

Supplementary Information for the article:

# Body or tip controlled reactivity of gold nanorods and their conversion to particles through other anisotropic structures

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## Supporting Information S1

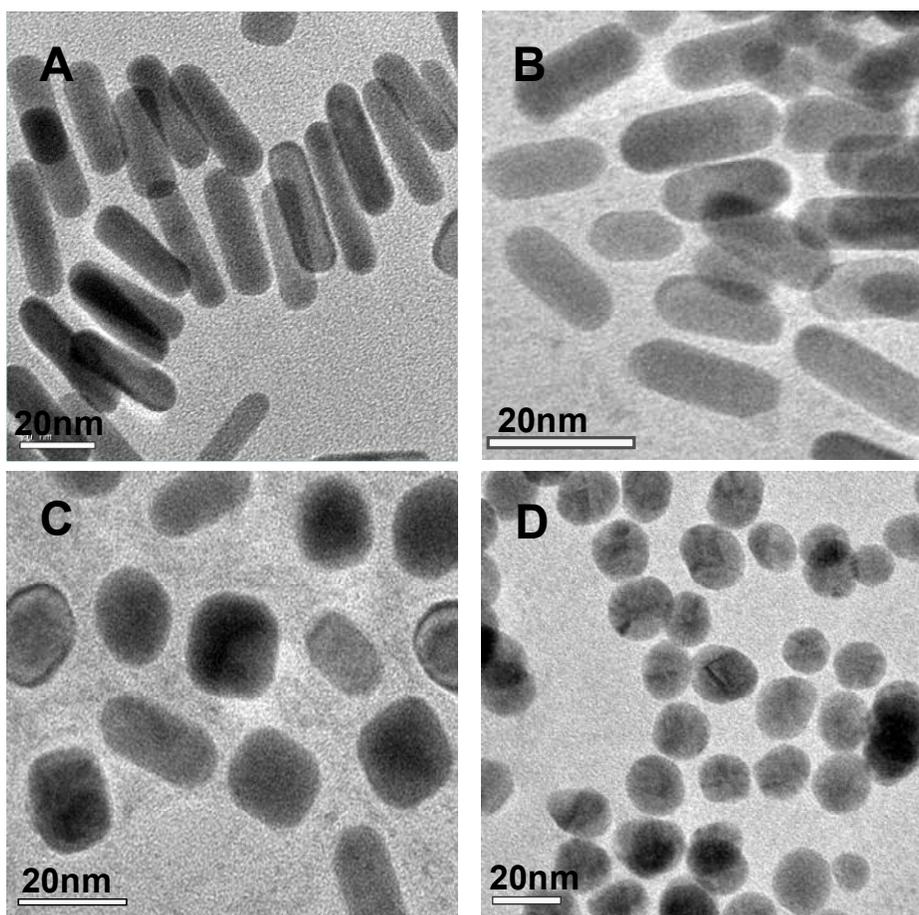
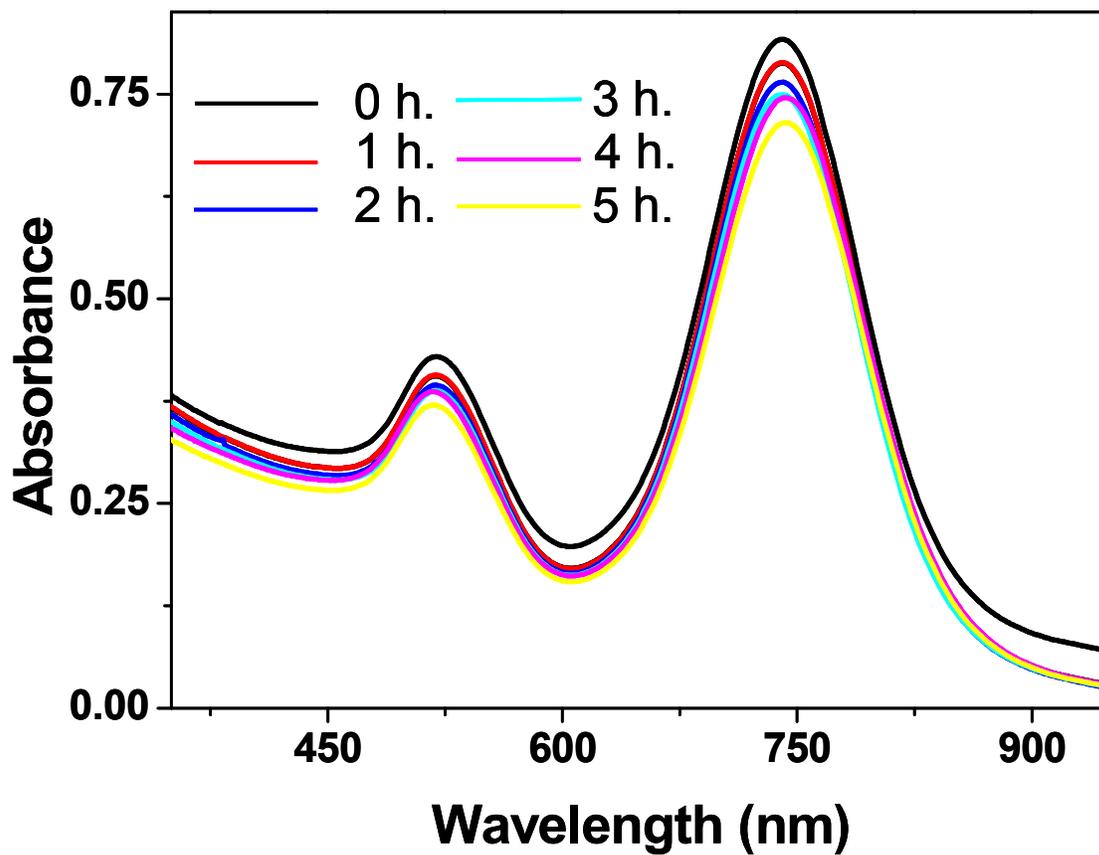
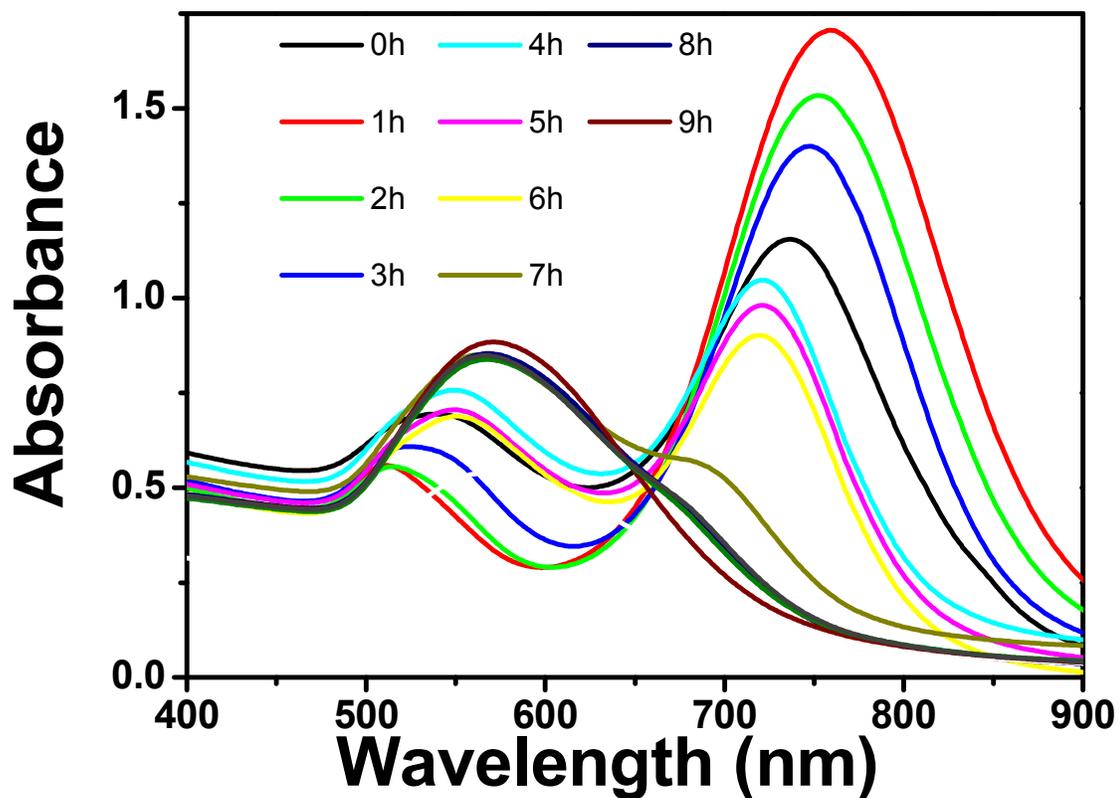


