

Electronic Supplementary Information (ESI)

**AuNP and ssDNA Capped Mesoporous Silica Nanoparticles for
Laser Controlled Drug Release**

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1. Tables

The following parameters are derived from the product certificate of analysis.

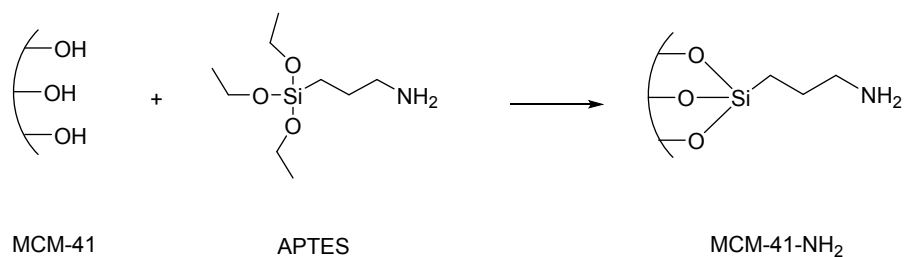
Table S1. Properties of commercial gold nanoparticle (AuNP) purchased

Diameter	3 nm
Zeta potential	-39 mV
Concentration	2.92E+14 nps/mL
Wt. conc.	0.050 mg/mL
Molarity	467.9551 nM

Table S2. Properties of MCM-41 purchased

Specific surface area (SSA)	$\geq 800 \text{ m}^2/\text{g}$
Pore volume	0.9-1.25 cm^3/g
Relative crystallinity	$\geq 90\%$
Pore diameter	3-5 nm
Particle size	200 nm-1 μm

2. Figures



Scheme S1. Reaction formula of preparing MCM-41-NH₂.

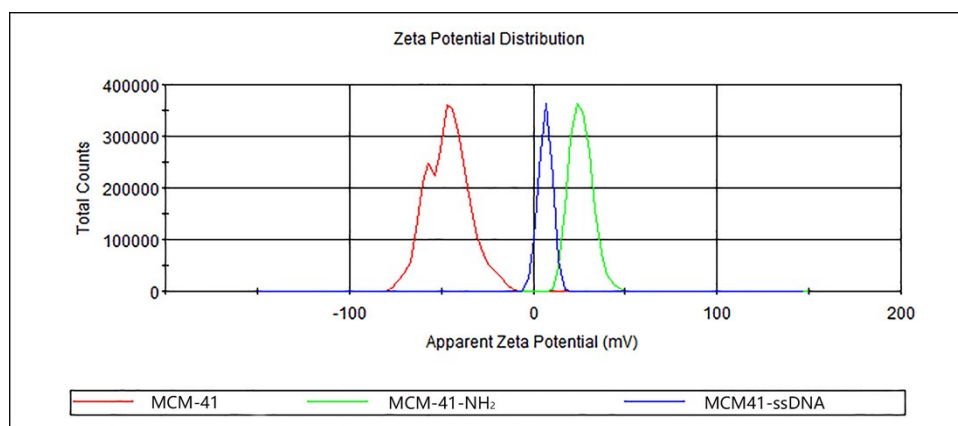


Figure S1. Zeta potential distributions of MCM-41, MCM-41-NH₂ and MCM-41-ssDNA.

