Supplementary Information for:

Externally controlled drug release using a gold nanorod contained composite membrane

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Table S1. ICP-Mass data from each collected aliquot from the accumulated drain layer after 3(#1), 9(#2), 24(#3), and 36 hours(#4) in the presence of NIR light at a power of 0.54 W/cm^2 and 336 hours(#5) without NIR light. The results indicate that our GNR-Den membrane in the device is robustly retained during light stimuli.

Aliquot (#)	Power (W/cm^2)	Duration (hr).	Sol'n Conc. (mg/L)	SD	%RSD	Intensity (c/s)
1	0.54	3	0.000	0.001	310.0	19.1
2	0.54	9	0.001	0.000	17.0	37.2
3	0.54	24	0.001	0.002	214.2	30.3
4	0.54	36	0.001	0.000	47.2	31.3
5	No	336	0.001	0.000	21.2	79.3

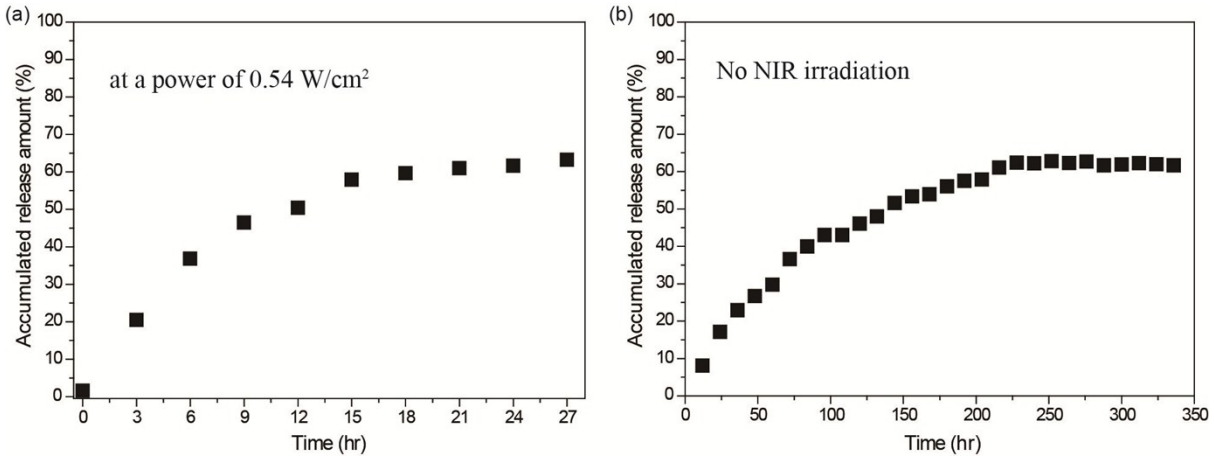

Figure S1 (a) The Dox release percent profile for accumulated amounts from the device at a NIR power of 0.54 W/cm^2. After 9 hours NIR irradiation at a NIR power of 0.54 W/cm^2, the release amount was significantly decreased with almost 50% Dox release from the total payload (180 ug) and reached a plateau during next 18 hours even in the presence of NIR. (b) The Dox release percent profile for accumulated release amounts from the device in the absence of NIR for a long time period.

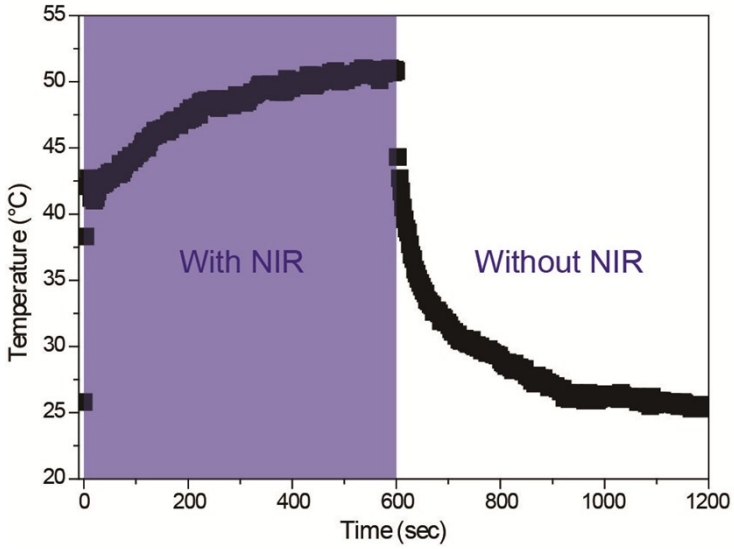

Figure S2 The temperature response from the fluidic device used for the experiment in Figure 5b by NIR irradiation (10 min) with a power of 0.54 W/cm^2. It shows a little hysteresis in light response. The media in the drug reservoir have been slowly heated with light and rapidly cooled without light, because the continuous water flow under the membrane in the fluidic device could be acted like a cooling system. We observed the fast increase in 10 sec up to 40 ^{o}C, but the slow increase to 50 ^{o}C after next 10 min because the media in the drug reservoir have been heated together by the localized heat from GNRs in the presence of light. With no heat source in the absence of light, the continuous supply of fresh PBS rapidly cooled the media in drug reservoir, showing fast decease in drug release rate.