Supporting Information

Fluorescent Boron and Phosphorus Co-Doped Graphene Quantum Dots for Bovine Serum Albumin Sensing in Cow's Milk with Smartphone-Enabled Real-Time Readout

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S1. Calculation for the limit of detection (LOD)

The LOD can be estimated by Equation (1)

$$\text{LOD} = \frac{3S}{K} \quad (1)$$

where S is the standard deviation of five measurements of blank samples and K is the quenching constant

S2. Photoluminescence quantum yield (PLQY)

$$Q_y = Q_R\left(\frac{m_s}{m_r}\right)\left(\frac{n_s}{n_r}\right)^2$$

Q = Fluorescence quantum yield

n= Refractive index of the solvent

A = Absorbance of the solution

E = Integrated fluorescence intensity of the emitted light

Subscripts ‘r’ and ‘s’ refer to the reference and unknown fluorophore respectively

$$Q_y = 0.51 \times \frac{5.9 \times 10^8}{8.4 \times 10^8} \quad (S2)$$

Q_y = 0.358

PLQ_y = 35.8%

Fig S3-a. Optimized and HOMO BSA

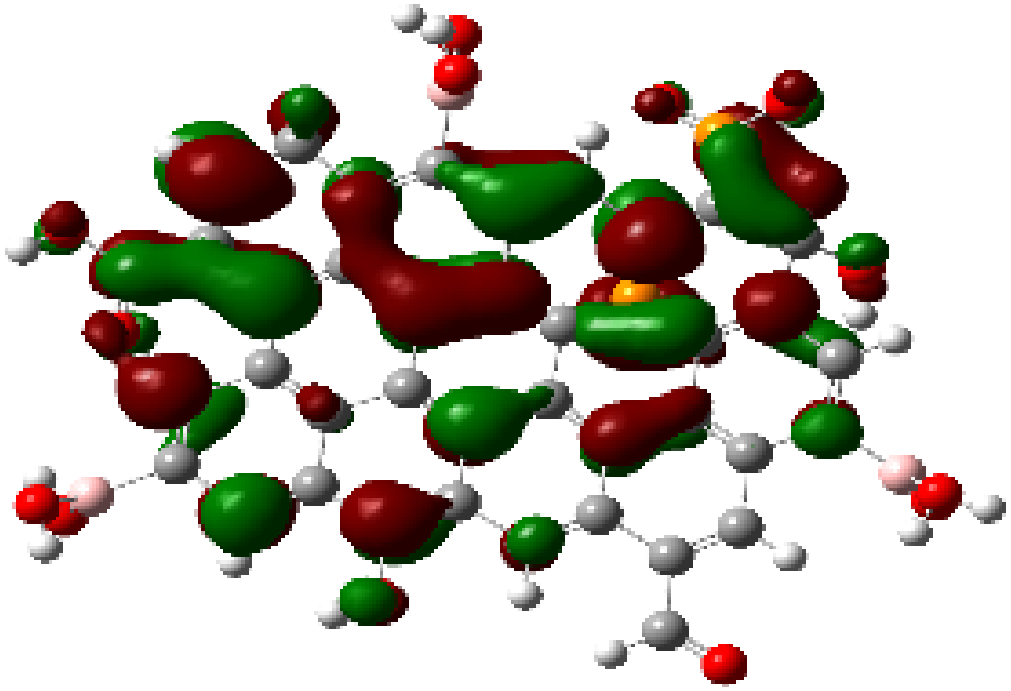

Fig S3-b. Optimized and LOMO BSA

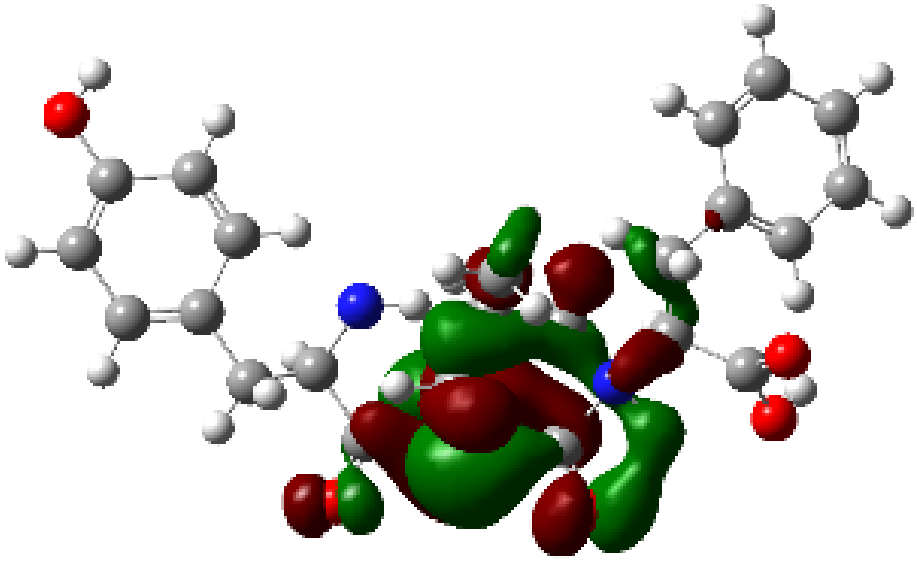

Fig S4-a. Optimized and HOMO BPGQDs

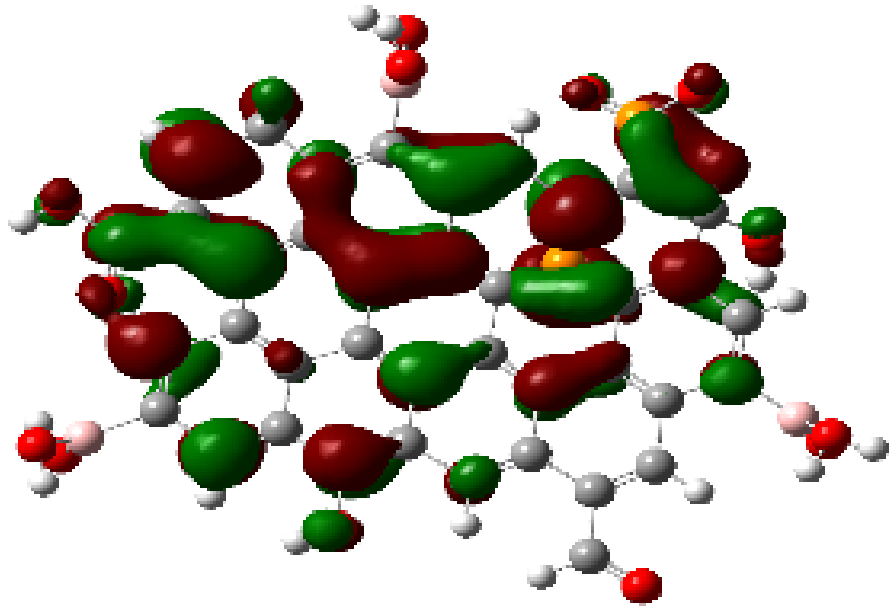

Fig S4-b. Optimized and LOMO BPGQDs