Supporting Information

Phosphorous-doped graphene nanosheets anchored with cerium oxide nanocrystals as effective sulfur hosts for high performance lithium–sulfur batteries

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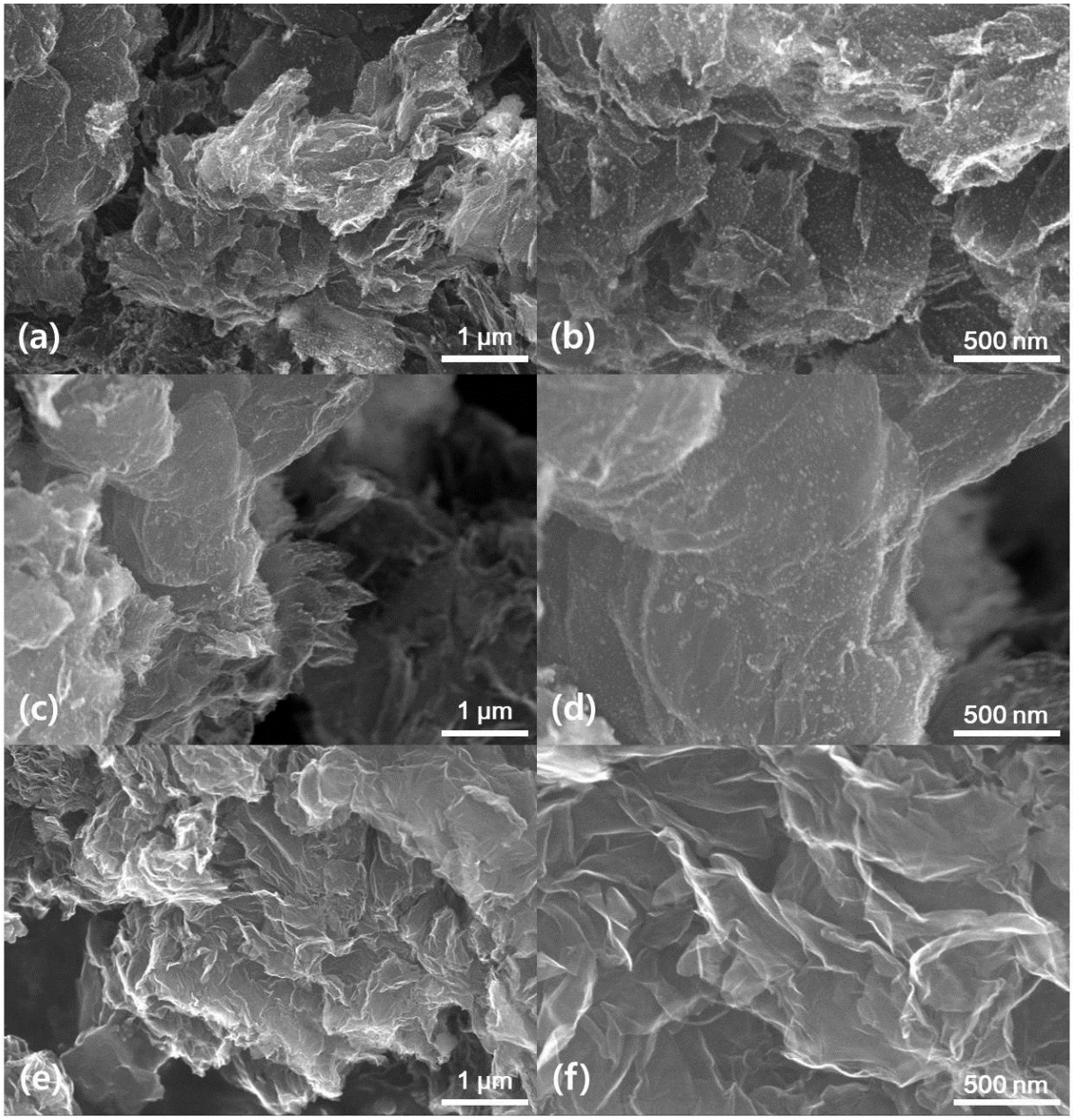

Fig. S1 Low and relatively high magnification SEM images of a,b) CeO_2/PG, c,d) CeO_2/G, and e,f) G**.**

