

Supporting Information

Silicone-containing thermoresponsive membranes

to form an optical glucose biosensor

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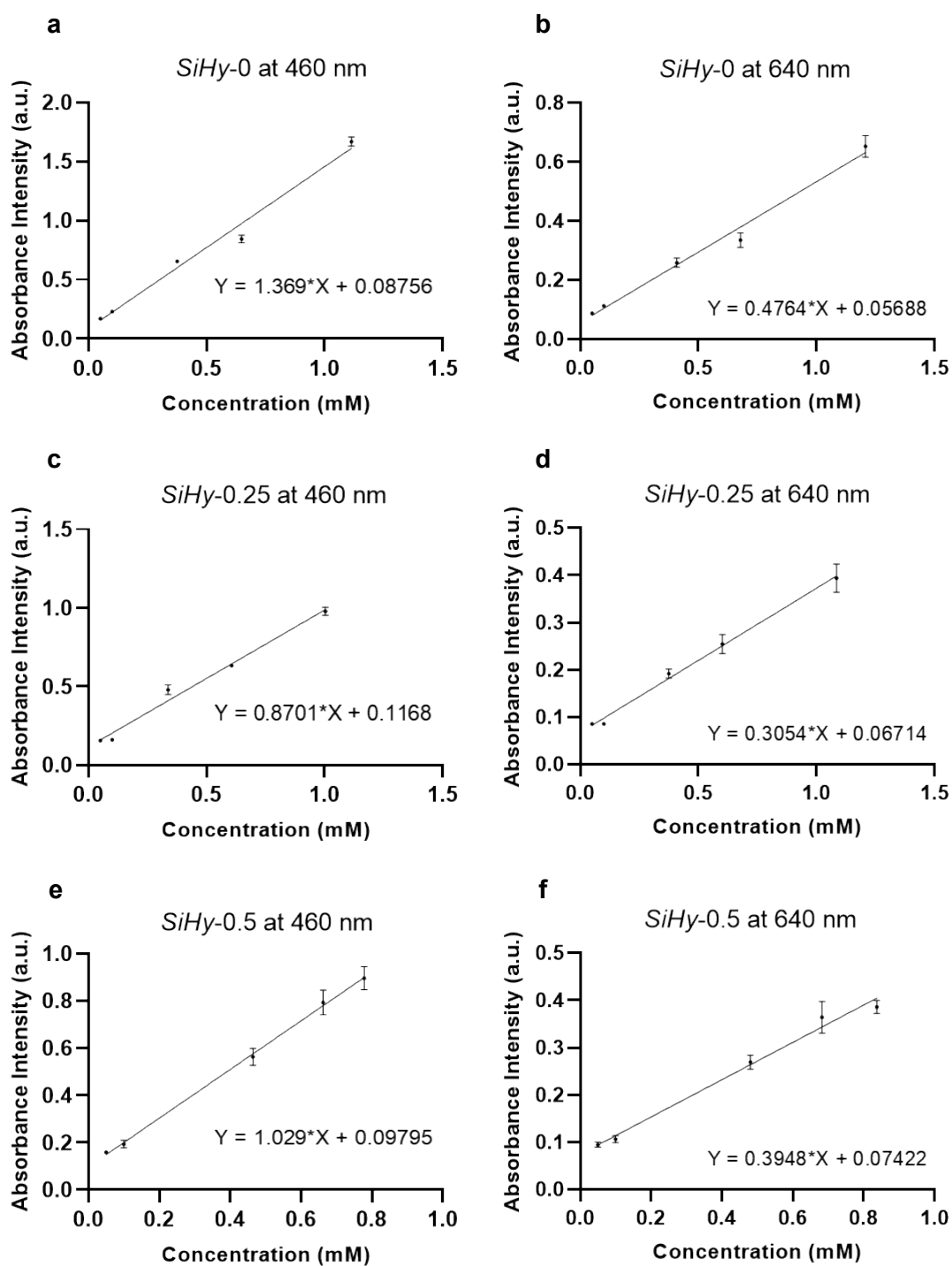


Figure S1. Calibration curves for absorbance at (a, c, e) 460 nm and (b, d, f) 640 nm, plotting with absorbance of HULK in DN membranes (*SiHy-x*, $x = 0, 0.25$ and 0.5) versus HULK concentrations in DNs (~ 0.05 mM, ~ 0.1 mM, ~ 0.45 mM, ~ 0.65 mM, and ~ 1 mM).

