

Highly sensitive of glucose sensor on graphitic carbon nitride quantum dots
(g-CNQDs)/boronic acid through interaction with diols group

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Here, we report a highly sensitive glucose sensor based on g-CNQDs/boronic acid with the simple and low-cost experiment process. To fabricate the quantum dots compound, the g-CNQDs treated by hydrothermal are shaken with boronic acid at room temperature to create the chemical linking through the carbonyl and amino group. The sensors are based on the fluorescence quenching of g-CNQDs/boronic acid complexes with the presence of 1,2-diols group in glucose. In the attendance of boronic groups, the sensor is demonstrated to enable quantitative analysis of glucose with an excellent sensitive and high selectivity in the wide linear range of 100 nM – 10 mM. Furthermore, it exhibits a low detection limit of 43 nM and the change of PL response are not noticeable towards interfering species. The combined of g-CNQDs/boronic acid is expected that it may provide a low-cost, rapid and excellent sensitive for detection of glucose in the biomedical and clinical applications.

Keywords — Graphitic carbon nitride, 3-aminophenyl boronic acid, Glucose sensor, Fluorescence, Quantum dots.