# Supporting Information.

## Soft-template construction of three-dimensionally ordered inverse opal structure from $Li_2FeSiO_4$/C composite nanofibers for high-rate lithium-ion batteries

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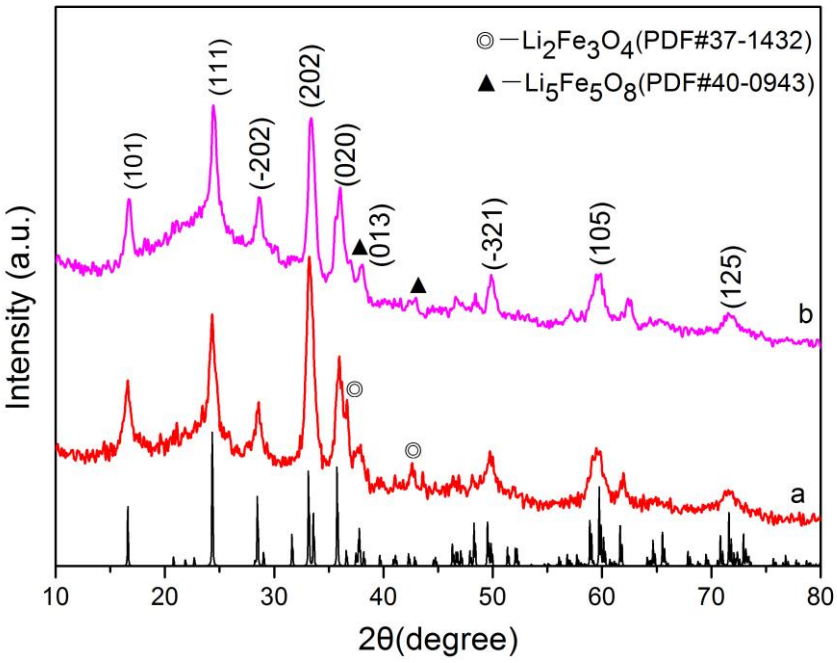



**Figure S1** XRD pattern of the LFS/C nanofibers calcined at 650℃ (a) with a little $Li_5Fe_5O_8$ impurity and (b) without any crystalline impurity. At (©) degrees, it is difficult to distinguish LFS reflections from $Li_5Fe_5O_8$. Bottom is ICSD#246132 pattern of $Li_2FeSiO_4$.

