Supporting information for

α-Glucosidase-triggered Reaction for Fluorometric and Colorimetric Assay
based on Formation of Silicon-Containing Nanoparticles

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Figure S1. Fluorescence emission spectra of the Si CNPs at various excitation wavelengths.

Figure S2. (A) Normalized FL intensity of Si CNPs prepared at various reaction times; and (B) Normalized FL intensity of Si CNPs prepared at different reaction temperatures.

Figure S3. (A) FL emission spectrum (pink line), excitation spectrum (blue line), and UV-vis absorption spectra of Si CNPs (green line). Inset photographs are Si CNPs
solutions under visible light (a) and UV light (b) illumination. (B) Full range XPS spectra of Si CNPs.

**Figure S4.** High resolution XPS spectra of Si CNPs. (A) C1s, (B) N1s, (C) O1s and (D) Si 2p, respectively.

**Figure S5.** Powder X-ray diffraction pattern of the Si CNPs.

**Figure S6.** Fluorescence intensities of the sensing system as function of (A) concentration of 4-HPαDG, (B) α-Glu reaction time, and (C) AEAPDMMS volume.
Figure S7. (A) Fluorescence and (B) colorimetric responses of the designed system against other enzymes/proteins in the absence and presence of α-Glu.

Figure S8. (A) Fluorescence and (B) UV-vis absorption spectra of AEAPDMMS-HQ system in the absence and presence of acarbose.

Table S1. Determination of α-Glu in human serum samples

<table>
<thead>
<tr>
<th>Sample</th>
<th>Added value (U/mL)</th>
<th>Fluorometric method</th>
<th>Colorimetric method</th>
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</thead>
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<tr>
<td></td>
<td>Found value (U/mL)</td>
<td>Recovery (%)</td>
<td>RSD (n=3)</td>
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<tr>
<td>1</td>
<td>0.5</td>
<td>0.47</td>
<td>94</td>
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<tr>
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<td>102</td>
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<tr>
<td>1.5</td>
<td>1.48</td>
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<td>2</td>
<td>0.5</td>
<td>0.52</td>
<td>104</td>
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<tr>
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<td>1</td>
<td>0.97</td>
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<td>1.5</td>
<td>1.53</td>
<td>102</td>
<td>2.8</td>
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Table S2. Comparison of the designed work with other previously reported approaches for α-Glu activity assay

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<tr>
<th>Detection method</th>
<th>Signal output unit</th>
<th>Linearity (U/mL)</th>
<th>LOD (U/mL)</th>
<th>Ref.</th>
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<td>FL</td>
<td>N-doped CDs</td>
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<td>Si QDs-MnO₂</td>
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<td>0.0046</td>
<td>This work</td>
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</table>

This work
References


(3) Liu, J.; Duan, X.; Wang, M.; Su, X. *Analyst*, 2019, 144, 7398-7405.


