

Supplementary Material: Morphology and Composition of Microspheres in Fly Ash from the Luohuang Power Plant, Chongqing, Southwestern China

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Table S1. Statistics about microsphere content of Luohuang fly ash under optical microscope.

Particle Types		L-1	L-4	L-7	L-10	L-13
Irregular Particles	Carbon	2	0	3	3	0
	Mineral fragment	3	5	2	3	1
	Sphere debris	0	2	3	0	1
	Others	2	3	1	4	3
Microspheres		39	55	42	60	63
Content of microspheres/%		84.8	91.7	82.4	85.7	92.65

Note: Ultra-fine particles which are difficult to identify were not counted in.

Table S2. Loss on ignition (LOI, %) of Luohuang fly ash and concentration (%) of major elements by X-Ray fluorescence spectrometry (XRF).

Sample No.	LOI	Na ₂ O	MgO	Al ₂ O ₃	SiO ₂	P ₂ O ₅	SO ₃	K ₂ O	CaO	TiO ₂	MnO	Fe ₂ O ₃
L-1	3.74	1.04	1.13	22.24	46.07	0.14	0.76	1.52	5.01	1.89	0.0937	13.14
L-2	4.19	0.599	1.06	22.77	45.37	0.138	0.76	1.38	5	1.95	0.0992	13.63
L-3	4.01	0.773	1.21	21.59	48.27	0.134	0.77	1.21	5.72	1.78	0.0929	14.09
L-4	3.89	0.451	1.26	20.67	49.72	0.142	0.62	1.19	5.64	1.7	0.086	14.32
L-5	3.09	0.551	1.06	24.05	45.84	0.123	0.70	1.24	5.22	2.14	0.0885	15.4
L-6	2.21	0.481	1.09	21.64	48.2	0.124	0.64	1.23	5.76	1.81	0.106	16.38
L-7	1.81	0.622	1.17	22.86	48.66	0.126	0.90	1.17	5.92	1.86	0.111	14.38
L-8	2.34	0.544	1.12	21.68	47.44	0.115	0.78	1.18	5.98	1.72	0.112	14.29
L-9	4.96	0.544	1.07	24.67	48.87	0.144	0.35	1.69	3.78	1.75	0.0723	11.71
L-10	4.68	0.57	1.13	24.38	46.81	0.156	0.56	1.71	4.05	1.75	0.07	10.81
L-11	2.84	0.619	1.23	22.35	49.31	0.123	0.58	1.78	4.68	1.84	0.079	11.51
L-12	3.78	0.683	1.14	22.26	47.05	0.135	0.72	1.31	5.32	1.89	0.0921	14.12
L-13	3.14	0.563	1.14	22.93	48.22	0.131	0.63	1.46	5.03	1.79	0.092	13.18
Average	3.44	0.618	1.14	22.62	47.68	0.133	0.67	1.39	5.16	1.84	0.0919	13.61

Table S3. Quantitative analyses of the mineral composition (%) of the fly ash by X-Ray diffraction (XRD) and Siroquant™.

Sample No.	L-1	L-2	L-3	L-4	L-5	L-6	L-7	L-8	L-9	L-10	L-11	L-12	L-13	Average
Glass	77.0	79.3	79.5	75.7	76.5	71.8	70.6	74.1	69.8	70.8	75.5	77.6	72.1	74.6
Mullite	9.4	9.4	8.3	9.3	11.9	12.3	12.9	10.5	15.6	15.3	10.4	9.7	12.8	11.4
Maghemite	6.3	5.5	4.6	5.4	6.8	7.4	5.6	6.5	4.8	5.5	5.0	5.7	5.8	5.8
Quartz	4.5	4.0	5.1	7.5	3.2	6.7	7.4	6.4	7.1	5.4	6.6	4.9	6.6	5.8
Hematite	1.9	1.0	1.9	1.7	1.3	1.3	2.7	1.6	1.0	1.5	1.6	1.6	1.6	1.6
Anhydrite	0.8	0.8	0.7	0.5	0.3	0.5	0.8	0.9	1.7	1.4	0.8	0.6	1.0	0.8



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