Supporting Information

Preparation of α-Fe_2O_3/polyacrylonitrile nanofiber mat as effective lead adsorbent

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In order to further investigate the morphology and density of the α-Fe_2O_3 on PAN nanofiber mats, we continued to adjust the pH value of the $FeCl_3$ solution to obtain the nanofiber mats. As shown in the FigS1a, there are only a few α-Fe_2O_3 particles on the surface of the nanofiber when the pH value is 3.6. Obviously, when the pH value increased to 3.8, the surface of the PAN nanofiber is similar with the $S_{2.0}$. That is to

say, we can get α-Fe_2O_3 nanoparticles coated on PAN when the pH ranging from 2.0 to 3.8. So it can conclude that excess acid or alkali is not conductive to the formation of the α-Fe_2O_3.

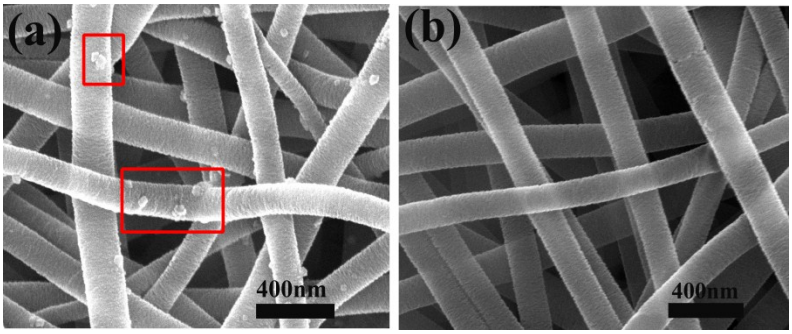

Fig.S1 SEM images of α-Fe_2O_3/PAN nanofiber mats with the different pH values of $FeCl_3$ 3.6 (a); 3.8 (b).

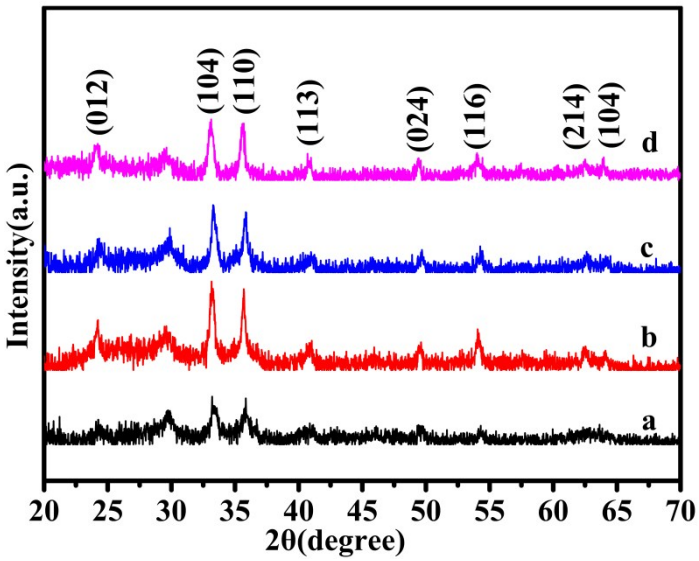

Fig.S2 XRD patterns of α-Fe_2O_3/PAN nanofiber mats: $S_{2.0}$ (a); $S_{2.4}$ (b); $S_{3.0}$ (c); $S_{3.4}$ (d).

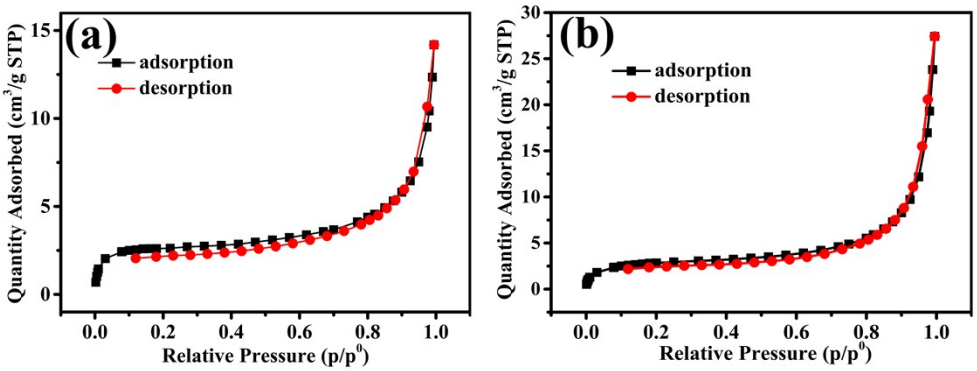

Fig.S3 N_2 adsorption-desorption isothermals of the α-Fe_2O_3/PAN nanofiber mats

The Brunauer-Emmett-Teller (BET) surface area of PAN and the α-Fe_2O_3/PAN nanofiber mats are shown in Fig S3. According to previous reports [1,2], the surface area of the electrospinning nanofibers are usually about 3-5m^2/g. In this paper, the surface area of PAN and the α-Fe_2O_3/PAN nanofiber mats was calculated to be 8.38 m^2/g and 9.84 m^2/g, respectively, indicating the α-Fe_2O_3 coated PAN nanofiber give the adsorbent a higher surface area. In addition, the surface ofα-Fe_2O_3 has a quantity of Fe-OH, which benefit for the adsorption.

References

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[2] X.Y. Tang, Y.X. Yu, Ceram. Int., 2015, **41**, 9232-9238.