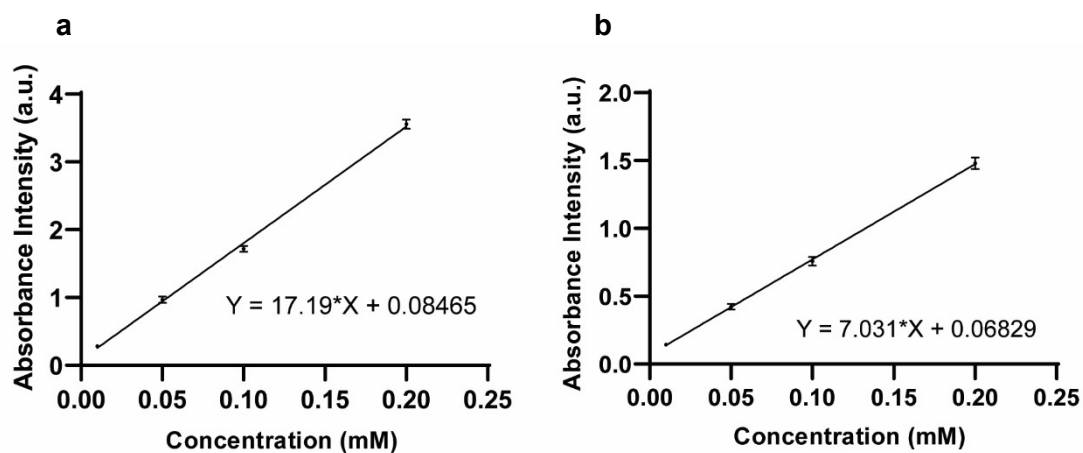


Figure S2. Calibration curves for absorbance at (a) 460 nm and (b) 640 nm, plotting with absorbance of HULK IPA solution versus HULK concentrations (0.01 mM, 0.05 mM, 0.1 mM, and 0.2 mM).

