# Electronic Supplementary Information

# A FRET aptasensor for sensitive detection of aflatoxin B1 based on a novel donor-acceptor pair between ZnS quantum dots and Ag nanocubes†

Chengquan Wang,[a,*] Wuhao Zhang,[a] Jing Qian,[b,*] Li Wang,[a] Yi Ren,[a] Yu Wang,[a] Mengqi Xu,[a] Xingyi Huang [a,*]

[a] School of Food and Biological Engineering, Jiangsu University, Zhenjiang 212013, China

[b] School of Chemistry and Chemical Engineering, Jiangsu University, Zhenjiang 212013, China

* Corresponding author: wangcq@ujs.edu.cn (C.Q. Wang); qianj@ujs.edu.cn (J. Qian); h_xingyi@163.com (X.Y. Huang).

**Preparation of aptamer coupled Ag nanocubes**

20 μL Apt was added into 5 μL Tris-HCl buffer containing 100 mM TCEP and vibrated for 1 hour at room temperature. The excess TCEP was removed by centrifugal filtration with a Millipore Amicon Ultra-0.5. Finally, the activated Apt was redispersed in Tris-HCl buffer for further use.

The activated Apt was added into the 800 μL Ag nanocubes solution. After ultrasonic treatment for 10 s, the activated Apt was incubated at room temperature for 30 minutes. Next, the salt aging process repeated until the sodium ion reached 0.5 M. Shake overnight at room temperature. After centrifugation, it was redispersed in 800 μL buffer (10 mM Tris HCl containing 10 mM NaCl and 5 mM $MgCl_2$, pH 7.4), and stored at 4 °C for further using. 8 μL MCH (1.0 mM) was added to incubate for 30 min, and block the active sites.

**Synthesis of ZnS QDs**

The protein was mixed with 500 μL of reaction solution containing 2 mM $ZnCl_2$ and 20 mM Tris HCl (pH 7.0) in a round bottom centrifuge tube, and then the volume was fixed to 2 mL. After incubation at room temperature for 1 hour, the centrifuge tube was placed in a vortex mixer to run at high speed. 500 μL 2 mM $Na_2S$ was added dropwise to maintain the total concentration of $Zn^{2+}$ and $S^{2-}$ at 0.4 mM and the total protein concentration at 1 μM. Place a stirring rod in a centrifugal tube and stir vigorously at room temperature for 5-10 minutes. Finally, the mixture was transferred to an incubator at 37 °C for 6 days.