

## SUPPORTING INFORMATION

### Intercommunicated nanosystem for dual delivery

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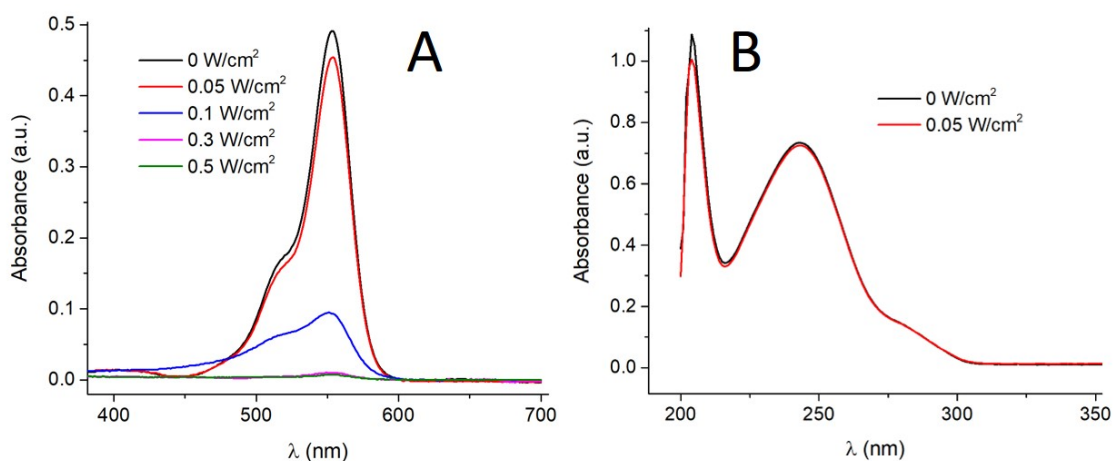


Figure 1S. UV-Vis spectra for 0.5  $\mu\text{mol/L}$  aqueous solutions of RB (A) and PAR (B) upon irradiation at different laser power density.

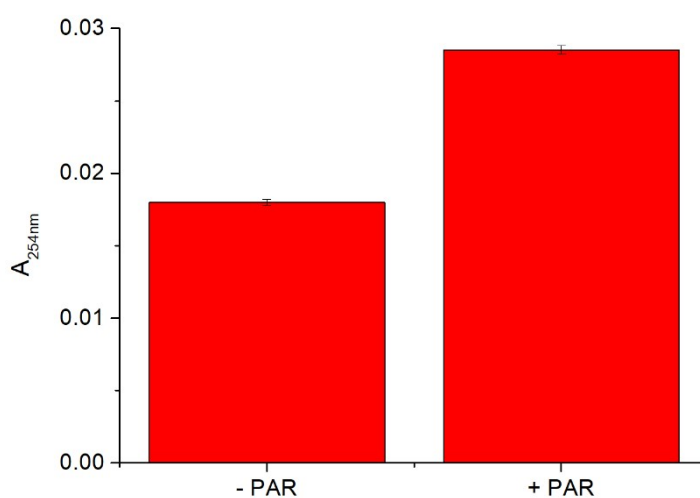


Figure 2S. Absorbance at 254 nm of the incubation media for JAN<sub>2</sub> loaded (+ PAR) and non-loaded (- PAR) with PAR after 4 h irradiation at 355 nm. Dilution 1:1000.

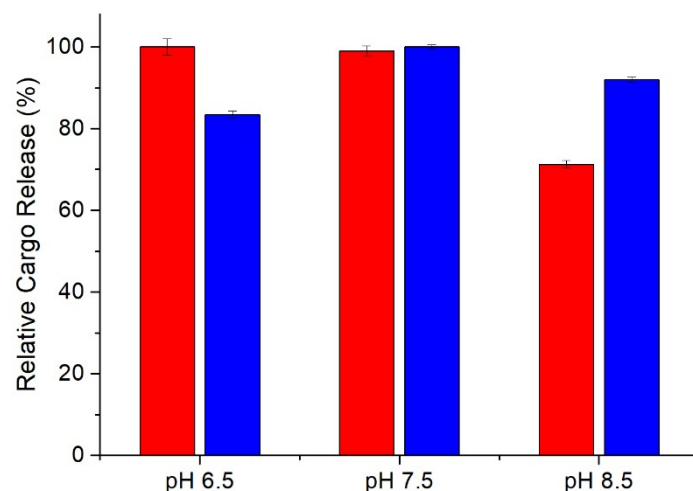


Figure 3S. Effect of pH on the relative cargo release from JAN<sub>2</sub> (red) and MSN<sub>1</sub> (blue) after 30 min of trigger application. Incubation media: 0.1 mol/L sodium phosphate buffer. Nanoparticles concentration: 1.0 mg/mL. Trigger conditions: 355 nm for JAN<sub>2</sub>, 75 mmol/L thiocholine for MSN<sub>1</sub>.

