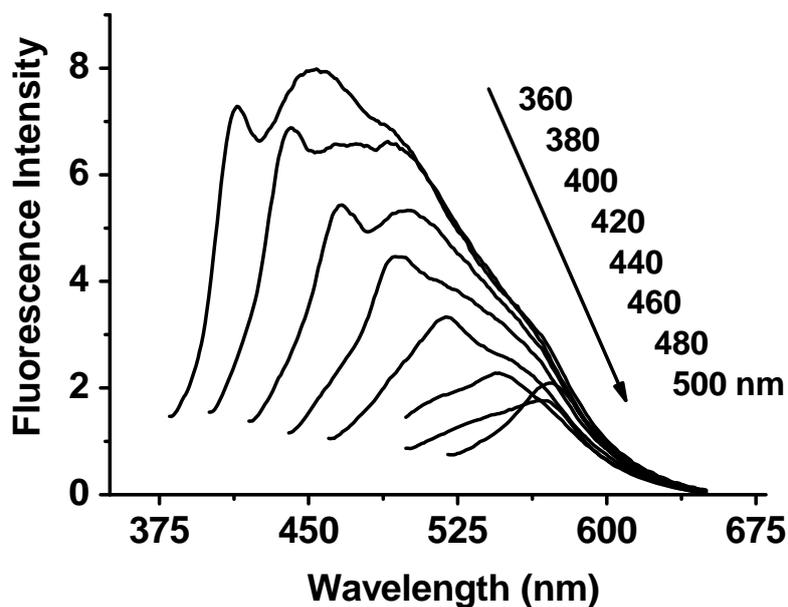


Electronic Supplementary Information for:

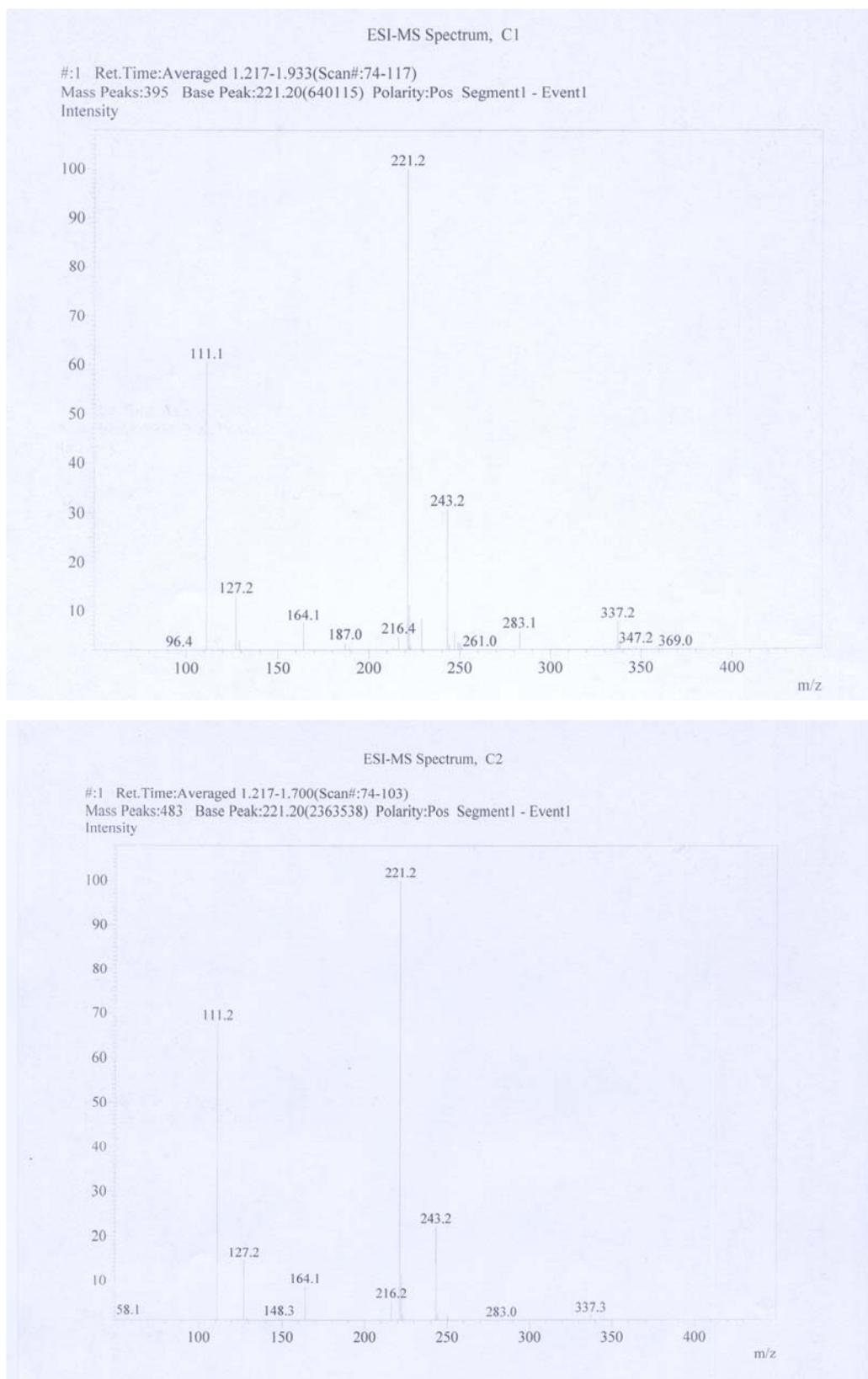
**Fluorescent carbon nanodots conjugated with folic acid for  
distinguishing folate-receptor-positive cancer cells from normal cells**

