

## Gas-phase oxidation modification strategy of spent graphite from spent $\text{LiFePO}_4$

### with Enhanced Initial Coulombic Efficiency for Lithium-Ion Battery Anodes

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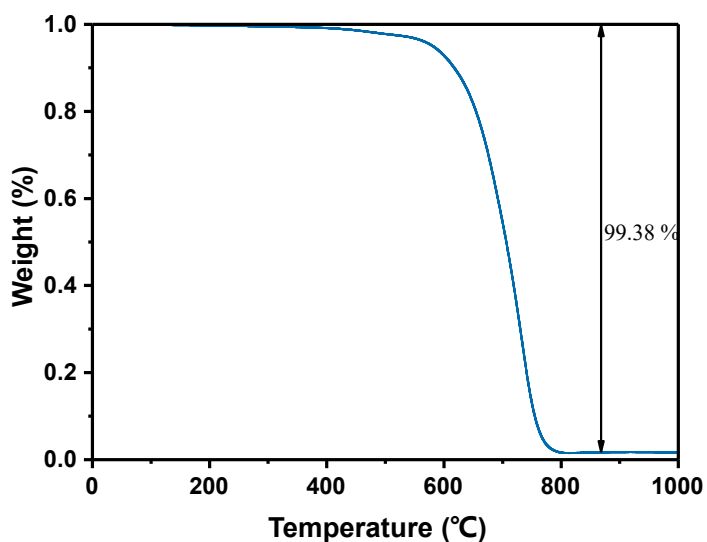


Figure S1  $\text{O}_2$  adsorption-desorption isotherms.

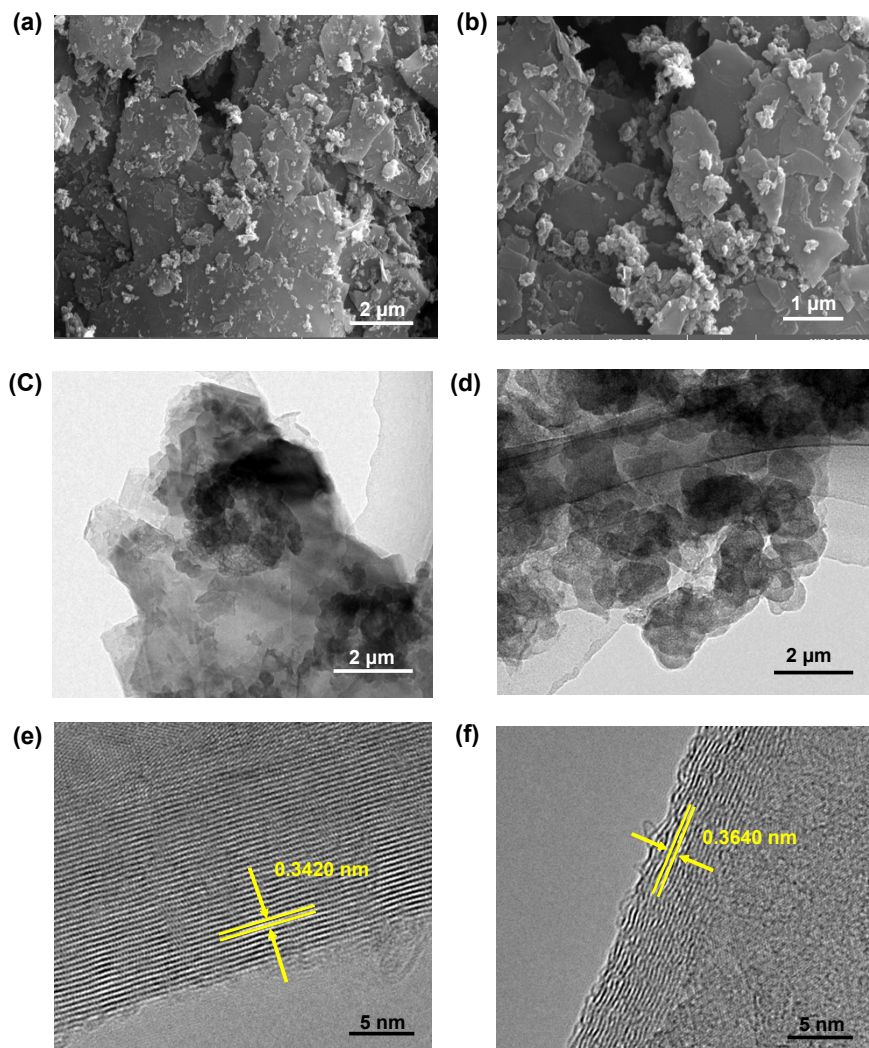


Figure S2 (a) and (b) SEM images and (c)–(f) TEM images of the SG sample with different magnifications.