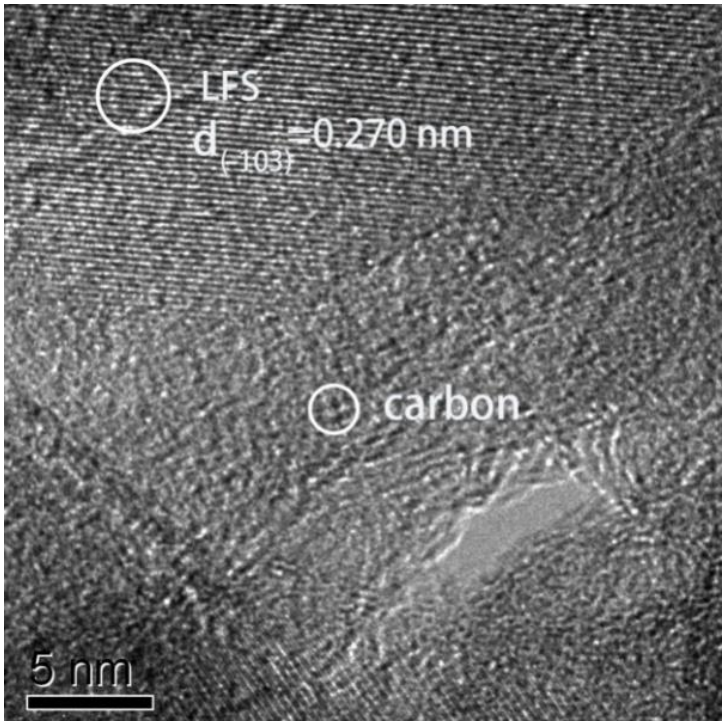



**Figure S2** HRTEM image of the LFS/C-NF composites calcined at 650℃.

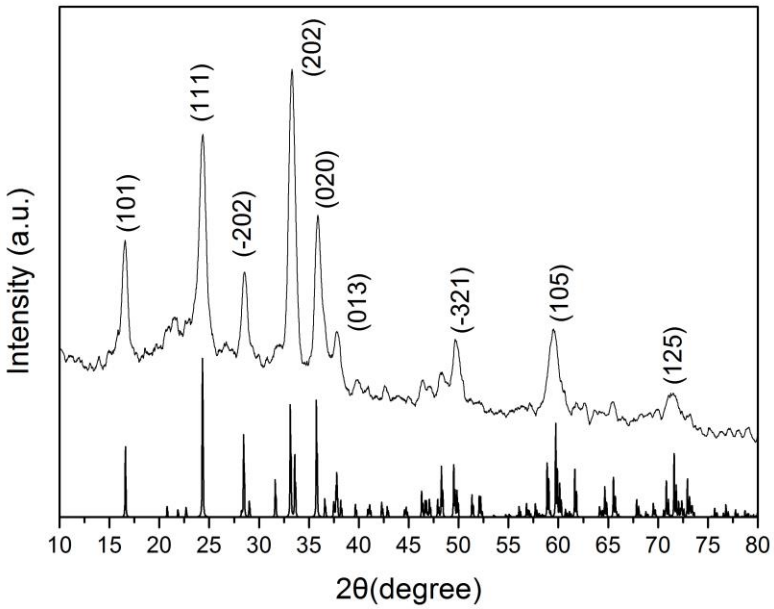
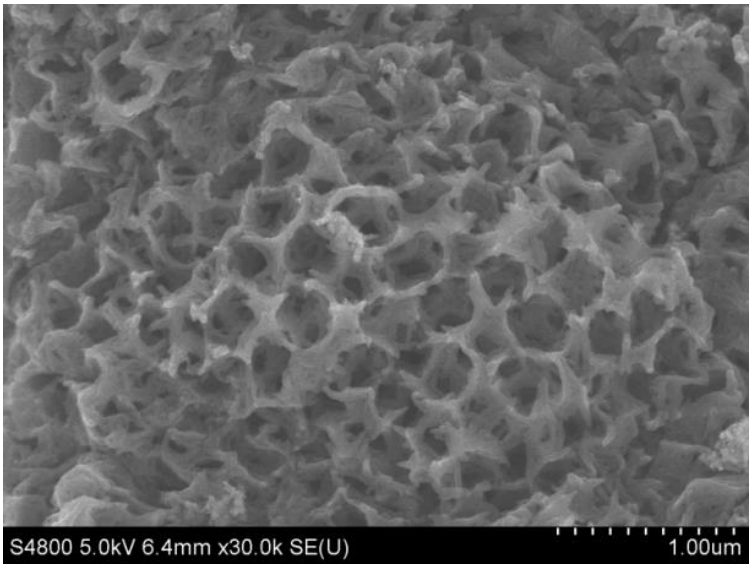



**Figure S3** XRD pattern of the 3DOM-LFS/C nanocomposite calcined at 650℃. Bottom is ICSD#246132 pattern of $Li_2FeSiO_4$.

(a)




(b)

