

Nanozyme based bio-FET platform for real-time glucose detection

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Real-time glucose detection is one of the challenging issues in a portable electronic device. In this research area, the lifetime of glucose sensors with high reliability requires an alternative to the conventional glucose oxidase enzyme. Recently, the photo-responsive modified graphitic carbon nitride (AKCN) nanozyme was reported as a promising alternative in mimicking the biochemical activity of glucose oxidase (GOx) enzymes for the oxidation of glucose. Herein, we proposed a single Bio-FET platform made of modified AKCN active-surface bearing bifunctional enzymatic activities mimicked from enzymes such as GOx and peroxidase for the real-time detection of hydrogen peroxide and glucose. The detailed sensing mechanism of AKCN is highlighted with the electrolyte-gated FET platform. Overall, these results extend the scope of developing efficient sensing materials which can replace biological enzymes making very simple, efficient, and reproducible commercial sensors.