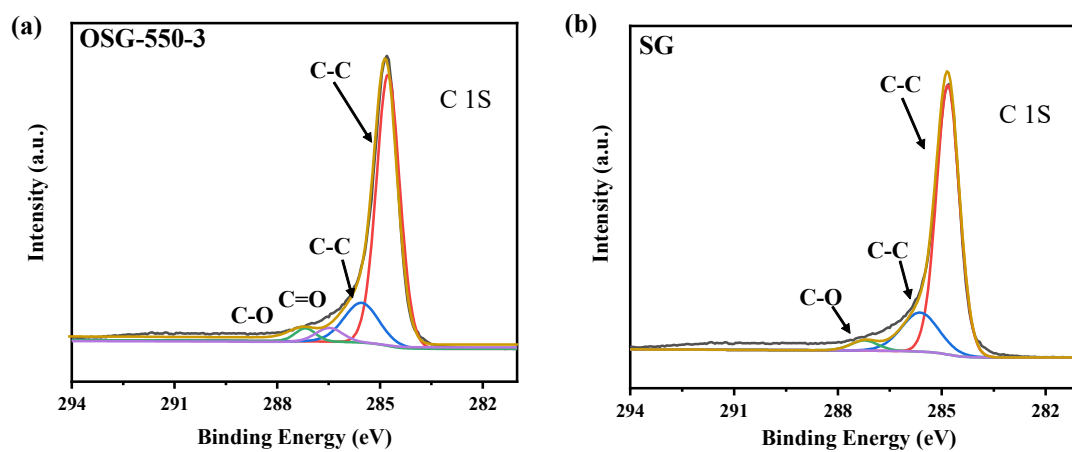


Figure S3 XPS C1s spectra of (a) OSG-550-3 and (b) SG.

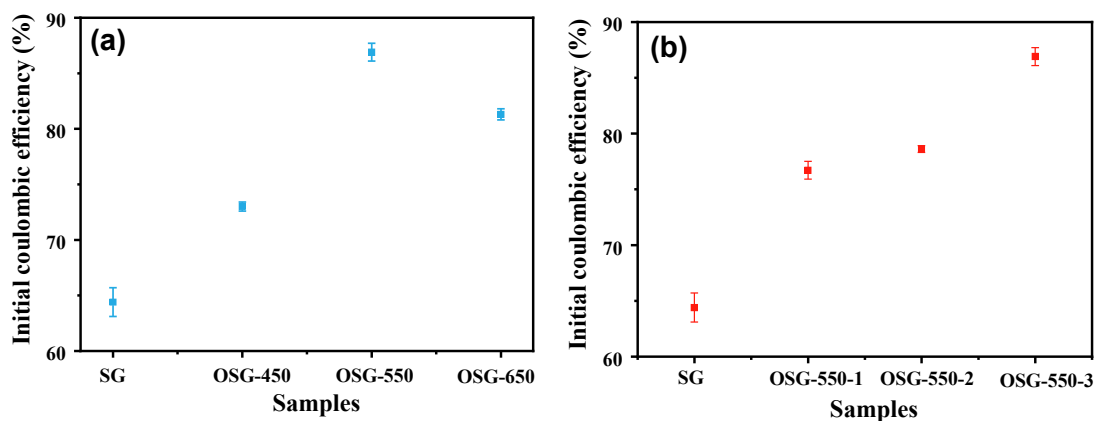


Figure S4 Initial coulombic efficiency with standard deviation bar per of OSG.