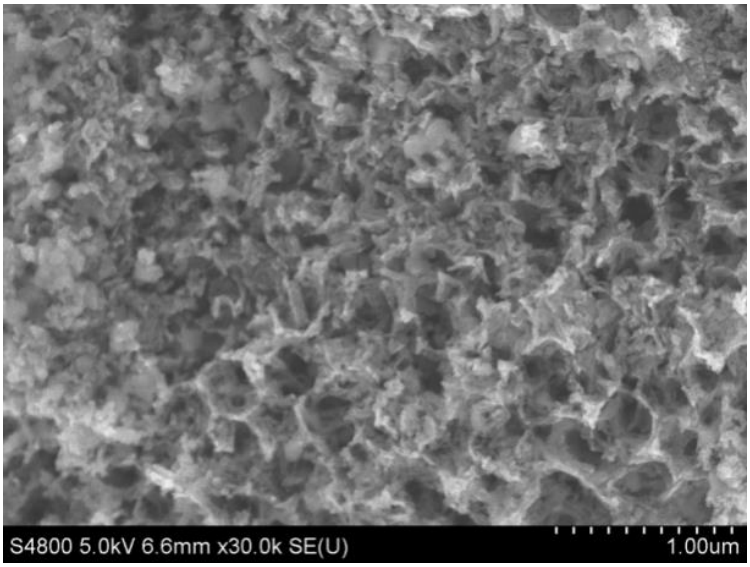



**Figure S4** FESEM images of the LFS/P123-PS gels annealed at (a) 700 ℃ and (b) 750 ℃.

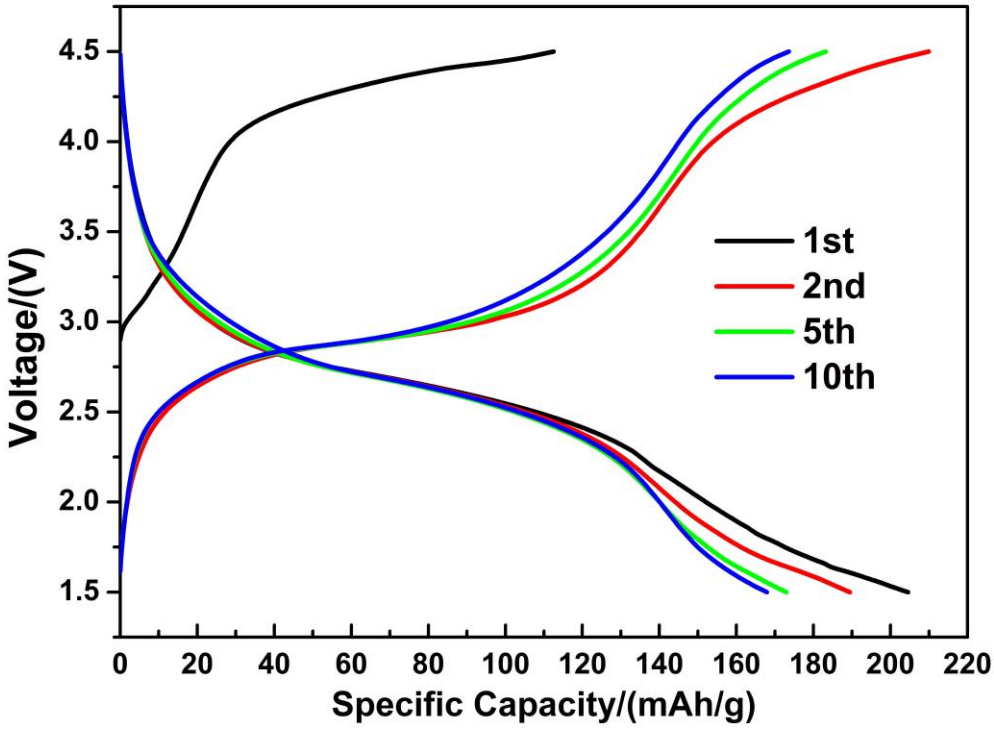
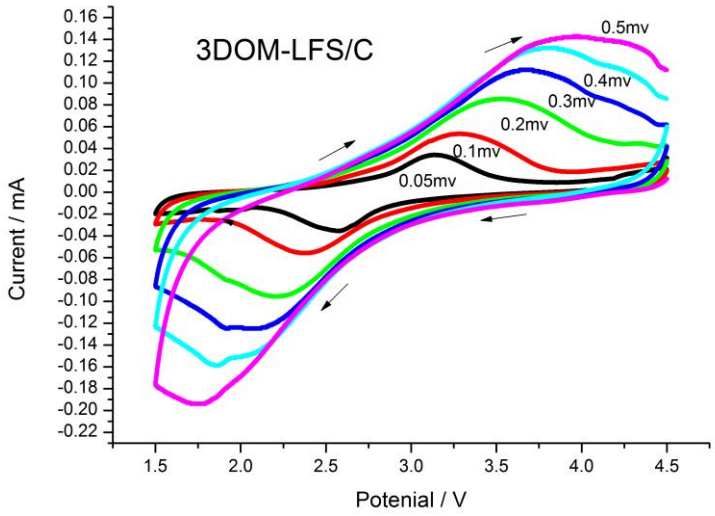



Figure S5 The charge-discharge voltage profiles of LFS/C-NF nanocomposite in the 1st, 2nd, 5th and 10th cycles at 0.1C and room temperature between 1.5 and 4.5 V (vs. $Li^+$/Li).