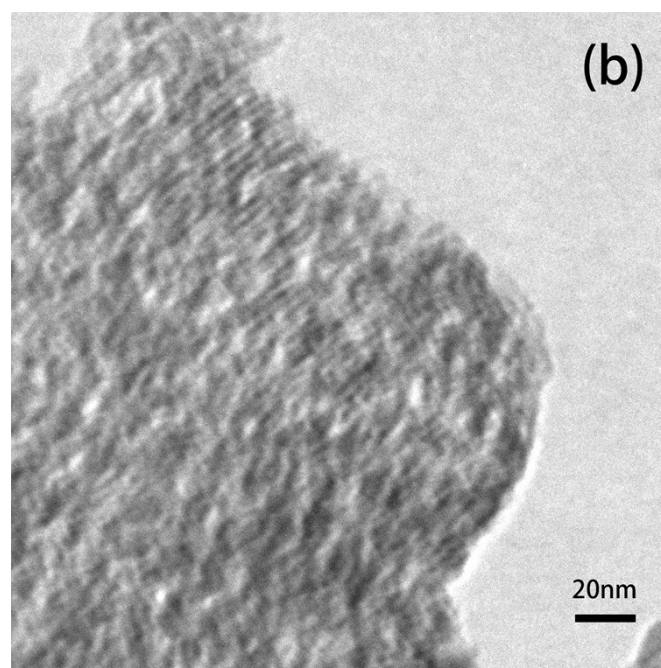
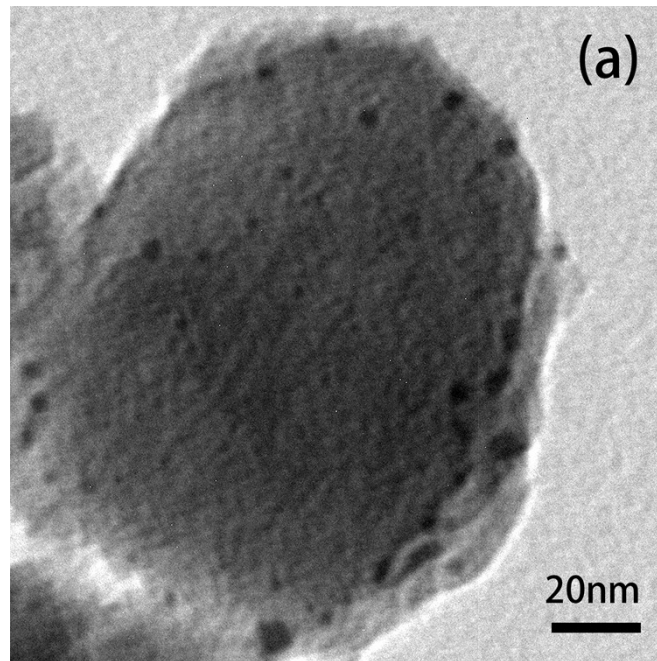


Figure S2. TEM images (a) of MCM-41-ssDNA-AuNP (loaded Dox) and (b) after MCM-41-ssDNA-AuNP was irradiated by 808 nm NIR laser

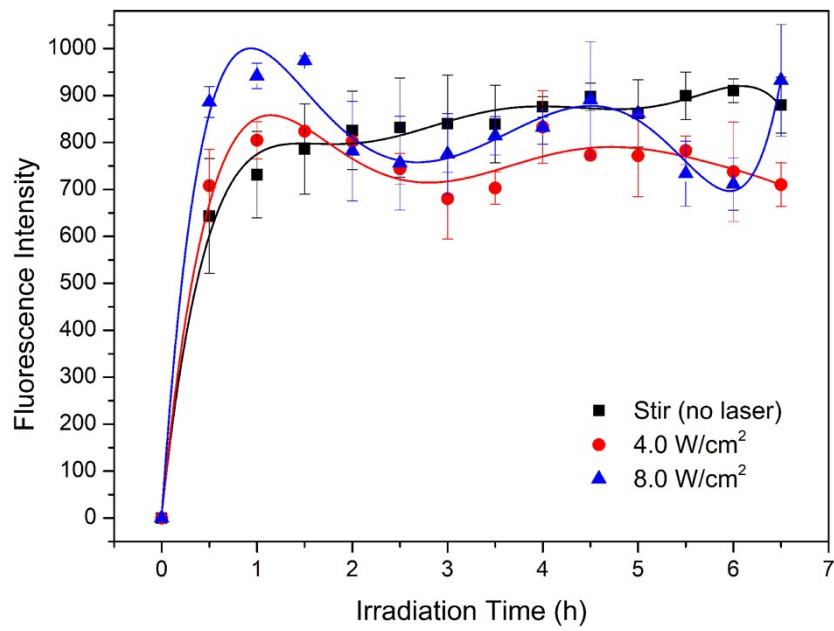


Figure S3. Fluorescence intensity curves of Dox release induced by laser irradiation on MCM-41/Dox without AuNP as the pore-cap.

