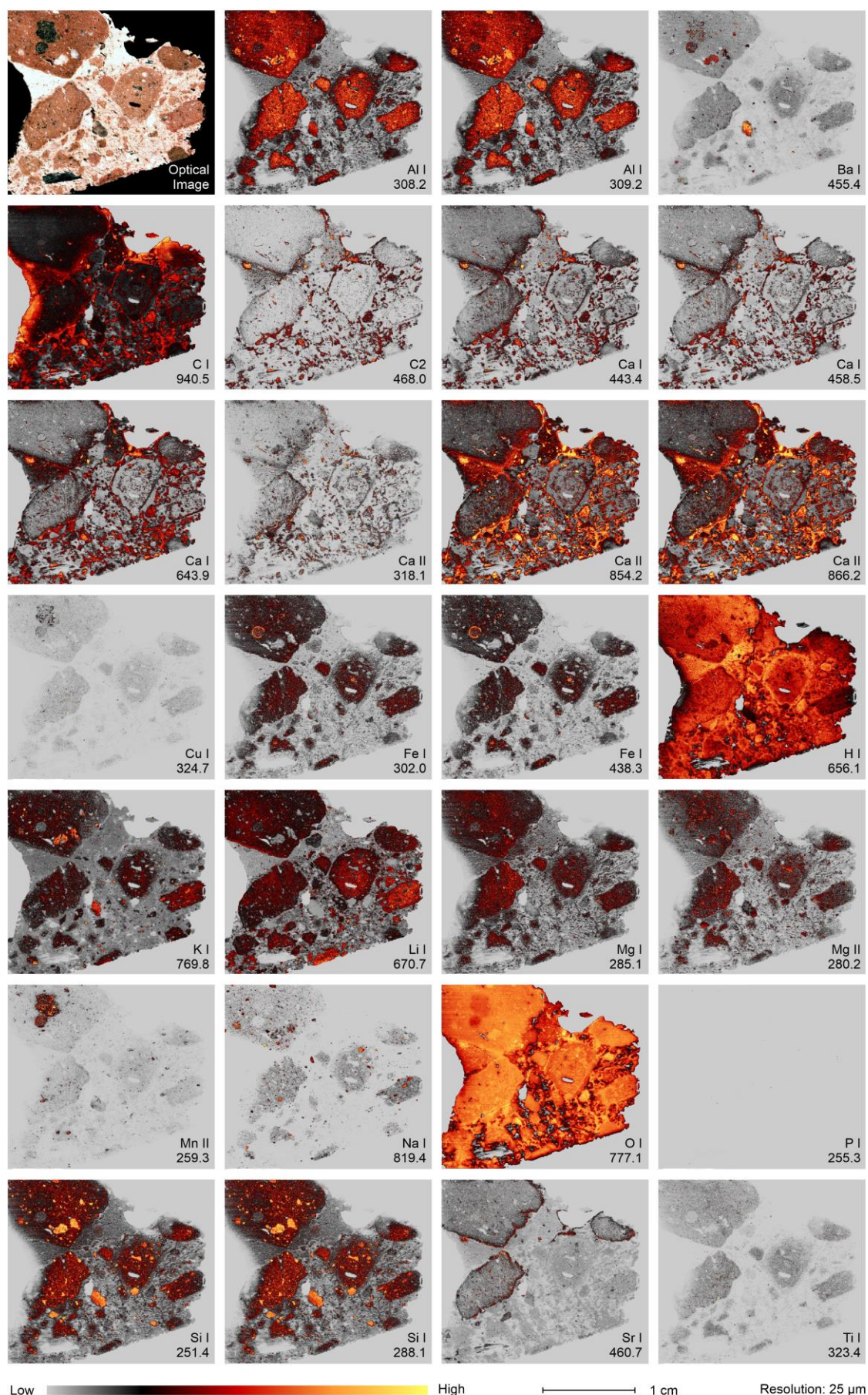




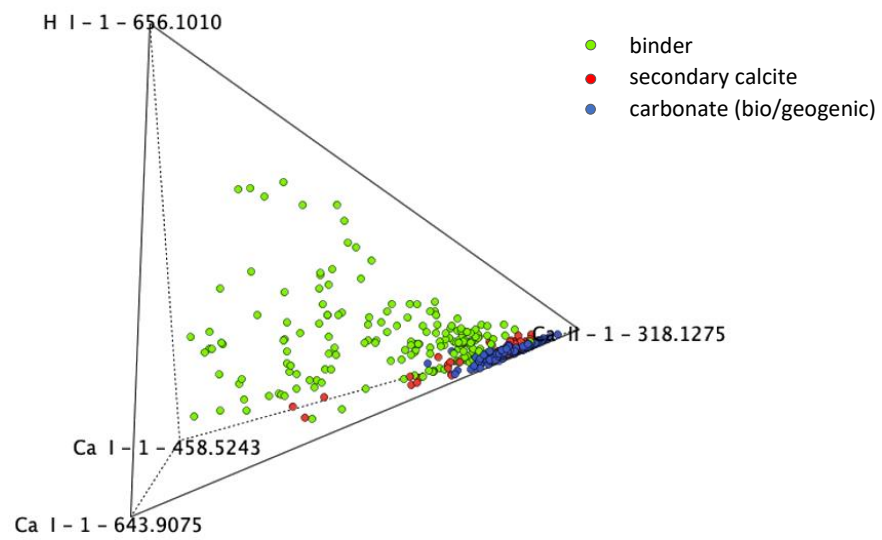
Supplementary Figure 1: LIBS elemental images of the sample M1 for the 27 selected emission lines.

#	Sample	Binder	Carbonate	Alumino-silicate	Tile	Quartz	Resine	Charcoal	Hole	TOTAL
1	Charcoal - 50159							69		69
2	Charcoal - Colombia coal							30		30
3	Limestone - Sixt		17							17
4	Limestone - white		19							19
5	Marble - Bregnier		14							14
6	Marble 1		15							15
7	Marble 2		14							14
8	Marble 3		15						15	30
9	Mortar - Angers M253A	50	41	61		33	65		13	263
10	Mortar - Aubain	10		9		8	15			42
11	Mortar - Brevenne coating	10			19				19	48
12	Mortar - Dardilly	24	53	22	50	7	33		37	226
13	Mortar - Gier 1	45		47		15				107
14	Mortar - Gier 2	15			19			3	18	55
15	Mortar - LMS1	29								29
16	Mortar - Pompei	11	4	40					10	65
17	Quartz - Fontainebleau					8				8
18	Quartz - pure					38				38
19	Resin						67			67
20	Shell - Neolithic		5							5
