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Supporting Information

Effect of alkali treatment and organic modification of diatomite on the properties of diatomite composite separator

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Fig. S1 displays XPS spectra of Si 2p on surface of raw diatomite and organic-modified diatomite (O-D). In the spectrum of raw diatomite, the peak of Si 2p was at 103.3 eV, which was in agreement with Si 2p in SiO_2 (103.3 eV).[1] As hydroxyl was electron withdrawing group, the binding energy of Si 2p in Si-OH on the diatomite surface shifted to 104.1 eV. In the XPS spectrum of O-D, two peaks of Si 2p appeared at 103.5 and 104.2 eV, respectively. The higher intensity Si 2p peak at 103.5 eV was attributed to Si 2p in $H_2C=C(CH_3)CO_2(CH_2)_3$-Si from the modifier MPS on O-D surface. The group $H_2C=C(CH_3)CO_2(CH_2)_3$- was a electron withdrawing group and therefore the binding energy was slightly higher than SiO_2 (103.3 eV). As MPS reacted with Si-OH and the amount of -OH greatly decreased, the peak of Si-OH became weak.

The corresponding revision has been added to the revised manuscript and Supporting Information.

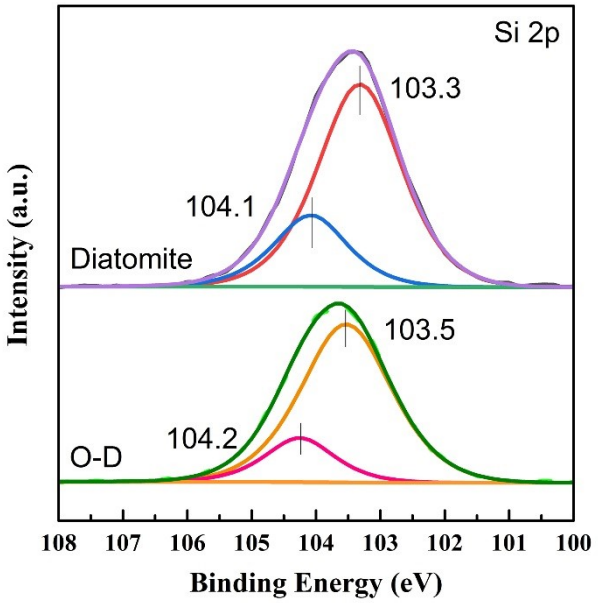

Fig. S1 XPS spectra of raw diatomite and O-D