Supplementary Information

for

Synthesis of a Glucose Oxidase-Conjugated, Polyacrylamide-Based, Fluorescent Hydrogel for a Reusable, Ratiometric Glucose Sensor

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Scheme S1. Changes in structures and emission colors of P1 under various pHs.
Figure S1. (A) FT-IR spectra of (a) GOx, (b) P1, (c) P2, and (d) P1@GOx. (B) XPS spectra of (a) P1 and (b) P2. Red and green curves indicate the fitted and deconvoluted ones, respectively.
**Figure S2.** Fluorescence spectra (a) and photographs of P1-based hydrogel at pH 4 (b) and at pH 10 (c). The photographs were taken under ambient light (left) and UV irradiation (365 nm, right).
Figure S3. SEM images of the pristine P1-based hydrogel (a), P1-GOx hydrogel (b), and P1@GOx hydrogel (c).
Figure S4. (a) Changes in the fluorescence spectra of P1-GOx hydrogel (0.57 g) as a function of glucose concentrations and (b) plot of relative fluorescence intensity versus concentration of glucose. $I_{598}$ and $I_{518}$ correspond to the emission intensity at 598 nm and 518 nm, respectively. Excitation wavelength, $\lambda_{\text{ex}} = 490$ nm.
Figure S5. Photographs of the P1-GOx hydrogel according to the concentrations of glucose under ambient (left) and UV light (365 nm, right).
Figure S6. Selectivity of the P1-GOx hydrogel upon exposure to sodium chloride, potassium chloride, calcium chloride, galactose (Gal), fructose (Fru), mannose (Man) and glucose (Glu). [Monosaccharides] = 10 mM and [Electrolytes] = 10 mM. I_{598} and I_{518} correspond to the emission intensity of the P1-GOx hydrogel at 598 nm and 518 nm, respectively.
Figure S7. Change in relative intensity ($I_{598}/I_{518}$) of P1@GOx upon exposure time to glucose. [Glucose] = 0.01 M. $I_{598}$ and $I_{518}$ correspond to the emission intensity at 598 nm and 518 nm, respectively. Excitation wavelength, $\lambda_{ex} = 490$ nm.
Figure S8. Changes in the fluorescence spectra of P1@GOx hydrogel (0.57 g) as a function of glucose concentrations (20 to 50 mM). Excitation wavelength, $\lambda_{ex} = 490$ nm.