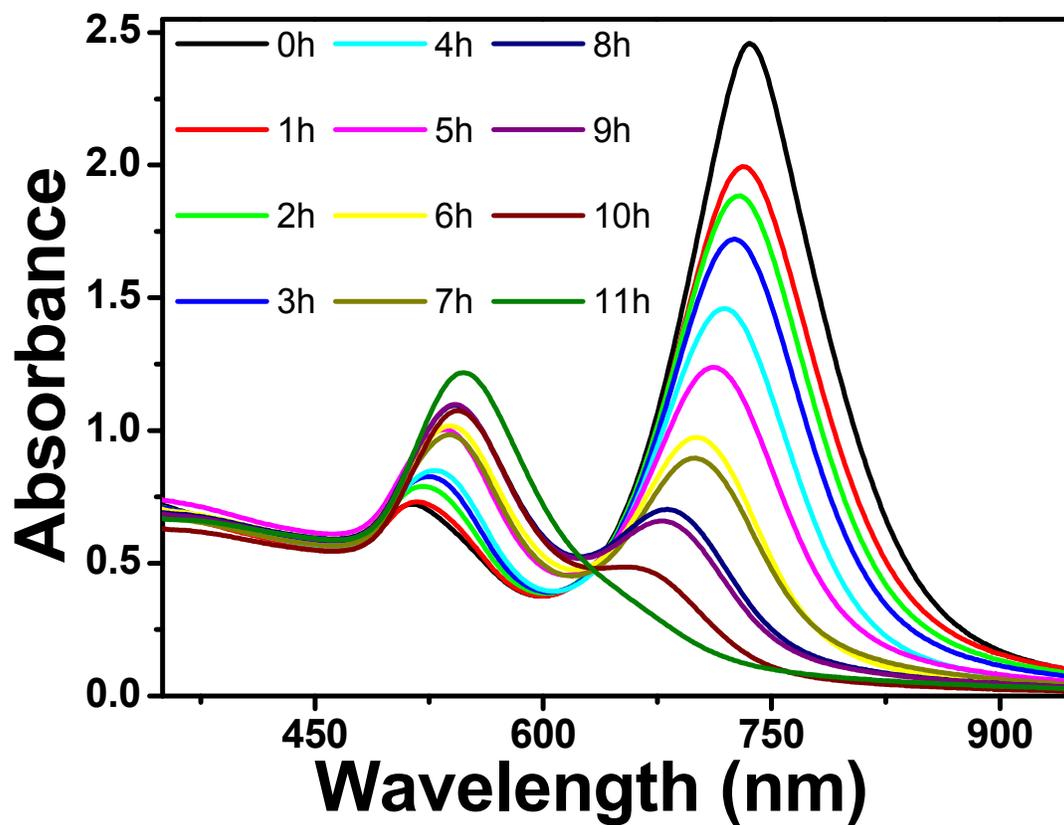
Figure S1. TEM images of  $R_1$  during the course of reaction with  $\text{CuCl}_2$  at  $70^\circ\text{C}$ . Concentrations are the same as in Figure S2. Images after A) 0h, B) 1h, C) 4h and D) 5h. Note that images are taken at different magnifications and the length of the scale bar is different in each case.



**Figure S2.** UV UV-visible spectra acquired at an interval of one hour of the reaction between 4 mL  $R_1$  ( $4 \times 10^{-5} M$ ) and 2 mL  $CuCl_2$  (1mM) carried out at room temperature. All spectra were taken by withdrawing 4 mL of the solution from the reaction mixture

