

Supplementary material S2

Table S1. Experimental data obtained with the model and spent black mass during the 3 type of flotation tests: no attrition (I), attrition (II) and attrition with kerosene (III).

No Attrition (I)					
Spent Black mass					
Cumulative time (s)	Cumulative water recovery (%)	Cumulative LMOS recovery (%)	R/W LMOs	Cumulative water recovery (%)	ENT Tracer
18	1.76	5.81	3.30	1.25	0.71
36	3.29	10.36	3.15	2.28	0.69
54	4.51	13.45	2.99	2.86	0.64
90	6.05	018.18	3.00	3.88	0.64
390	12.97	31.67	2.44	7.12	0.55
Model Black mass					
Cumulative time (s)	Cumulative water recovery (%)	Cumulative LMOS recovery (%)	R/W LMOs	Cumulative water recovery (%)	ENT Tracer
18	5.58	6.16	1.10	2.60	0.47
36	6.82	6.91	1.01	2.88	0.42
54	7.18	7.10	0.99	2.95	0.41
90	7.77	7.40	0.95	3.04	0.39
390	13.00	8.68	0.67	3.78	0.29
Attrition (II)					
Spent Black mass					
Cumulative time (s)	Cumulative water recovery (%)	Cumulative LMOS recovery (%)	R/W LMOs	Cumulative water recovery (%)	ENT Tracer
18	1.75	3.25	1.86	1.03	0.59
36	2.48	6.02	2.42	1.82	0.73
54	3.5	9.31	2.28	2.43	0.67
90	5.20	11.20	2.15	3.14	0.60
390	11.93	17.58	1.47	5.47	0.46
Model Black mass					
Cumulative time (s)	Cumulative water recovery (%)	Cumulative LMOS recovery (%)	R/W LMOs	Cumulative water recovery (%)	ENT Tracer

18	3.07	1.88	0.61	1.55	0.51
36	4.04	2.14	0.53	1.87	0.46
54	4.41	2.23	0.51	1.96	0.44
90	5.17	2.40	0.46	2.17	0.42
390	10.58	3.20	0.30	2.96	0.28

Attrition with kerosene (III)

Spent Black mass

Cumulative time (s)	Cumulative water recovery (%)	Cumulative LMOS recovery (%)	R/W LMOS	Cumulative water recovery (%)	ENT Tracer
18	4.14	9.70	2.34	5.06	1.22
36	6.13	13.81	2.25	6.20	11.01
54	7.26	16.33	2.25	6.77	0.93
90	8.43	19.00	2.28	7.24	0.86
390	14.19	26.16	1.84	9.55	0.67

Model Black mass

Cumulative time (s)	Cumulative water recovery (%)	Cumulative LMOS recovery (%)	R/W LMOS	Cumulative water recovery (%)	ENT Tracer
18	4.19	3.76	0.90	3.35	0.80
36	4.77	3.94	0.83	3.53	0.74
54	5.22	4.05	0.78	3.64	0.70
90	5.62	4.16	0.74	3.80	0.68
390	8.14	4.72	0.58	4.07	0.50

Attrition with kerosene (III)					
Spent Black mass					
Cumulative time (s)	Cumulative water recovery (%)	Cumulative LMOs recovery (%)	R/W LMOs	Cumulative tracer recovery (%)	ENT Tracer
18	4.14	9.70	2.34	5.06	1.22
36	6.13	13.81	2.25	6.20	1.01
54	7.26	16.33	2.25	6.77	0.93
90	8.43	19.00	2.25	7.24	0.86
390	14.19	26.16	1.84	9.55	0.67
Model Black mass					
Cumulative time (s)	Cumulative water recovery (%)	Cumulative LMOs recovery (%)	R/W LMOs	Cumulative tracer recovery (%)	ENT Tracer
18	4.19	3.76	0.90	3.35	0.80
36	4.77	3.94	0.83	3.53	0.74
54	5.22	4.05	0.78	3.64	0.70
90	5.62	4.16	0.74	3.80	0.68
390	8.14	4.73	0.58	4.07	0.50