Electronic Supplementary Information (ESI)

Elevated rate capability of sulfur wrapped with thin rGO layers for lithium sulfur batteries

Wook Ahn^{a*}, Dong Un Lee^a, Hoon Sub Song^b, Sun-Hwa Yeon^c, Kwang-Bum Kim^{d*}, Zhongwei Chen^a

^aDepartment of Chemical Engineering, University of Waterloo, 200 University Ave W.

Waterloo, ON, N2L3G1, Canada

^bCanmet Energy, Natural Resources Canada, 1 Hannel Drive, Ottawa, ON, K1A1M1,

Canada

^cKorea Institute of Energy Research, 152 Gajeong-ro, Yuseong-Gu, Daejeon, 305-343,

Korea

^dDepartment of Materials Science & Engineering, Yonsei University, 50 Yonsei-ro,

Seodaemun-Gu, Seoul, 120-749, Korea



Fig. S1. Schematic diagram for synthesis procedure of sulfur-rGO composite.



Fig. S2. TGA analysis of sulfur-rGO composite for measuring the content of sulfur in sulfur-rGO composite.



Fig. S3. SEM and TEM images of synthesized rGO prior to preparing the sulfur-rGO composite.

	Capacity reduction ratio per cycle (%)				
Cycle No.	S-rGO composite				S-rGO mixture
	0.1 C-rate	0.5 C-rate	1 C-rate	2 C-rate	0.1 C-rate
2nd	18.7	18.7	15.6	9.5	13.7
10th	2.7	2.7	1.7	1.6	2.6
20th	0.6	0.6	0.4	1.0	2.1
30th	0.6	0.6	0.9	0.6	1.4
40th	0.5	0.5	0.7	0.9	1.3
50th	0.3	0.3	0.1	0.9	0.4
60th	0.4	0.4	0.7	0.9	0.6
70th	0.2	0.2	0.3	0.8	0.7
80th	0.4	0.6	0.5	0.5	0.3
90th	0.2	0.2	0.4	0.4	0.5
100th	0.3	0.2	0.4	0.4	0.6

Table S1. Capacity reduction ratio per cycle of sulfur-rGO composite and sulfur-rGO mixture electrode at various current density.