

Remarkable charge transfer between CdSe seeded CdS Nanorods and its metallic and semiconducting tips and its effect on Rhodamine B photodegradation

Xianmei Xiang^{a,c}, Lingjun Chou^{*a} and Xinheng Li^{*a,b}

^a *The State Key Laboratory for Oxo Synthesis and Selective Oxidation, Lanzhou Institute of Chemical Physics, Chinese Academy of Sciences, Lanzhou 730000, China. Fax: +86-512-62872747; Tel: +86-512-62872747*

^b *Suzhou Institute of Nano-tech and Nano-bionics, Chinese Academy of Sciences, Suzhou 215123, China.*

^c *Graduate School of Chinese Academy of Sciences, Beijing 100049, People's Republic of China.*
E-mail: xinhengli@licp.cas.cn; ljchou@licp.cas.cn

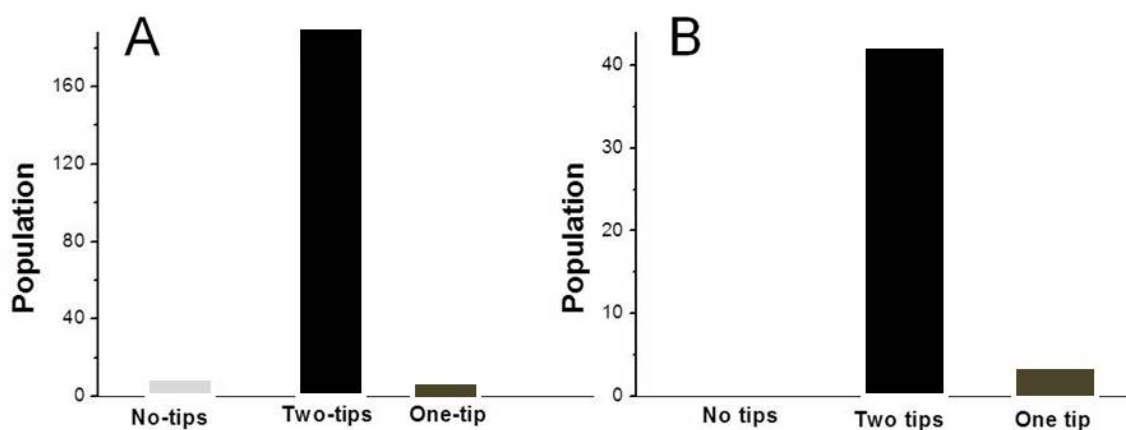


Fig. S1 Statistical distribution of the populations of the gold-deposited CdSe@CdS NRs (A) and palladium sulphide-deposited CdSe@CdS NRs. In the above, no tips refers to those NRs without any deposition occurred, two tips refers to those NRs which two ends were deposited, while one tip refers to those NRs with only one end decorated with gold or palladium sulphide.