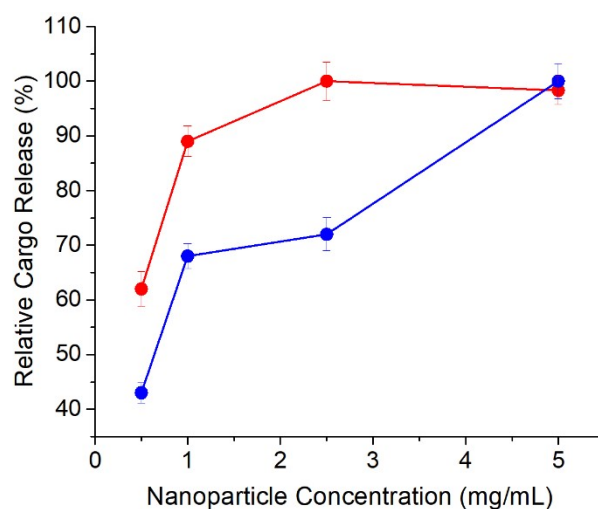


Figure 4S. Effect of nanoparticles concentration on the relative cargo release from JAN<sub>2</sub> (red) and MSN<sub>1</sub> (blue) after 30 min of trigger application. Incubation media: 0.1 mol/L sodium phosphate buffer, pH 7.5. Nanoparticles concentration: 1.0 mg/mL. Trigger conditions: 355 nm for JAN<sub>2</sub>, 75 mmol/L thiocholine for MSN<sub>1</sub>.

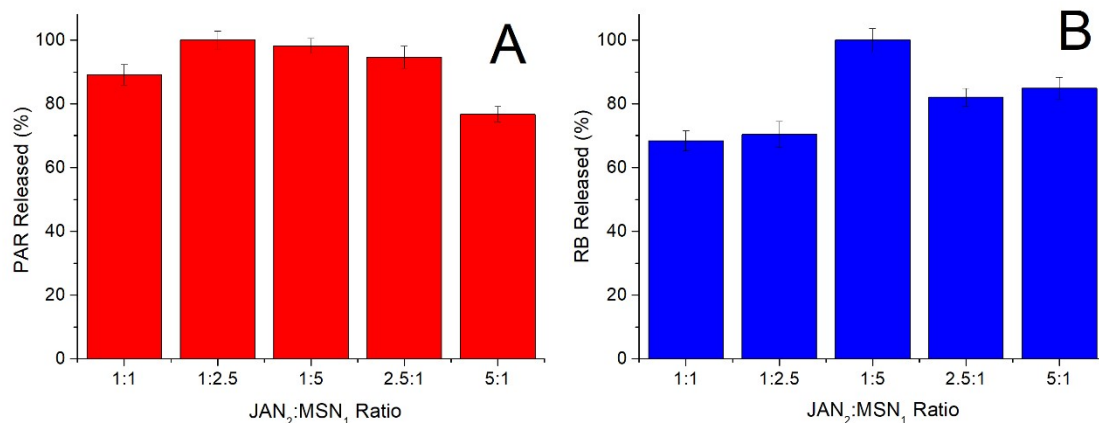


Figure 5S. Effect of JAN<sub>2</sub>:MSN<sub>1</sub> ratio on the relative cargo release from JAN<sub>2</sub> (A) and MSN<sub>1</sub> (B) after 30 min of trigger application. Incubation media: 0.1 mol/L sodium phosphate buffer, pH 7.5. 1.0 mg/mL. Trigger conditions: 355 nm for JAN<sub>2</sub>, 75 mmol/L acetylthiocholine for MSN<sub>1</sub> via communication protocol.

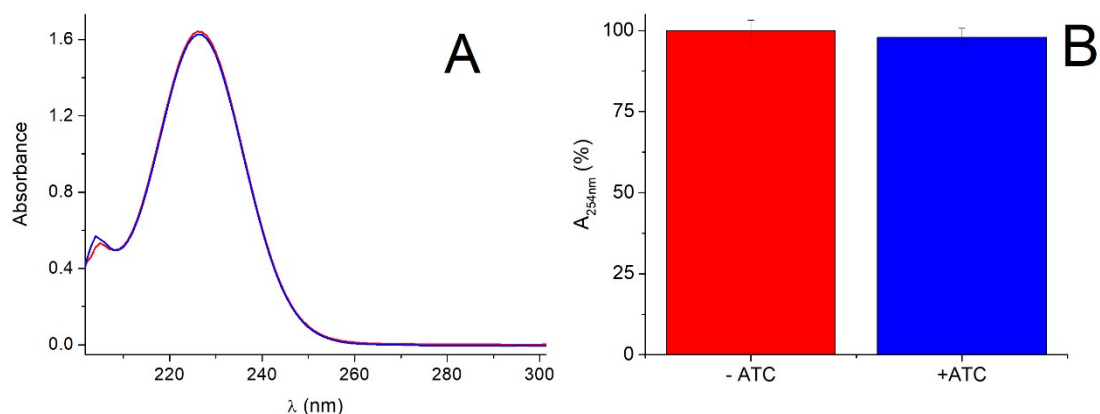


Figure 6S. UV spectra (A, 1000-fold dilution) and relative absorbance at 254 nm for JAN<sub>2</sub> at 2.5 mg/mL in 0.1 mol/L sodium phosphate buffer, pH 7.5, before (red) and after (blue) addition of 75 mmol/L acetylthiocholine (ATC). Incubation time: 1 h.