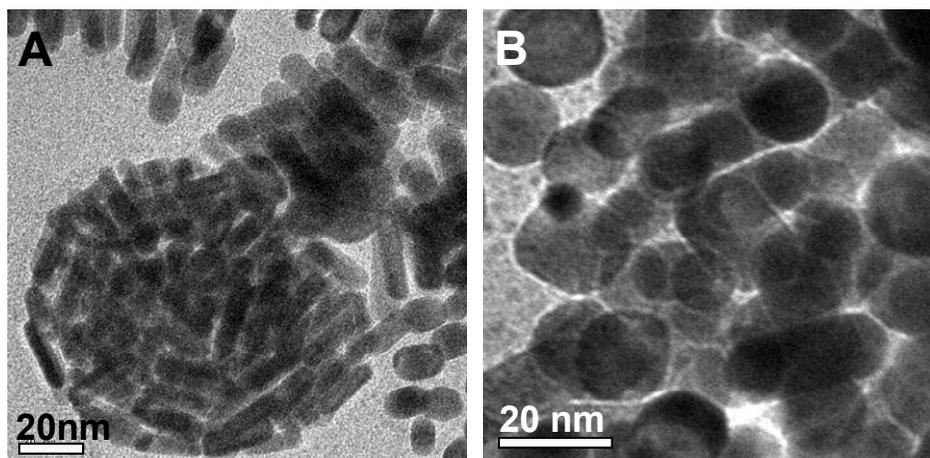


**Figure S3.** UV-visible spectra acquired at an interval of one hour of the reaction between 4 mL R<sub>1</sub> ( $4 \times 10^{-5}$  M) and 2 mL, 1mM CuCl<sub>2</sub>, incubated at 60°C. All spectra were taken by withdrawing 4 mL of the solution from the reaction mixture



**Figure S4.** UV-visible spectra acquired at an interval of one hour of the reaction between 4 mL  $R_1$  ( $4 \times 10^{-5}$  M) and 2 mL  $10^{-4}$  M  $\text{CuCl}_2$ , incubated at  $70^\circ\text{C}$ .

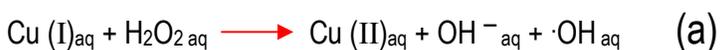
## Supporting Information S5



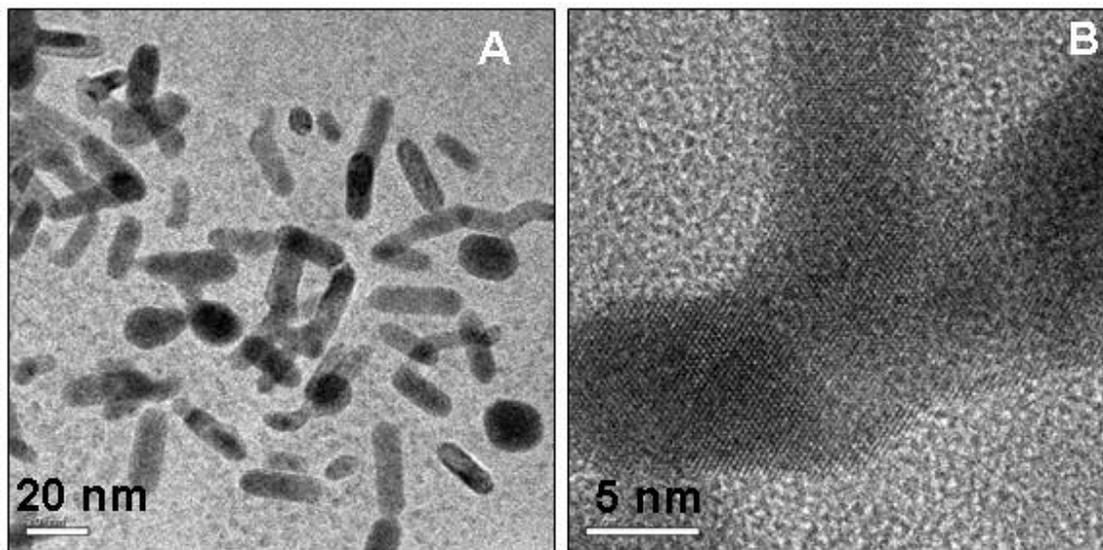
**Figure S5.** TEM images of  $R_2$  ( $< 4 \times 10^{-5}$  M) after A) 1 h and B) 3h of the reaction with  $\text{CuCl}_2$  (1 mM), at  $70^\circ\text{C}$  with the external addition of AA (1 mL, 100 mM). TEM clearly shows that there is a high degree of aggregation, even though the rods are becoming progressively smaller. Upon expansion, reaction on the rod body can be seen.