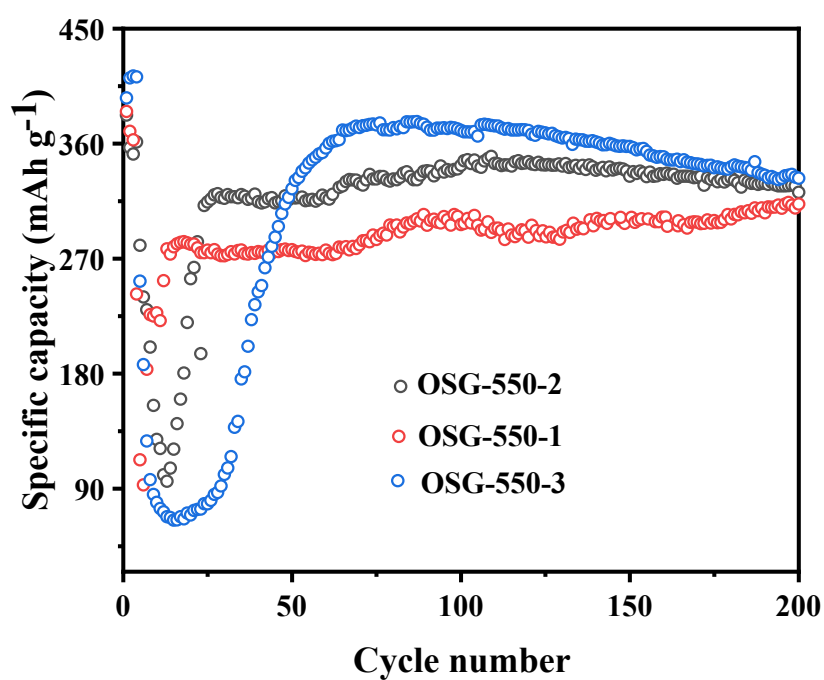


Figure S5 the cycle performance of OSG-550-1、OSG-550-2 and OSG-550-3.

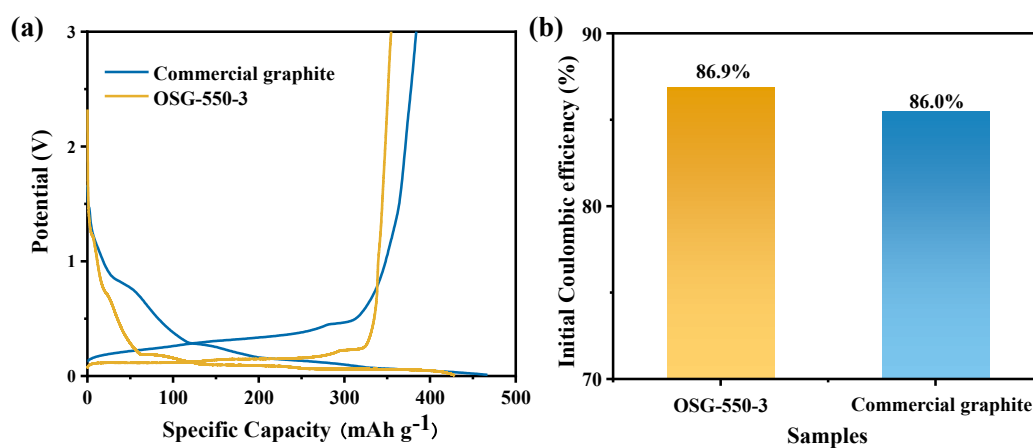


Figure S6 (a) first cycle charge-discharge curve of commercial graphite and OSG-

550-3, (b) commercial graphite and OSG-550-3 comparison of initial coulombic efficiency.

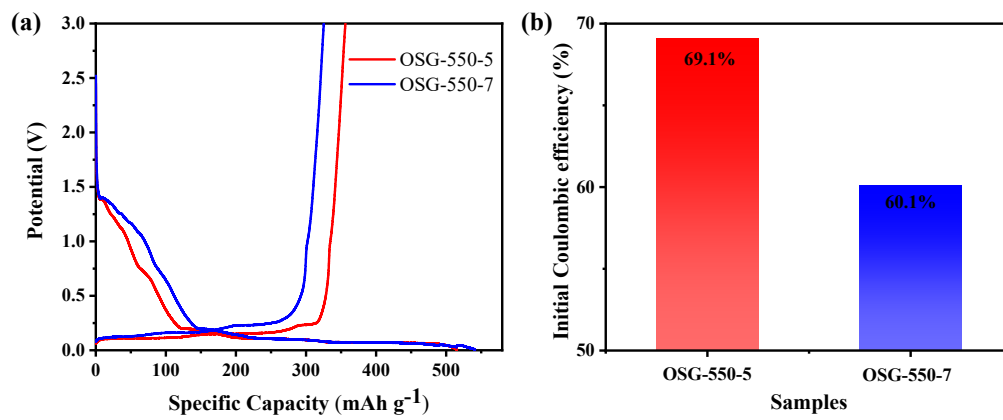


Figure S7 (a) first cycle charge-discharge curve of OSG-550-5 and OSG-550-7, (b) OSG-550-5 and OSG-550-7 comparison of initial coulombic efficiency.