## **Supporting Information**

## High-Performance Lithium-Selenium Batteries Promoted by Heteroatom-Doped Microporous Carbon

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Figure S1 (TGA) curve of the Se-CP composite.

## Details of first principle calculation

Our calculations are based on the density functional theory (DFT) with the Perdew–Burke–Ernzerh of version of the generalized gradient approximation (GGA-PBE)<sup>1</sup> for the exchange-correlation potential, as implemented in a plane-wave basis code VASP,<sup>2,3</sup> The pseudo-potential is described by the projector-augmented-wave (PAW)<sup>4</sup> method. An energy cutoff of 400 eV and  $1 \times 1 \times 1$  k-point with a  $\Gamma$  centered k mesh are used in our calculations. The atomic coordinates are fully relaxed using the conjugate gradient method<sup>1</sup> until the force on each atom is converged to less than 0.02 eV/Å.

## References

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