## Supporting Information S6

### Various steps in equation 5

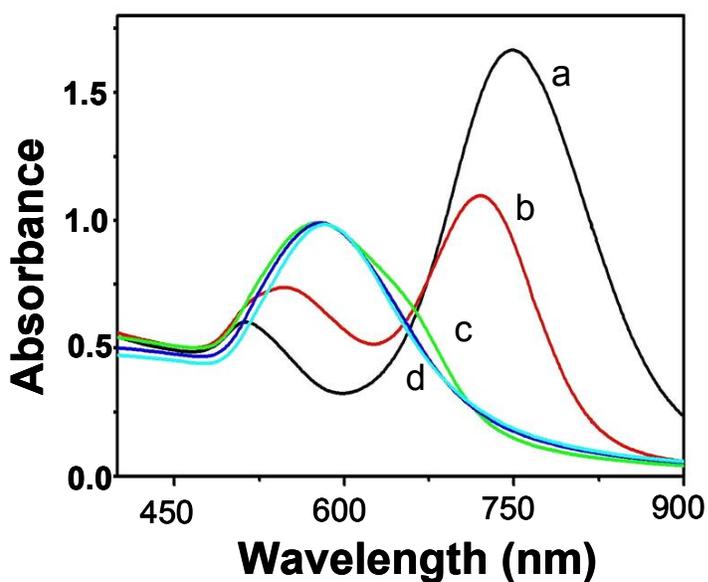


Supporting Information S7



**Figure S7.** HRTEM images taken at an intermediate stage of the transformation reaction between  $R_1$  and  $\text{CuCl}_2$  at  $70^\circ\text{C}$  showing the fusion of rods during the reaction. A) Low magnification image showing a high degree of fusion between the rods. B) A high magnification image showing the fused stage of three rods with continuous lattice in the fused region. The image is taken after two hours of the reaction.

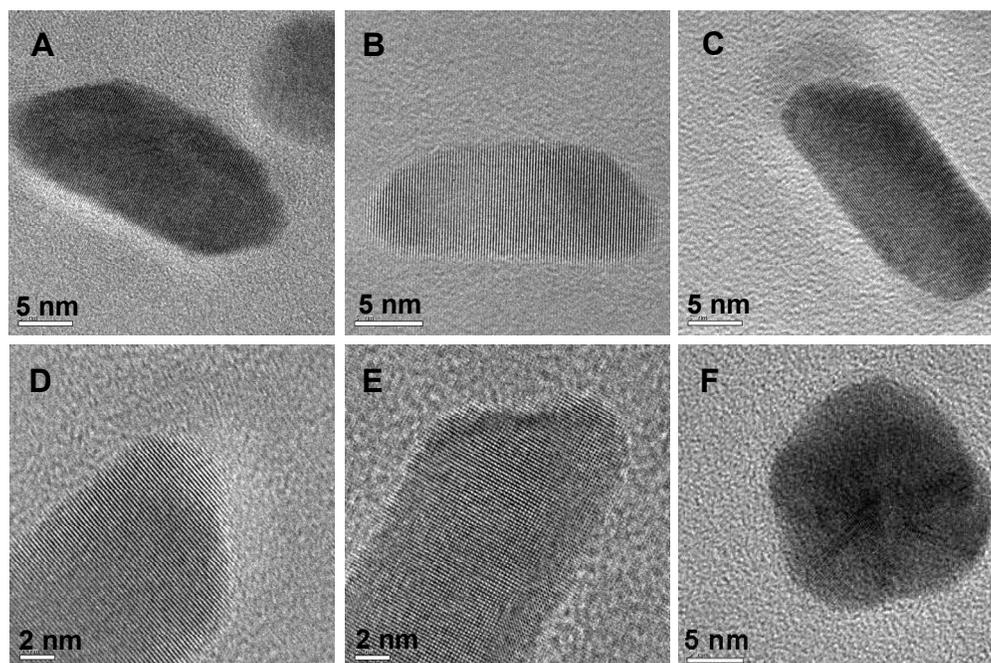
Supporting Information S8



**Figure S8.** UV-visible spectra acquired at an interval of one hour of the reaction between 4 mL  $R_2$  ( $< 4 \times 10^{-5}$  M) and  $\text{CuCl}_2$  (1 mM) with external addition of 1 mL, 100 mM AA and 1 mL, 100 mM

CTAB . Reaction was carried out at 70 °C. Trace (a) corresponds to time zero. Other traces are at 1 h interval.

Supporting Information S9



**Figure S9.** TEM images of R<sub>2</sub> during the course of reaction (A to E) with CuCl<sub>2</sub> with the external addition of AA and CTAB (concentrations as in Figure S5). TEM clearly shows that the tip is reacting in this case emphasizing the selectivity of the reaction in presence and absence of CTAB. F is the expanded image of a particle.