

Supporting information for:

Distance and Color Change Based Hydrogel Sensor for Visual Quantitative Determination of Buffer Concentrations

Renjie Wang, Xinfeng Du, Jingying Zhai, and Xiaojiang Xie*

Department of Chemistry, Southern University of Science and Technology, Shenzhen, 518055, China

*Email: xiexj@sustech.edu.cn

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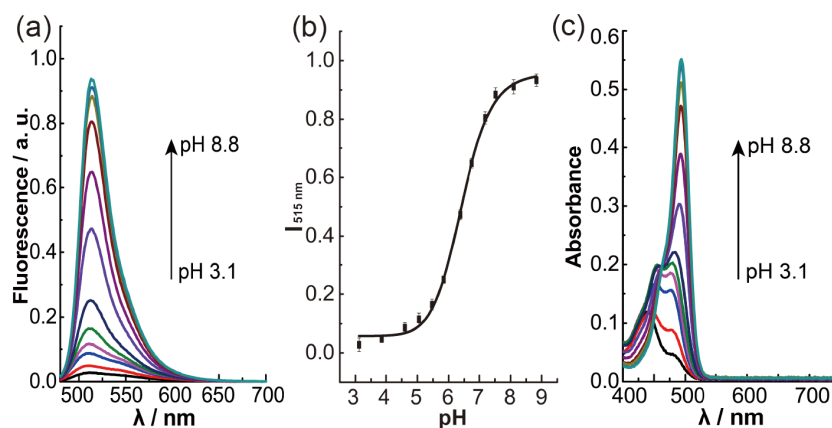


Figure S1. Fluorescence spectra (a) and UV-visible absorption spectra (c, peak maxima at 490 nm) of FITC-dextran (0.18 mg / mL) in a universal buffer solution (2.5 mM of NaH_2PO_4 , boric acid, and citric acid) with different pH. (b) Maximum emission intensity as a function of pH fit with a sigmoidal curve.

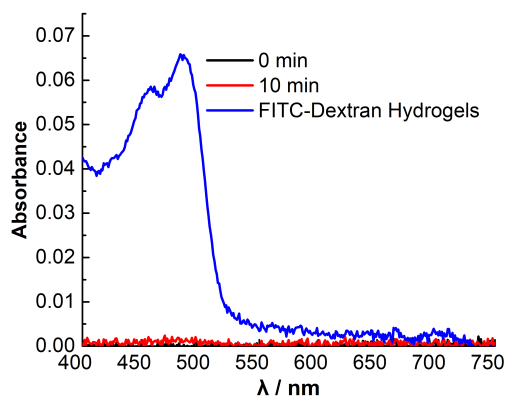


Figure S2. Absorption spectra of aqueous solutions after contacting with the hydrogel for 0 and 10 minutes. The spectrum of hydrogel loaded with FITC-dextran was also presented for comparison.

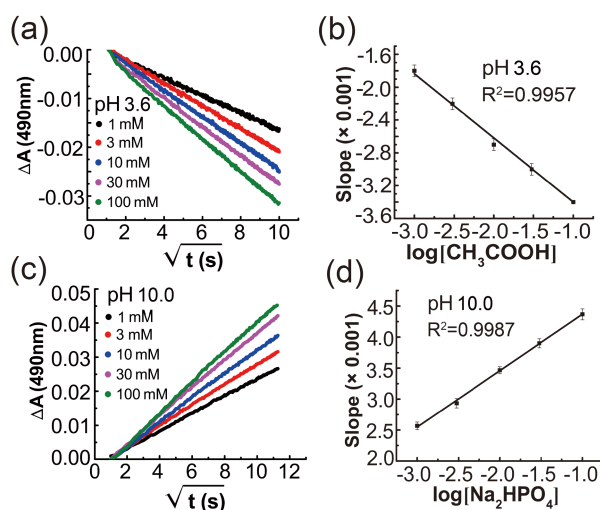


Figure S3. (a) Temporal evolutions of absorbance changes of the hydrogels at 490 nm after exposing to pH 3.6 acetate buffer solutions (HOAc+NaOAc) with various concentrations as indicated. (b) Corresponding calibration curve by plotting the rate of absorbance change (slope) against logarithmic concentrations of acetate buffer solutions. (c) Temporal evolutions of absorbance changes of the hydrogels at 490 nm after exposing to pH 10.0 phosphate buffer solutions (Na_2HPO_4) with various concentrations as indicated. (d) Corresponding calibration curve by plotting the rate of absorbance change (slope) against logarithmic concentrations of phosphate buffer solutions. Error bars represent standard deviations from 3 measurements.

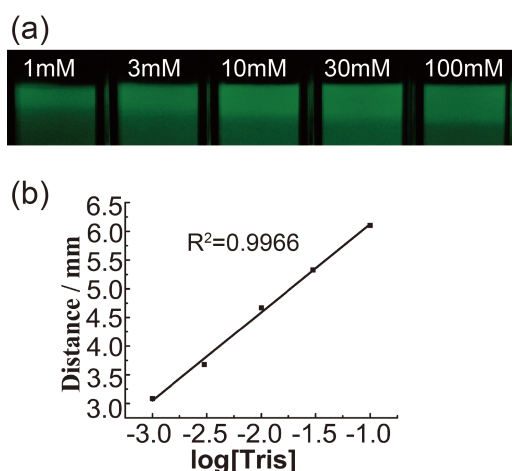


Figure S4. (a) Pictures of the hydrogels 30 minutes after adding on the top Tris-HCl buffer solutions with various concentrations as indicated. (b) Corresponding calibration line by plotting the vertical length (distance) of the brighter green color against logarithmic buffer concentrations.

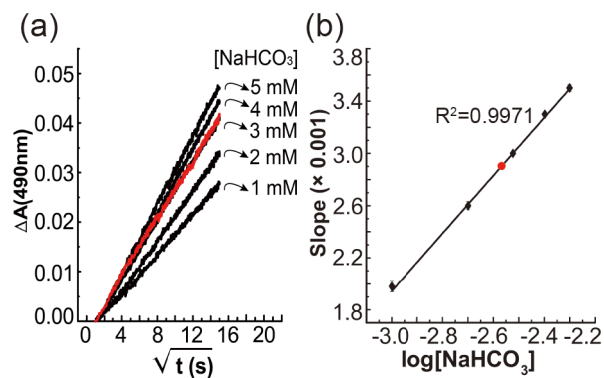


Figure S5. (a) Absorbance change of the hydrogels in response to NaHCO_3 solutions with concentrations from 1 to 5 mM as indicated. The red data points represent the response from seawater sample. (b) Corresponding calibration curve using the slope as a function of logarithmic NaHCO_3 concentrations. The red dot represents seawater. Error bars represent standard deviations from 3 measurements.