(a)




(b)

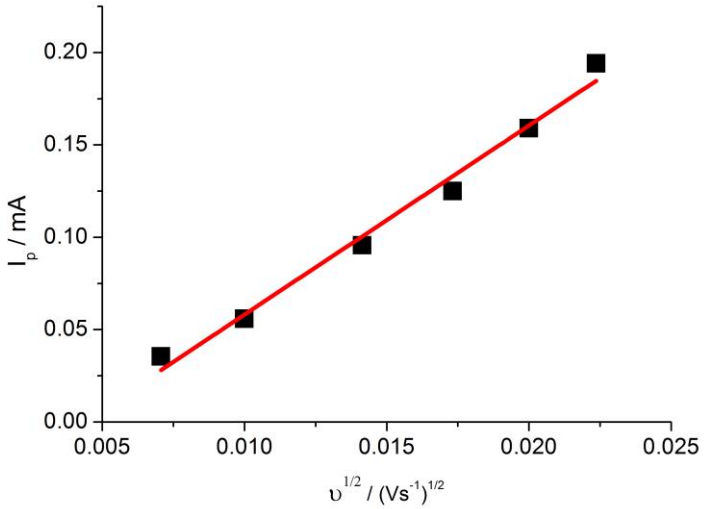
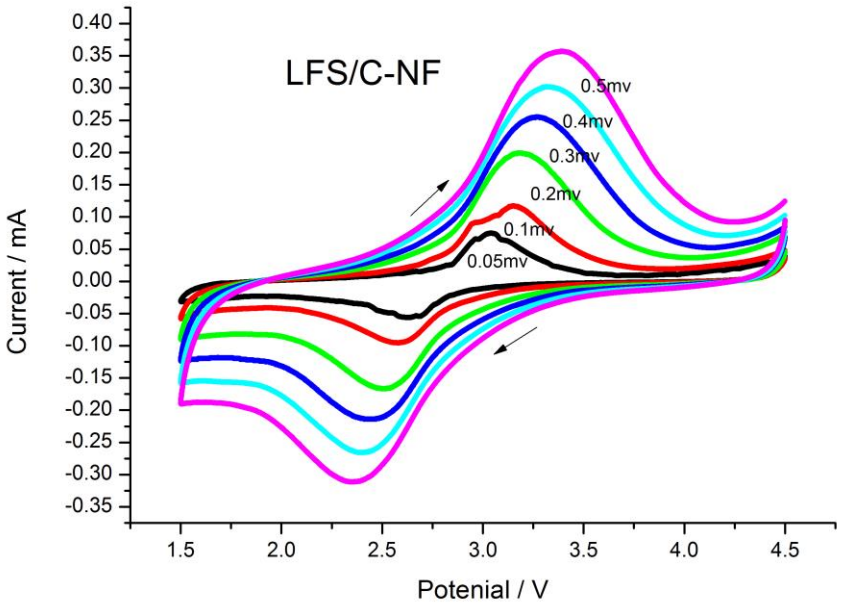



Figure S6 Cyclic voltammograms of 3DOM-LFS/C composite (a) at different scan rates, and (b) plot of the reductive peak current $I_p$, as a function of the square root of the scan rates ($\upsilon^{1/2}$).

(a)




(b)