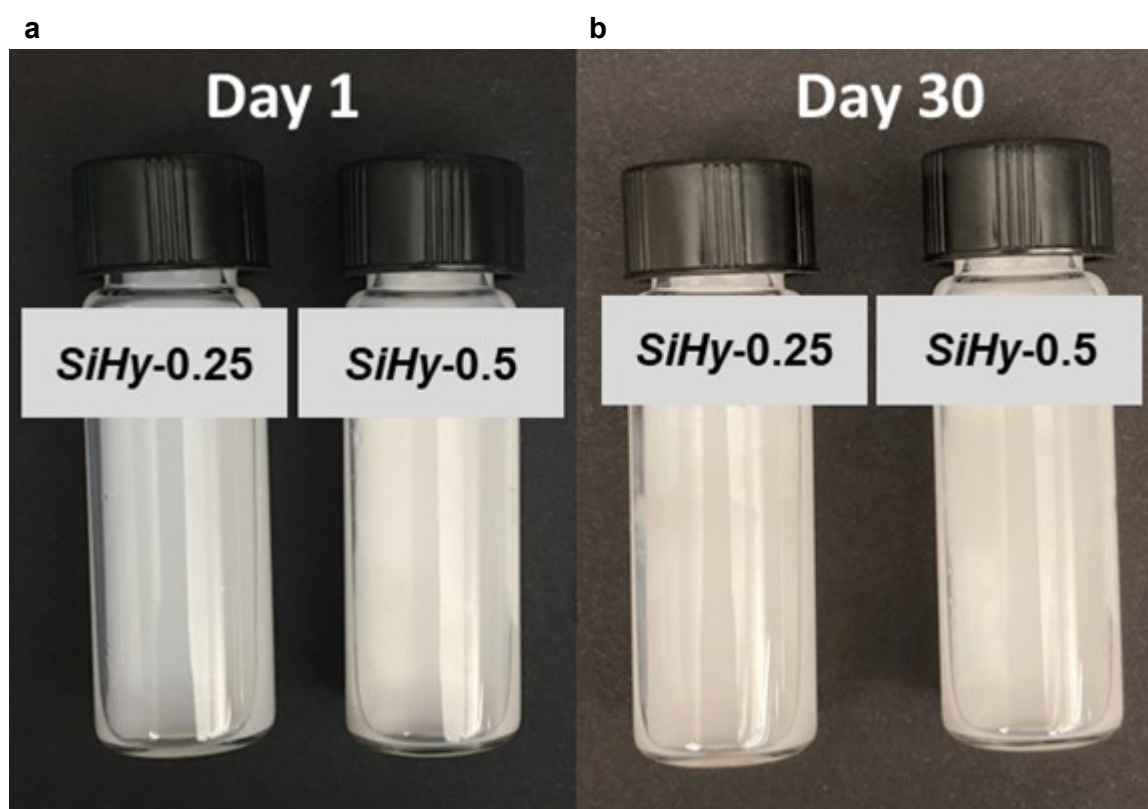


Figure S3. 1st network precursor emulsion for *SiHy-0.25* and *SiHy-0.5*: (a) $t = 0$, and (b) $t = 30$ days. Note: Solutions for hydrogel fabrication were used within 1 hr.