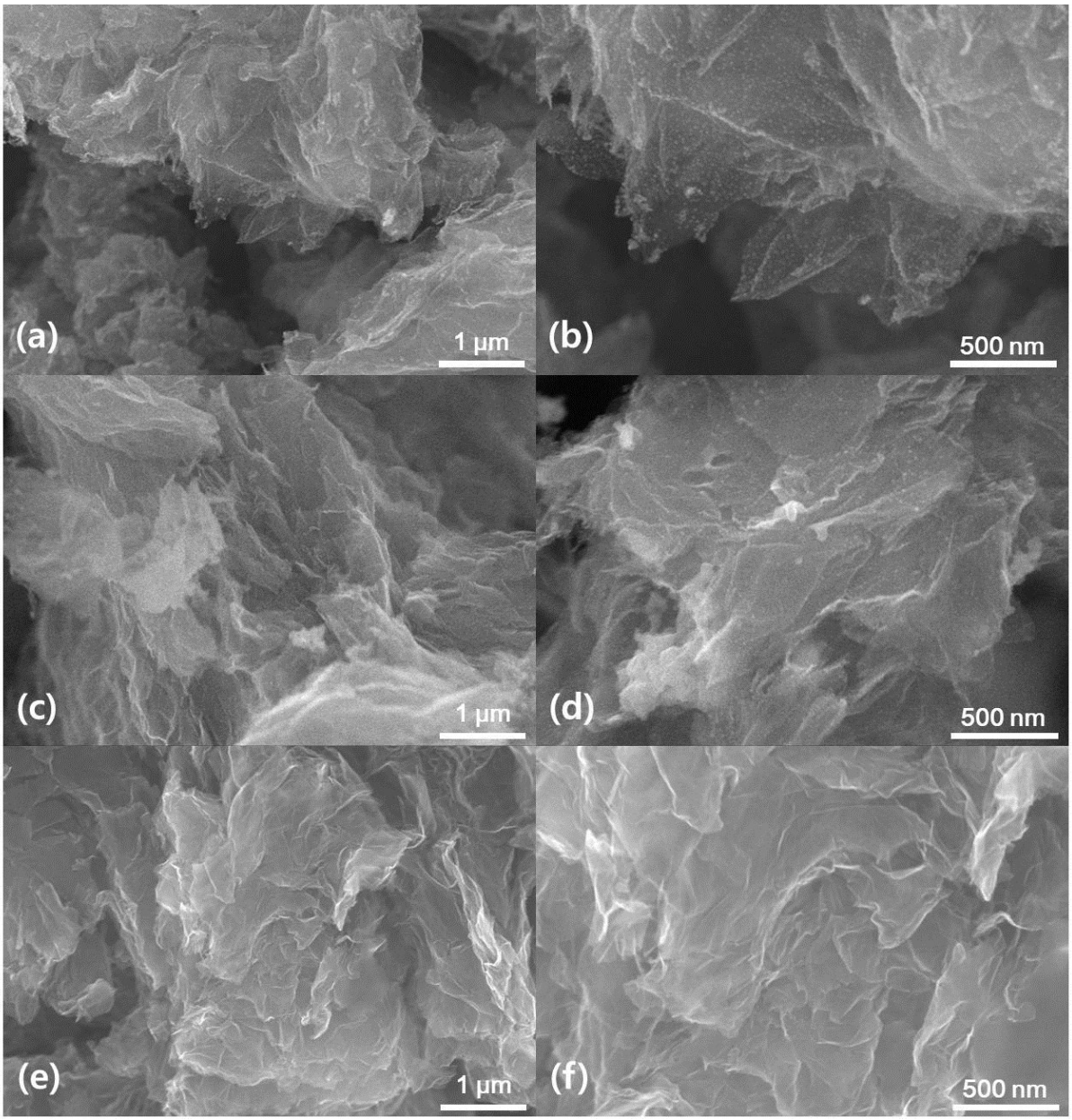

Fig. S2 Low and relatively high magnification SEM images of a,b) S@CeO_2/PG, c,d) S@CeO_2/G, and e,f) S@G**.**