21	Shell - Oman		4							4
22	Shell - Veneridae		4							4
23	Shell - window		5							5
24	Speleotheme		20							20
25	Tile - Albi				29					29
26	Tile - Ardeche				29					29
27	Tile - window			15	29	7				51
28	Air								50	50
TOTAL		194	230	194	175	116	180	102	162	1353

Supplementary Table 1: Reference spectra.

Element	Specie	Wavelength (nm)	Spectrometer
Si	I	251.43	A
P	I	255.33	
Mn	II	259.37	
Mg	II	280.27	
Mg	I	285.17	
Si	I	288.16	
Fe	I	302.06	
Al	I	308.22	
Al	I	309.28	
Ca	II	318.13	
Ti	II	323.45	
Cu	I	324.75	
Fe	I	438.35	B
Ca	I	443.5	
Ba	II	455.4	
Ca	I	458.52	
Sr	I	460.73	
C2	molecular	468.02	
Ca	I	643.91	C
H	I	656.1	
Li	I	670.79	
K	I	769.9	
O	I	777.19	
Na	I	819.48	
Ca	II	854.21	
Ca	II	866.21	
C	I	940.57	

Supplementary Table 2: selected emission lines



Supplementary Figure 2: Representation of 3 carbonates categories on a quaternary diagram associating H (656.10 nm) to three Ca lines (318.13 nm, 458.52nm, 643.91 nm).