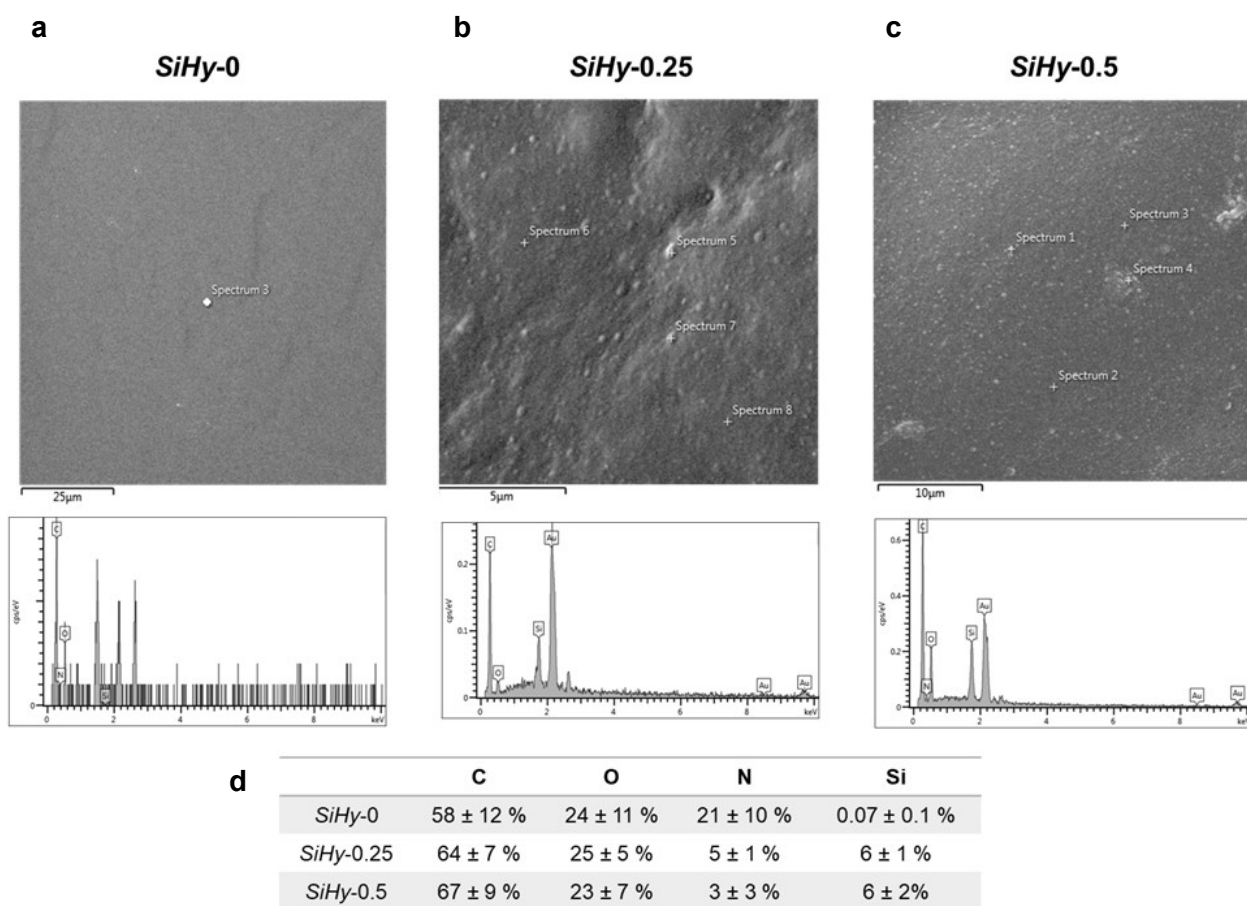


Figure S4. Representative SEM images and EDS spectra of **(a)** *SiHy-0*, **(b)** *SiHy-0.25*, and **(c)** *SiHy-0.5*. **(d)** Average % elements for *SiHy-x* ($x = 0, 0.25$ or 0.5) based on SEM-EDS.