**Yanchao Song, Wen Shi, Wei Chen, Xiaohua Li, and Huimin Ma\***

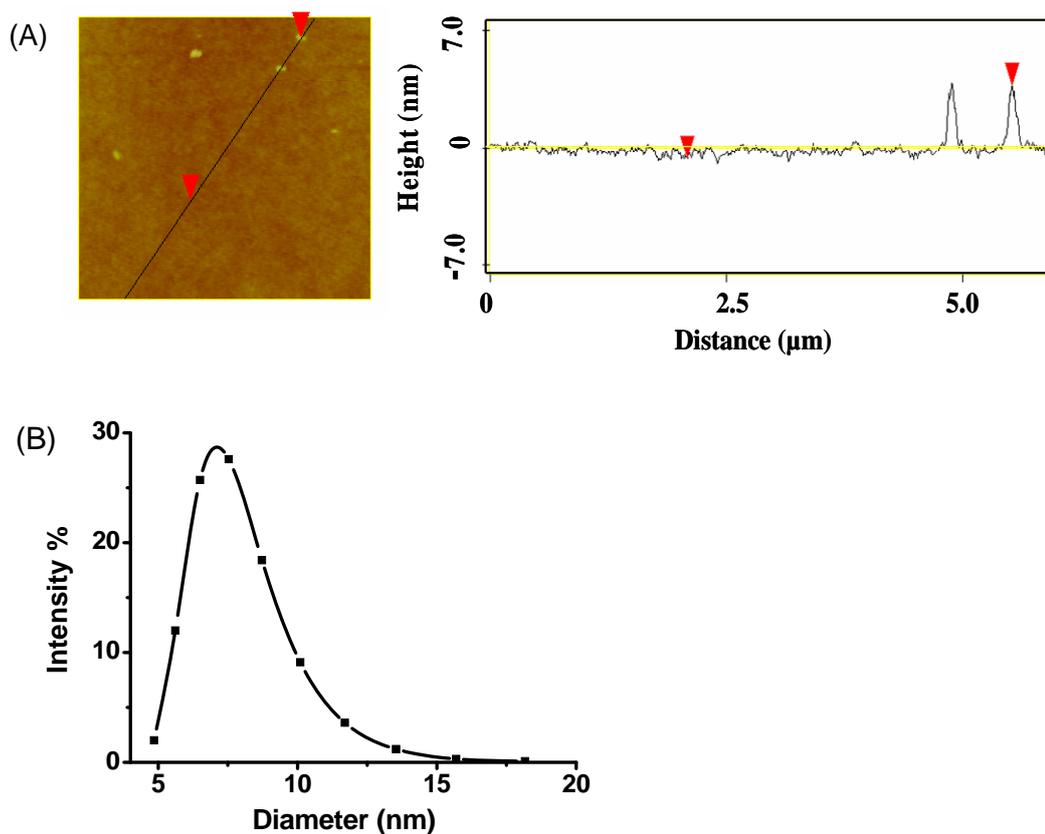
*Beijing National Laboratory for Molecular Sciences, Key Laboratory of Analytical Chemistry for  
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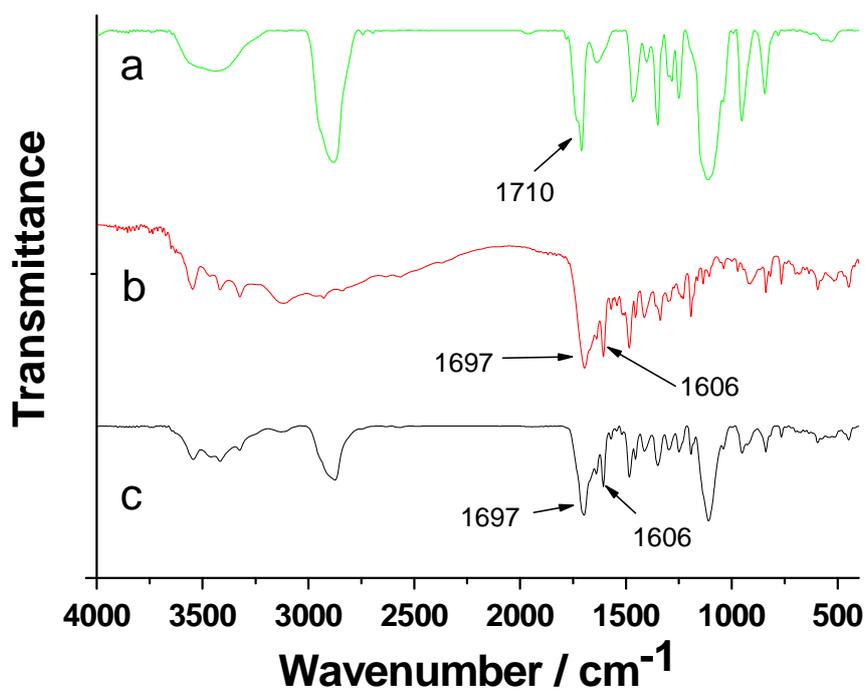
**Figure S1.** Fluorescence emission spectra (with progressively longer excitation wavelengths from 360 nm to 500 nm in 20 nm increment) of the non-passivated C-dots.