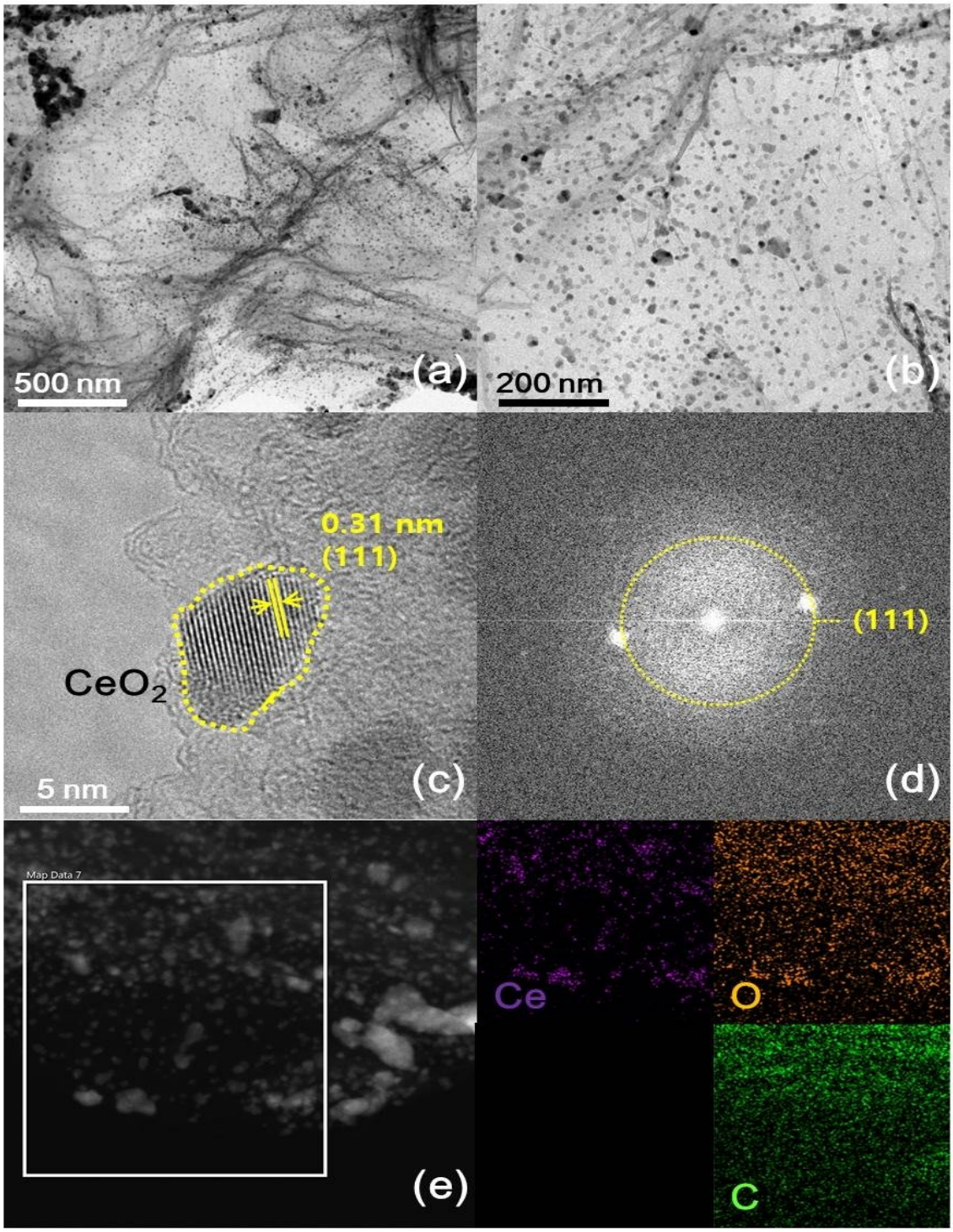
500 nm
(a)
200 nm
(b)
0.31 nm
(111)
CeO2
5 nm
(c)
(111)
(d)
Map Data 7
(e)
Ce
O
C

Fig. S3 a,b) TEM images, c) high-resolution TEM (HRTEM) image of CeO_2 nanoparticles anchored on graphene. d) Fast Fourier Transform (FFT) pattern of CeO_2/G composites, e) EDX maps of Ce, O, and C.