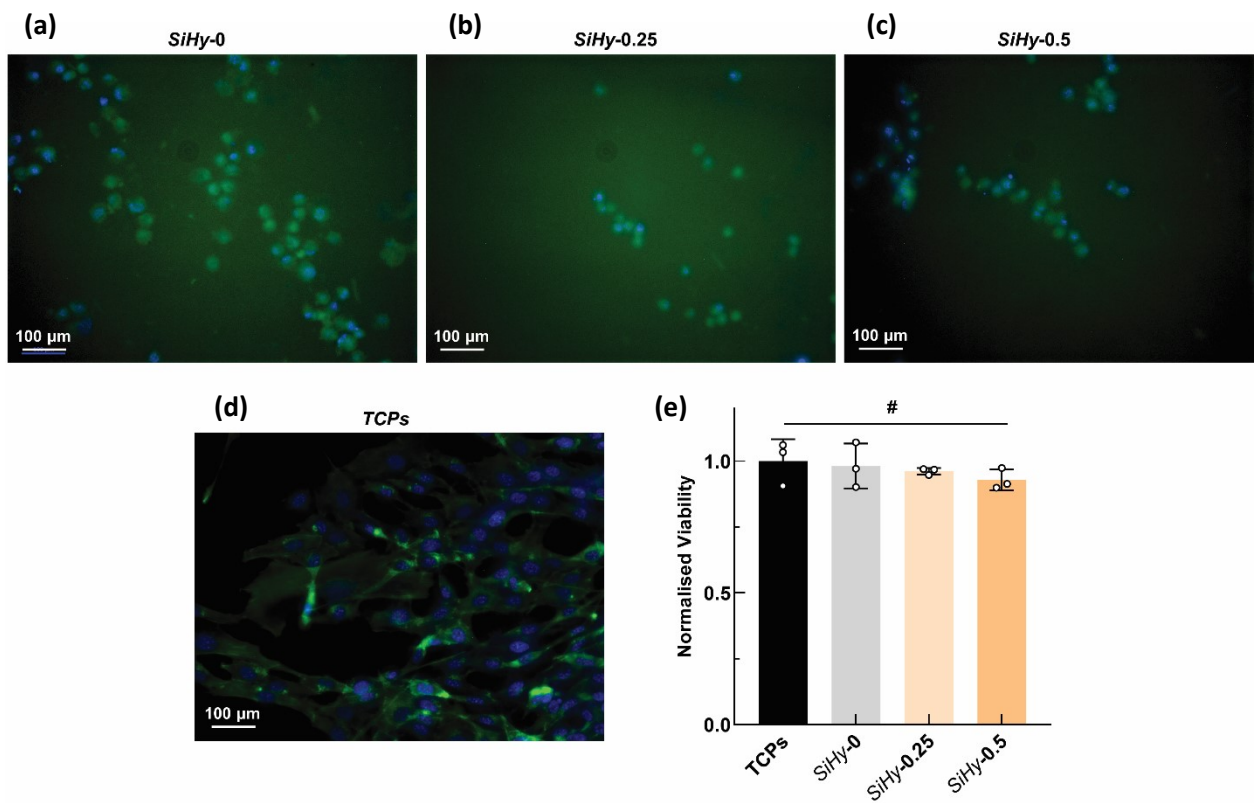


Figure S5. (a-d) Fluorescence imaging of cells seeded on *SiHy*-0, -0.25, or -0.5 and tissue culture plates (TCPs) after 24 hr. (e) Normalized cell viability of *SiHy*-0, -0.25, or -0.5 and tissue culture plates (TCPs). (#: $p > 0.05$, no significant difference)

Table S1 Sol content of both SNs and DN for all compositions (*SiHy*-0, *SiHy*-0.25, and *SiHy*-0.5). (Data corresponds to that reported in Figure 4.4b.)

	SN	DN
<i>SiHy</i> -0	0.11 ± 0.06	0.27 ± 0.01

<i>SiHy</i> -0.25	0.13 ± 0.01	0.27 ± 0.01
<i>SiHy</i> -0.5	0.12 ± 0.02	0.28 ± 0.01

Table S2 Contact angle (°) of *SiHy*-0, *SiHy*-0.25, and *SiHy*-0.5. (Data corresponds to that reported in Figure 4.7a.)

	0 min	10 min
<i>SiHy</i> -0	93.6 ± 3.1	60.9 ± 8
<i>SiHy</i> -0.25	100.7 ± 3.3	78.4 ± 4.2
<i>SiHy</i> -0.5	108.4 ± 2.4	84.7 ± 5.5

Table S3 H-index of *SiHy*-0, *SiHy*-0.25, and *SiHy*-0.5. (Data corresponds to that reported in Figure 4.7b.)

	H-index
<i>SiHy</i> -0	0.73 ± 0.01
<i>SiHy</i> -0.25	0.79 ± 0.03
<i>SiHy</i> -0.5	0.98 ± 0.03

Table S4 Glucose diffusion coefficient ($\times 10^{-6} \text{ cm}^2\text{s}^{-1}$) of *SiHy*-0, *SiHy*-0.25, and *SiHy*-0.5. (Data corresponds to that reported in Figure 4.7c.)

	At RT	At 37 °C
<i>SiHy</i> -0	1.9 ± 0.08	2.6 ± 0.01
<i>SiHy</i> -0.25	2.2 ± 0.09	3.3 ± 0.07
<i>SiHy</i> -0.5	1.9 ± 0.08	2.9 ± 0.01

Table S5 Compressive mechanical properties of *SiHy*-0, *SiHy*-0.25, and *SiHy*-0.5. (Data corresponds to that reported in Figure 4.8.)

	Strain (%)	Modulus (MPa)	Strength (MPa)	Toughness (MJ/m ³)
<i>SiHy</i> -0	54.5 ± 0.7	0.4 ± 0.03	2.1 ± 0.1	0.26 ± 0.02
<i>SiHy</i> -0.25	59.2 ± 1.7	0.26 ± 0.02	1.7 ± 0.2	0.23 ± 0.03
<i>SiHy</i> -0.5	88.1 ± 2.9	0.19 ± 0.02	2.7 ± 0.2	0.6 ± 0.06