**Figure S2.** ESI-MS of TTDDA in 3 mL water before (top) and after (bottom) heated for 10 min in a 500 W microwave oven with a frequency of 2450 MHz. TTDDA is found to be stable because no obvious change in its mass spectrum is observed after the heat treatment.



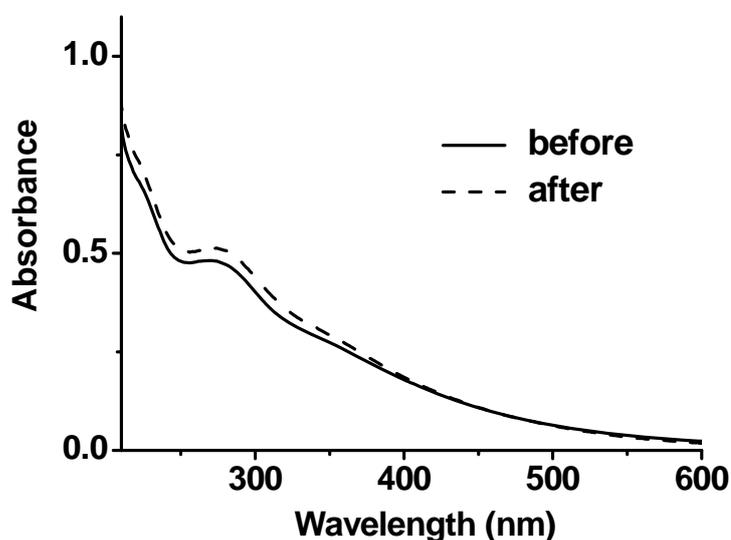
**Figure S3.** Experimental results from AFM image (A) and dynamic light scattering (B) of the passivated C-dots.