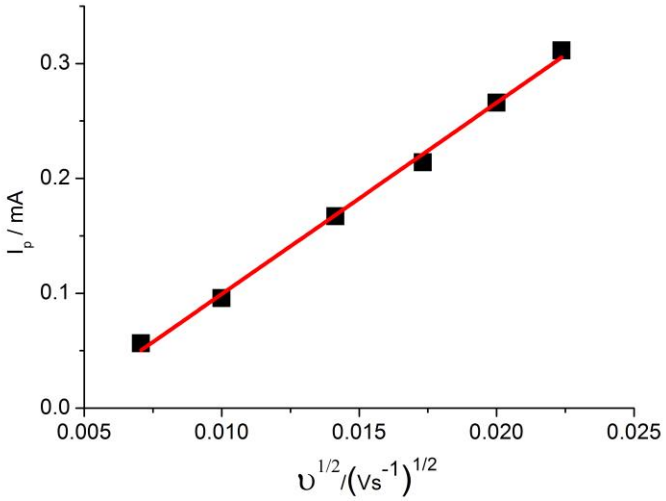
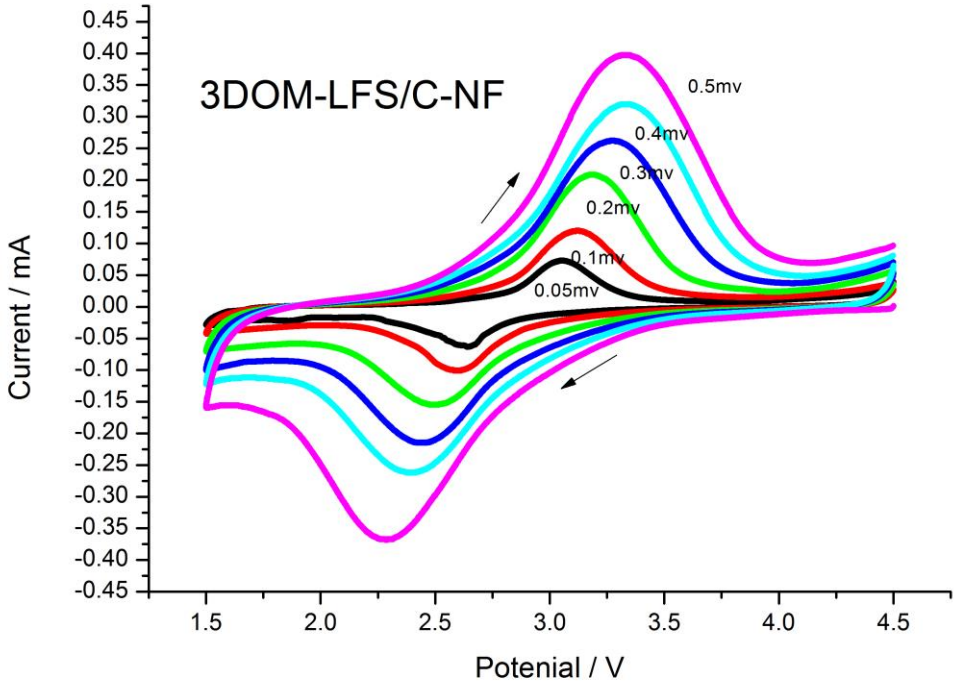



Figure S7 Cyclic voltammograms of LFS/C-NF composite (a) at different scan rates, and (b) plot of the reductive peak current $I_p$, as a function of the square root of the scan rates ($\upsilon^{1/2}$).

(a)




(b)

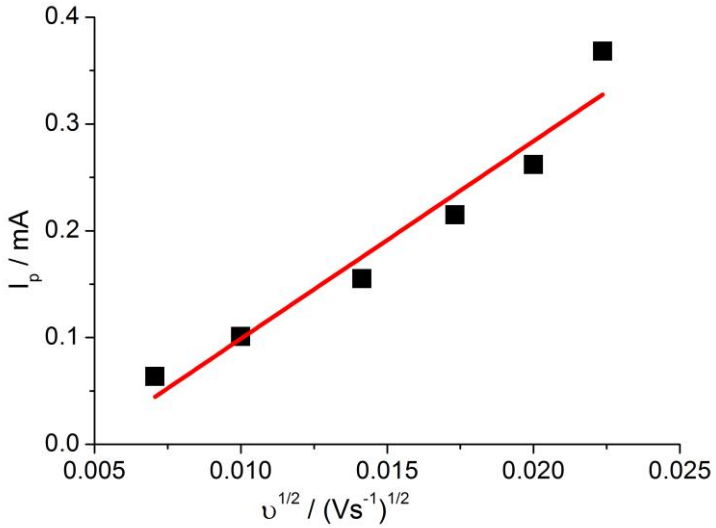



Figure S8 Cyclic voltammograms of LFS/C-NF composite (a) at different scan rates, and (b) plot of the reductive peak current $I_p$, as a function of the square root of the scan rates ($\upsilon^{1/2}$).

Table S1 $Li^+$ diffusion coefficients D in the solid calculated based on the CV measurements

| samples | D ($cm^2$ $s^{-1}$) |
|---|---|
| 3DOM-LFS/C | $2.98167\times10^{-13}$ |
| LFS/C-NF | $7.90447\times10^{-13}$ |
| 3DOM-LFS/C-NF | $9.74569\times10^{-13}$ |