

## A Photoelectrochemical Sensor for the Sensitive Detection of Rutin Based on a CdSe QDs Sensitized TiO<sub>2</sub> Photoanode

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In this paper, a CdSe quantum dots (QDs) sensitized TiO<sub>2</sub> photoanode was synthesized by molten-salt-assisted self-assembly (MASA) on a fluorine-doped tin oxide (FTO)-coated glass (CdSe QDs-TiO<sub>2</sub>/FTO), and an efficient photoelectrochemical (PEC) sensor was constructed for the sensitive detection of rutin. CdSe can transfer photo-excited electrons to the conduction band of TiO<sub>2</sub>, thus enhancing the photoelectric activity of TiO<sub>2</sub>. The experimental results show that the PEC sensor has excellent selectivity, good stability, and a wide linear response range for rutin of 0.025–50.0 μM with a low detection limit of 0.007 μM. Moreover, the PEC sensor was successfully applied to the detection of rutin content in serum sample.

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**Keywords:** Photoelectrochemical sensor; CdSe QDs; TiO<sub>2</sub>; molten-salt-assisted self-assembly; rutin

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