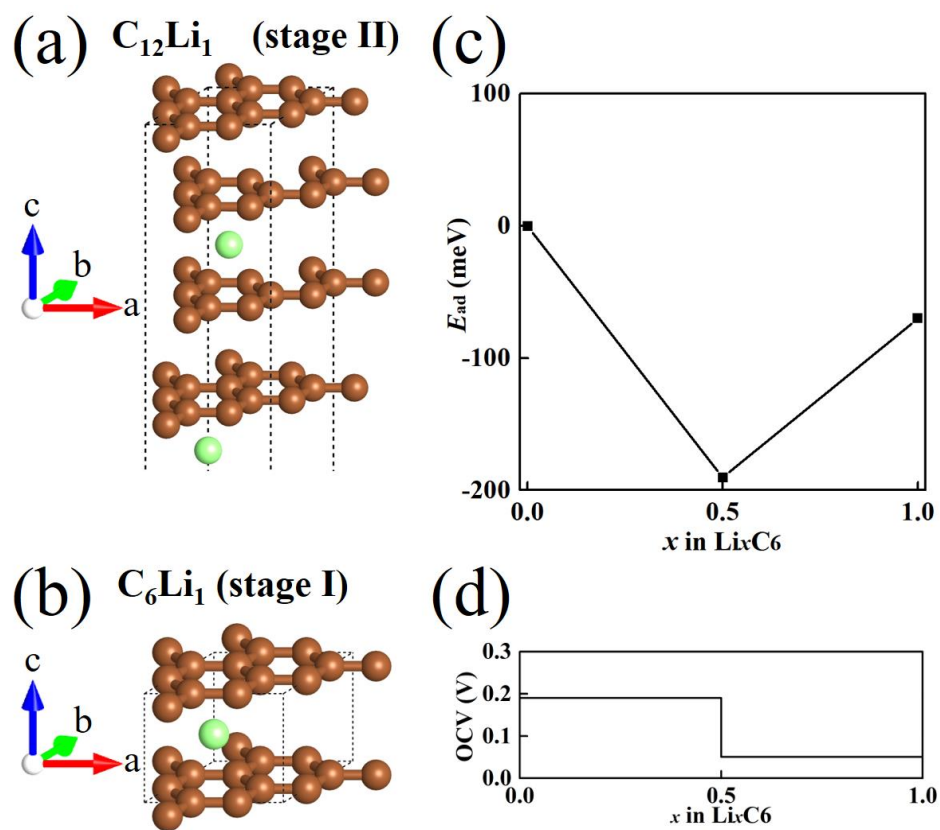
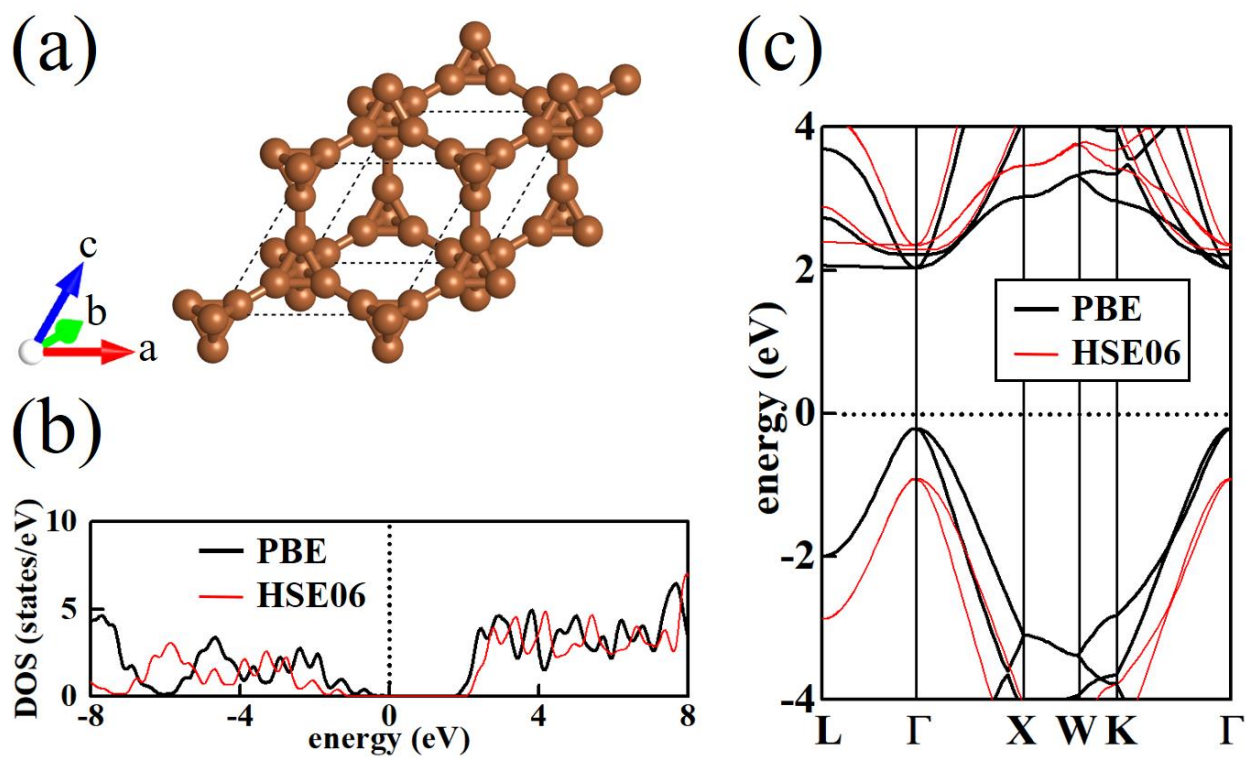


## Supplementary Information



**Fig. S1** The structures of graphite with Li intercalation: (a)  $C_{12}Li_1$  and (b)  $C_6Li_1$ . (c) The Li adsorption energy on  $C_{12}Li_1$  and  $C_6Li_1$ . (d) The calculated potential of graphite anode at the level of PBE-D3.



**Fig. S2** The structure (a), DOS (b) and energy bands (c) of T-carbon.