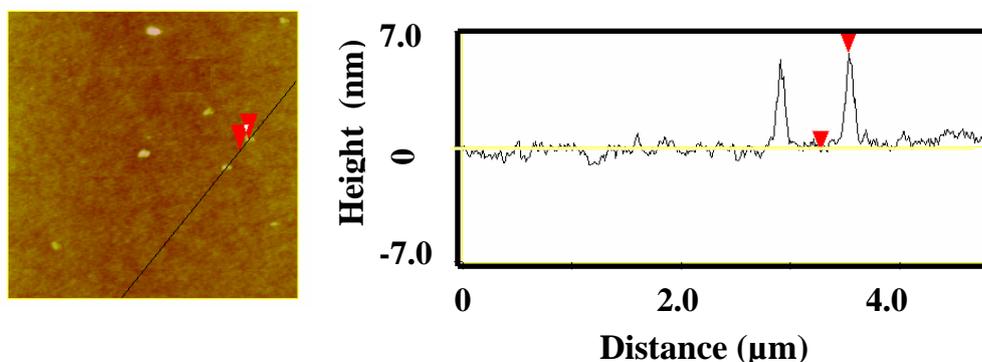
**Figure S4.** FTIR spectra of TTDDA passivated C-dots (a), FA (b), and C-dots-FA (c). As can be seen from these spectra, C-dots-FA (spectrum c) shows not only the

characteristic peaks of the C-dots themselves but also the ones at 1697 and 1606  $\text{cm}^{-1}$  indicative of FA (Li et al, *Chem. Eur. J.*, 2009, **15**, 9868), supporting the successful conjugation of FA to the C-dots.

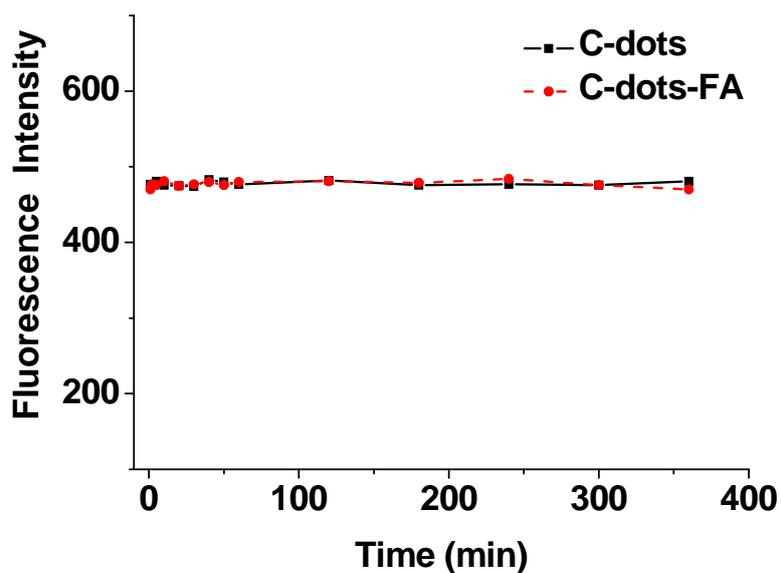
The Zeta potential of the TTDDA passivated C-dots was measured to be 26.3 mV, suggesting that the surface of the passivated C-dots is positively charged due to the presence of amino groups. After conjugation of FA to the C-dots, the resulting C-dots-FA had a Zeta potential of 3.0 mV, implying that the surface of C-dots-FA is still positively charged. This decrease in Zeta potential may be ascribed to the introduction of FA with carboxyl groups.



