature (°C)	562.8	816.3	728.3	589.8	828.0	636.0	789.6
Sample	G1	G2	G3	G4	G5	G6	G7
Burning time (min)	5	10	15	20	30	40	50
Average temperature (°C)	533.7	760.5	602.1	752.6	825.1	739.1	760.8

Table S3. Average temperatures from the long timeframe burning experiment.

Sample	1	2	3	4	5	6	7	8	9	10
Burning time (min)	67	170	125	300	280	250	240	175	135	135
Average temperature (°C)	834.8	852.5	781.8	754.9	732.9	708.3	672.9	778.9	689.2	740.1

Table S4. The immediate temperature of sample 2 during the twenty-seventh to ninety-fifth minutes of the long timeframe burning experiment.

Burning time (min)	27	29	31	33	35	37	39	41	43	45	47	49	51	53
Average temperature (°C)	870.0	870.1	890.3	859.7	1251.0	881.3	1244.0	946.2	812.6	1073.0	883.4	912.5	1116.0	904.9
Burning time (min)	55	57	59	61	63	65	67	69	71	75	80	85	90	95
Average temperature (°C)	910.2	887.2	885.5	910.4	893.0	859.7	843.2	838.3	844.5	813.1	850.8	898.3	905.4	1241.0

Table S5. Comparison of the chroma and glossiness of the jade samples before and after the burning experiment.

Sample	Burning time (min)	L*		a*		b*		G	
		Before	After	Before	After	Before	After	Before	After
D1	5	29.25	18.62	-4.11	-5.66	4.60	15.56	87.6	81.0
D2	10	42.60	21.63	-4.68	-4.56	2.92	18.58	88.0	81.7
D3	15	33.46	10.90	-3.91	-0.71	2.29	17.76	73.9	85.6
D4	20	34.40	30.28	-4.37	-4.74	5.99	12.03	99.0	70.0
D5	30	38.36	32.71	-4.17	0.50	3.97	17.95	75.5	62.1
D6	40	22.79	16.98	-3.73	-5.80	5.69	23.49	92.1	59.7
D7	50	26.22	48.29	-3.29	-4.29	9.20	3.24	95.9	77.2
G1	5	22.81	20.61	-2.97	-1.56	3.18	0.84	94.0	87.5
G2	10	23.62	25.42	-2.29	-3.91	4.69	15.95	94.1	99.0
G3	15	19.54	13.99	-3.11	-5.68	4.56	18.77	80.9	91.2
G4	20	23.72	44.46	-3.07	-2.93	4.88	9.60	81.9	93.5
G5	30	19.86	32.04	-3.42	-4.65	5.86	6.91	92.1	94.1
G6	40	18.37	26.79	-3.03	-4.48	5.85	10.32	95.3	89.6
G7	50	26.16	53.57	-3.03	-3.36	1.80	2.67	98.2	94.9
1	67	58.78	80.84	-0.54	-0.98	1.27	6.96		
2	170	56.91	84.37	-0.55	-2.46	1.79	6.56		
3	125	58.00	83.76	-3.63	-2.17	3.91	5.36		
4	300	57.02	72.43	-1.34	1.13	7.50	9.73		
5	280	56.95	83.22	-1.44	-1.25	3.63	6.91		
6	250	54.10	75.07	0.20	1.58	4.97	7.97		
7	240	54.28	80.21	-1.25	-1.69	-0.07	6.87		
8	175	55.58	69.48	-0.05	-0.47	5.02	7.35		
9	135	58.31	67.04	-0.48	-0.29	2.43	8.18		
10	135	59.87	71.24	-1.46	-1.48	3.10	3.54		