Since there was no obstacle, MCM-41 allowed free access of the drug molecules, showing a wave of dynamic equilibrium.

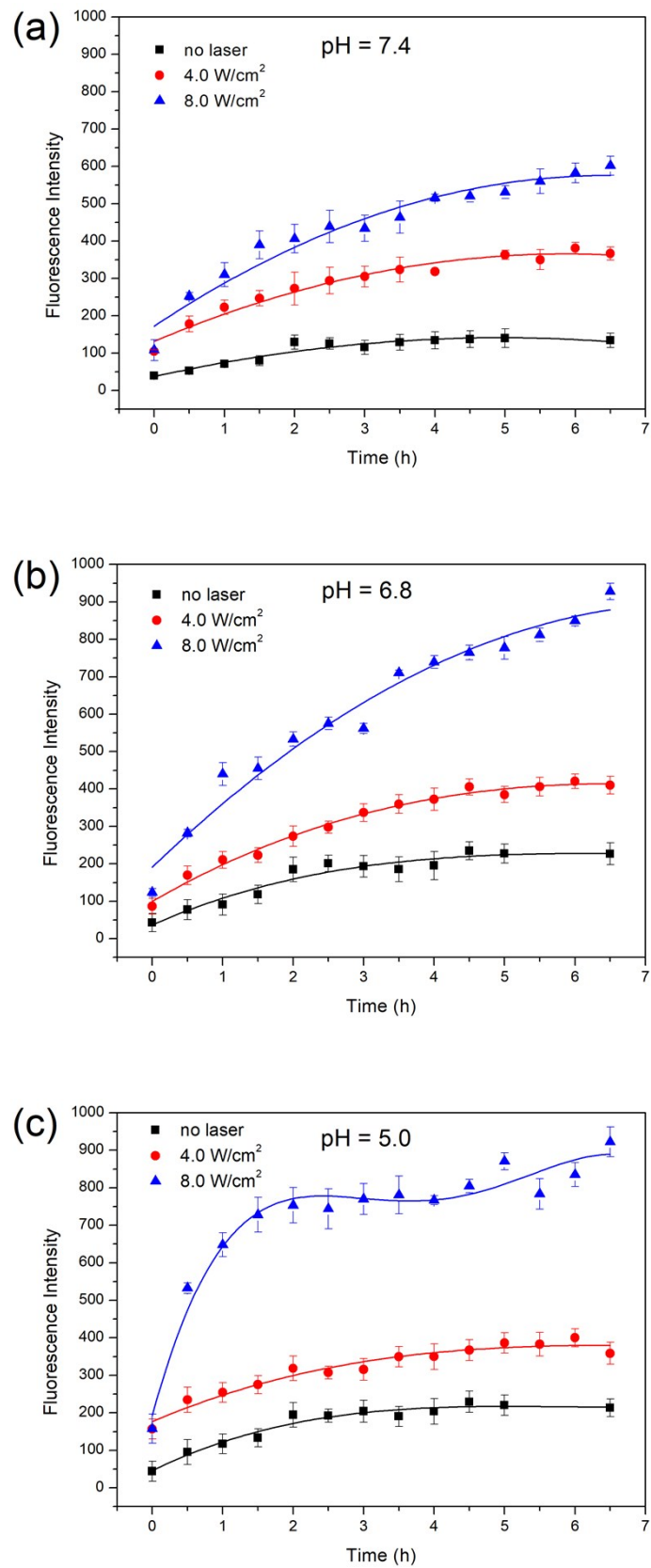


Figure S4. Fluorescence intensity curves of Dox release at (a) pH 7.4; (b) pH 6.8; (c) pH 5.0.