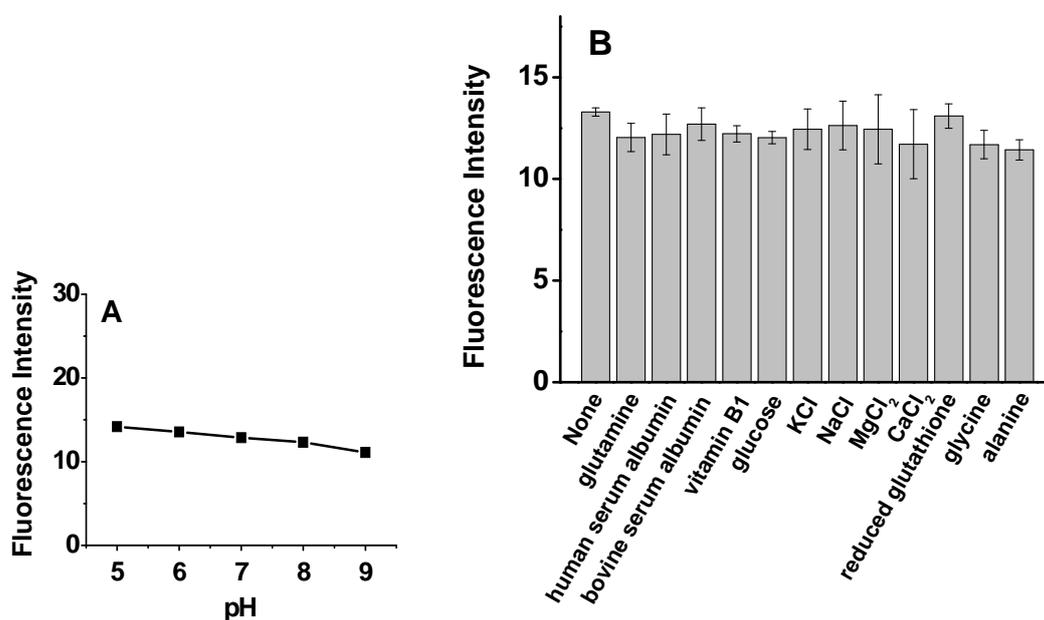
**Figure S5.** UV-vis absorption spectra of non-passivated C-dots before and after reaction with FA-NHS.



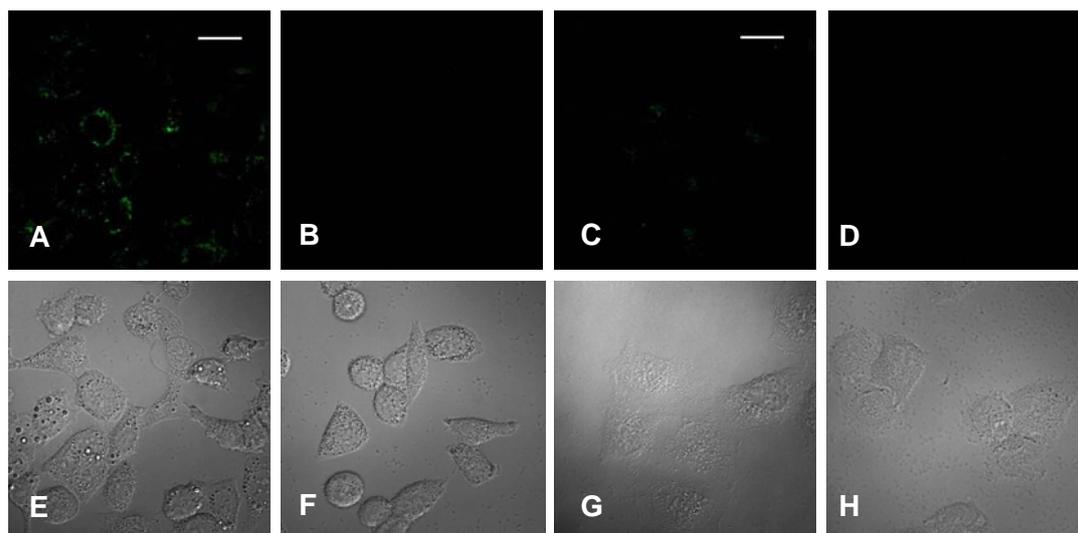
**Figure S6.** AFM image of the product C-dots-FA.



**Figure S7.** Fluorescence stabilities of passivated C-dots and C-dots-FA versus the time of continuous light excitation.  $\lambda_{\text{ex/em}} = 488/545$  nm.



**Figure S8.** Effects of (A) pH and (B) common cellular substances on the fluorescence of C-dots-FA (50  $\mu\text{g/mL}$ ).  $\lambda_{\text{ex/em}} = 488/545$  nm.



**Figure S9.** Comparison of fluorescence images of HeLa cells (A and B) and MCF-7 breast cancer cells (C and D) incubated in the presence (A and C) and absence (B and D; controls) of C-dots-FA (50  $\mu\text{g}/\text{mL}$ ) at 37  $^{\circ}\text{C}$  for 6 h. The differential interference contrast (DIC) images of the corresponding samples are shown below (panels E-H). Scale bars, 20  $\mu\text{m}$ .