

**Electronic Supplementary Information**

**Fluorescent carbon dots from beer for breast cancer cell imaging and drug delivery**

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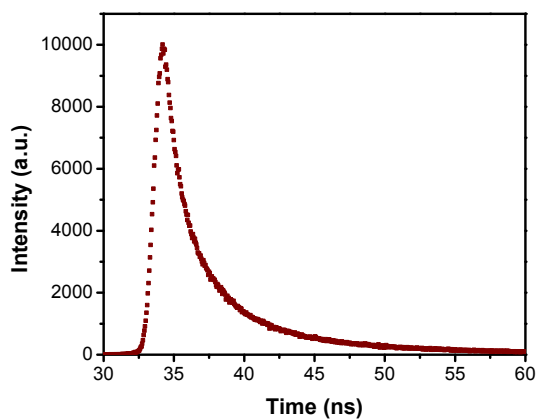
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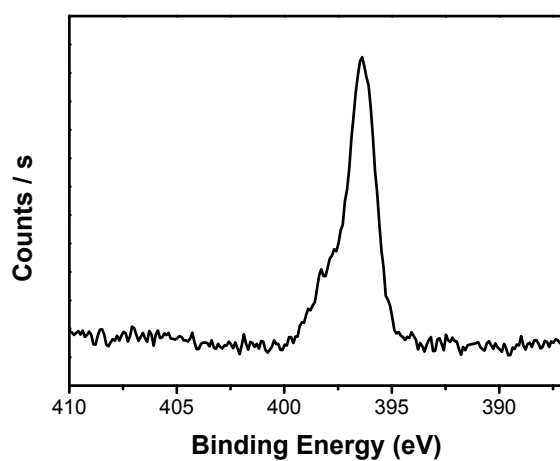
**Table S1.** Parameters of the lifetime ( $\tau$ ) measurement of BCDs from Tsingtao<sup>®</sup> beer

$\tau_i$ (ns)	$A_i$ (%)
0.76	25.13
3.93	53.40
14.85	21.47

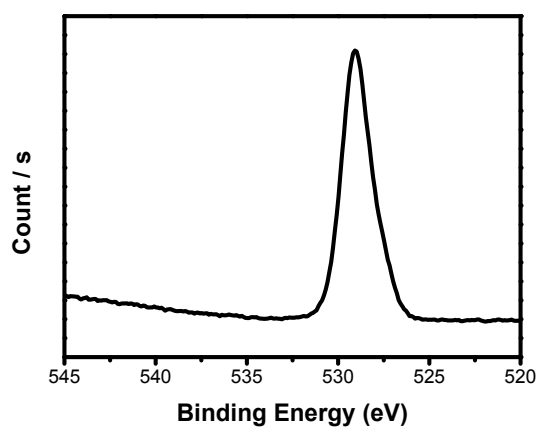
Fluorescence lifetime ( $\tau$ ) of the BCDs was calculated using the equation:  $\tau = (A_1\tau_1^2 + A_2\tau_2^2 + A_3\tau_3^2)/(A_1\tau_1 + A_2\tau_2 + A_3\tau_3)$ . The average fluorescence lifetime of BCDs was 9.02 ns, wherein  $A_i$  is the fractional contributions of time-resolved decay lifetime of  $\tau_i$ ,  $i=1, 2$ , and  $3$ .



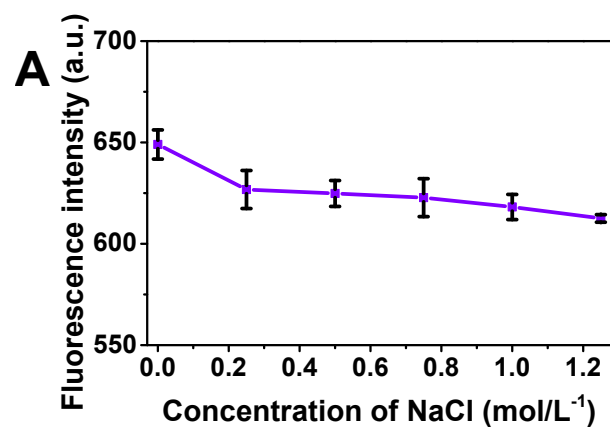
**Fig. S1** Fluorescence decay curve of BCDs with a 376 nm laser as excitation source.



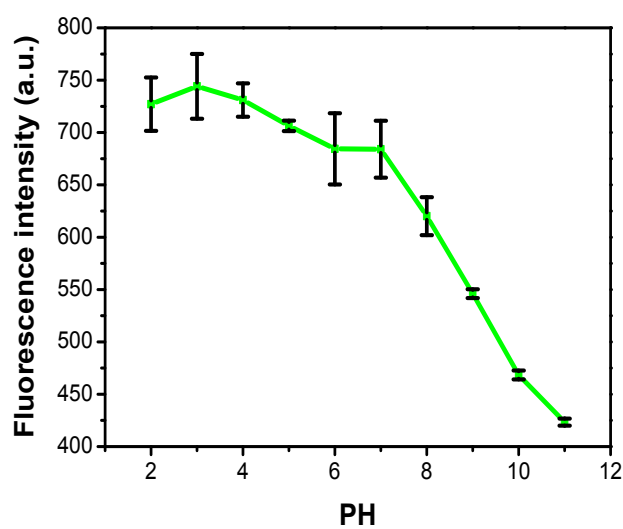
**Fig. S2** N1s spectrum of the BCDs



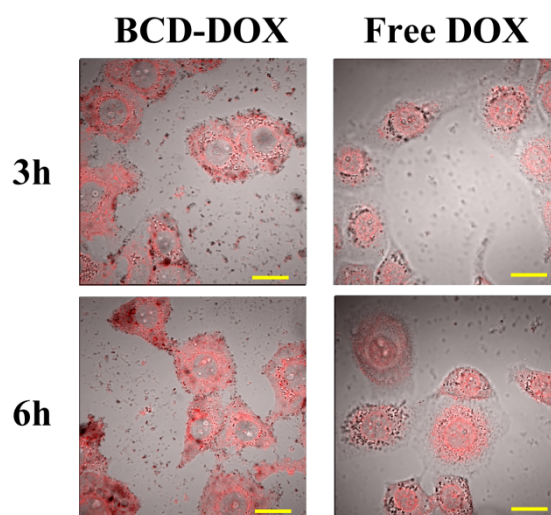
**Fig. S3** O1s spectrum of the BCDs.



**Fig. S4** Effect of ionic strength on the fluorescence (FL) intensity of BCDs



**Fig. S5** pH effect on the fluorescence (FL) intensity of BCDs.



**Fig. S6** Cellular imaging of MCF-7 cells treated with BCD-DOX or free DOX with 543 nm excitation (Merged fluorescence and bright field images). Scale bar=20  $\mu\text{m}$ .