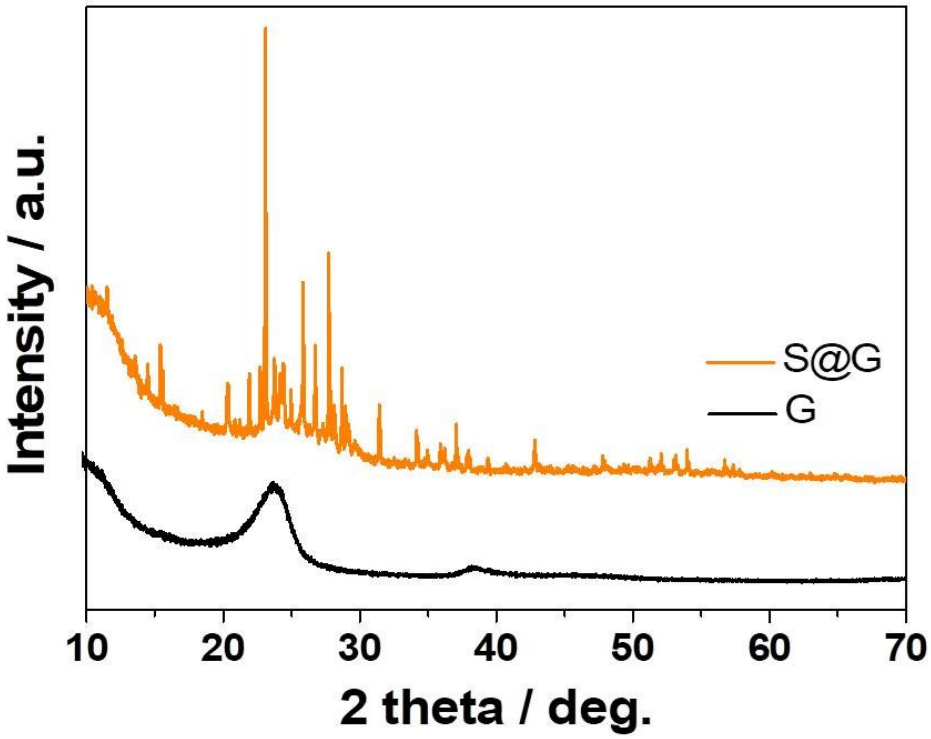

Fig. S4 X-ray diffraction patterns of S@G and G.

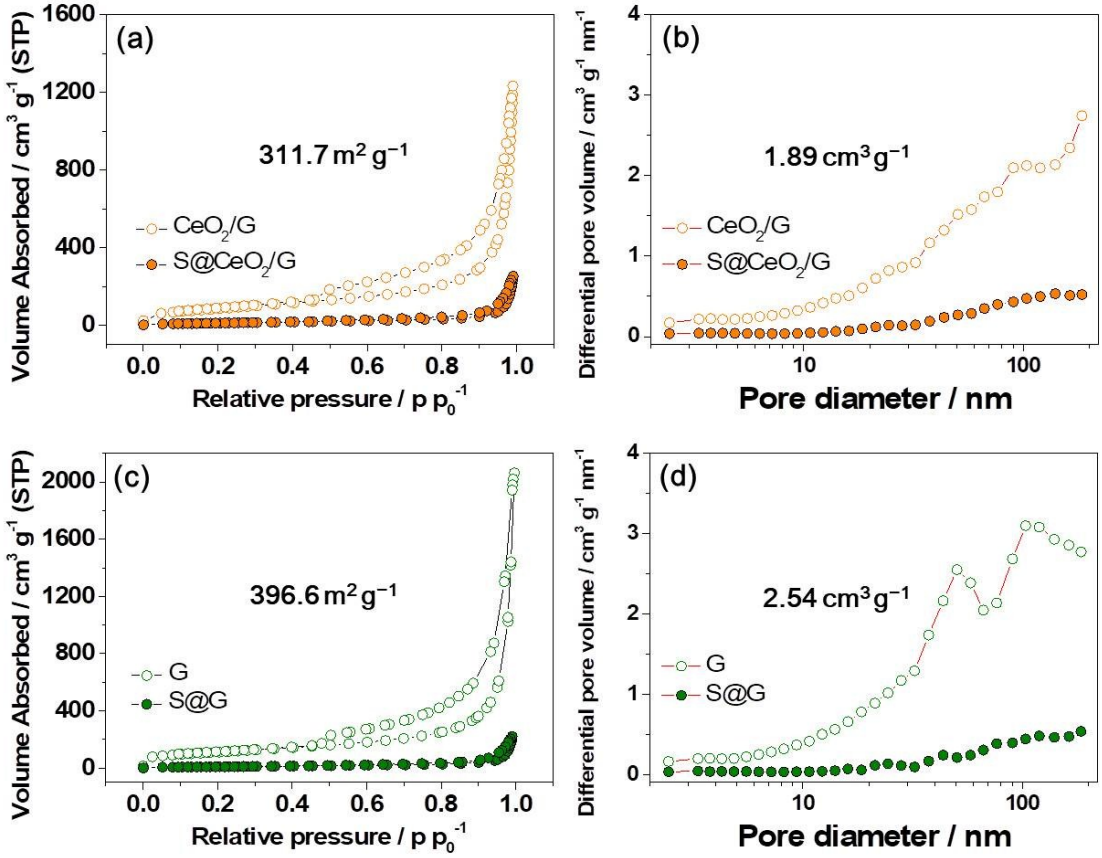

Fig. S5 N_2 adsorption-desorption isotherms and pore distribution of a,b) S@CeO_2/G and CeO_2/G, c,d) S@G and G, respectively.

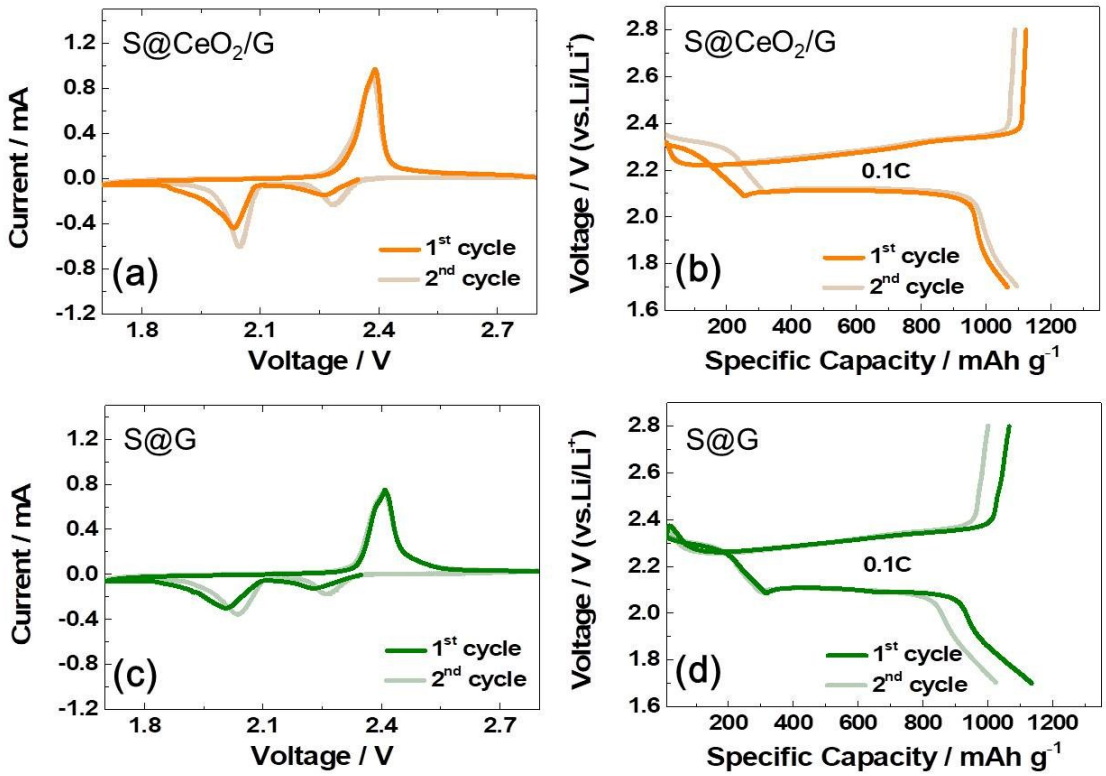

Fig. S6 Cyclic voltammograms and charge/discharge profiles of a,b) S@CeO_2/G and c,d) S@G electrodes, respectively.

Table S1 The contents of CeO_2/PG composites from XPS analysis.

Sample	Content	At [%]	Mass [%]
CeO_2/PG	P 2p	1.27	2.8
	C 1s	84.3	71.85
	O 1s	13.41	15.23
	Ce 3d	1.02	10.11