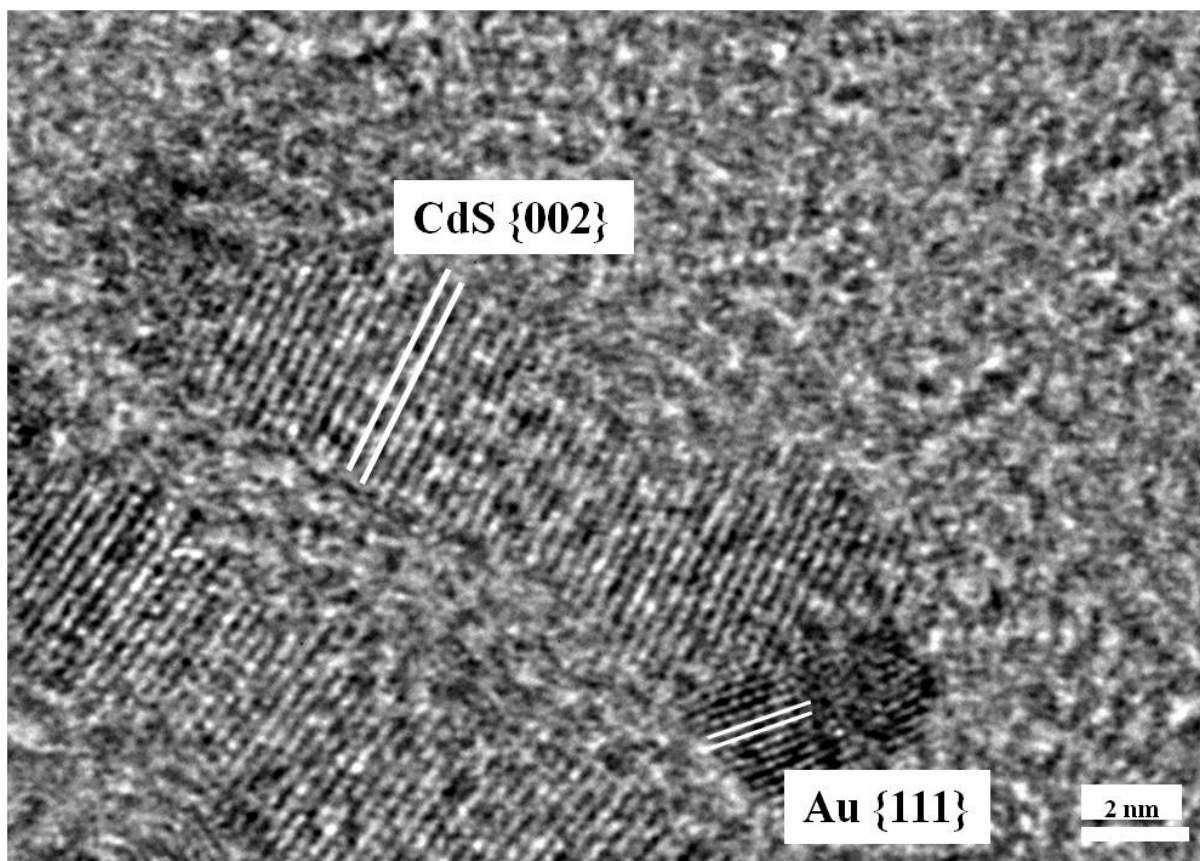


Fig. S2 HRTEM image of the gold-deposited CdSe@CdS NRs. The top lines correspond to CdS {002} plane with a lattice constant 0.34 nm, while bottom lines correspond to Au (111) plane with a lattice constant 0.23nm.

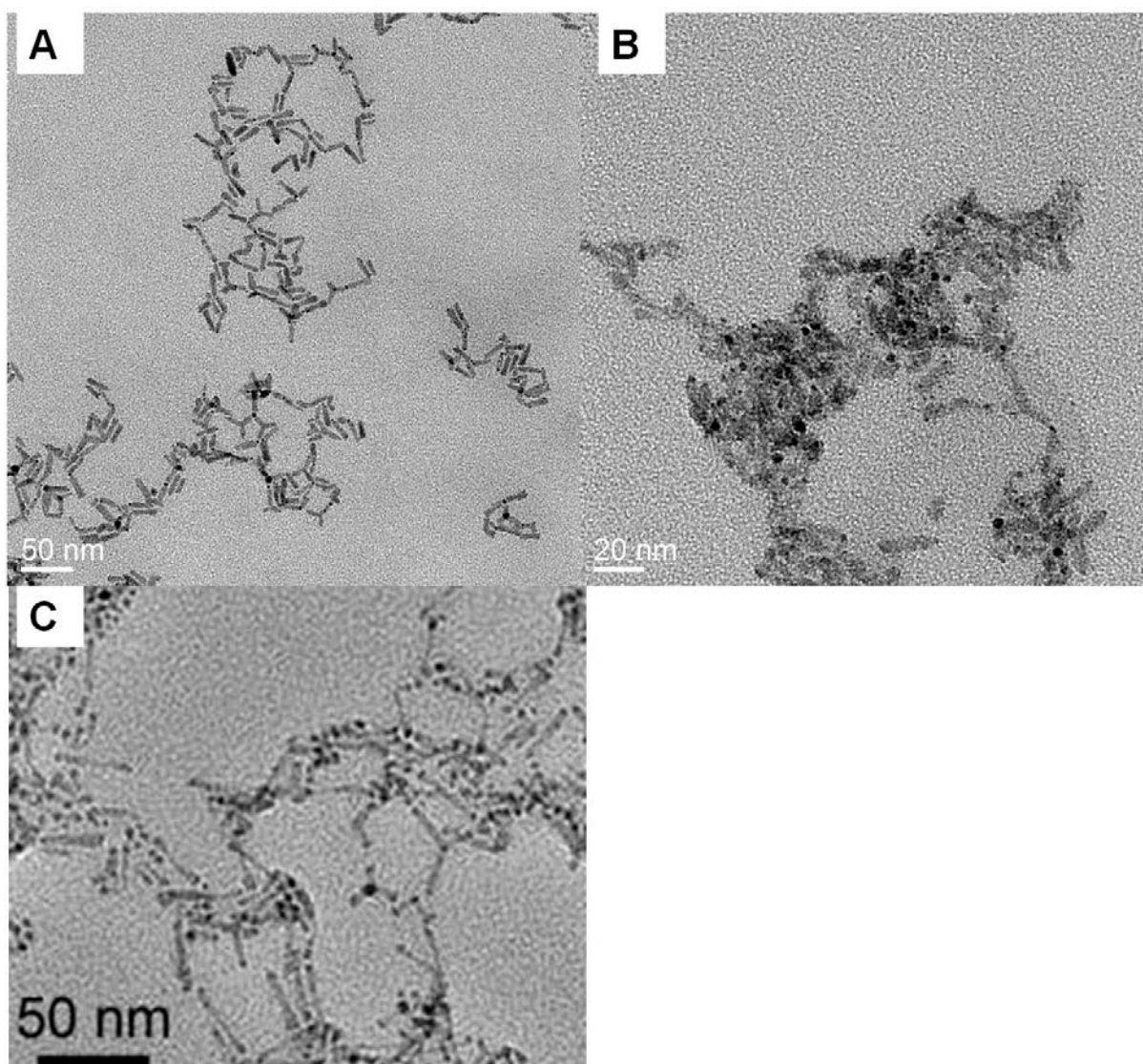


Fig. S3 TEM images of after 30 min. (A) and 1 hr. (B) reactions for the gold-deposited CdSe@CdS NRs with a dumbbell structure, 2 hrs reactions for the Pd₄S-tipped CdSe@CdS NRs.

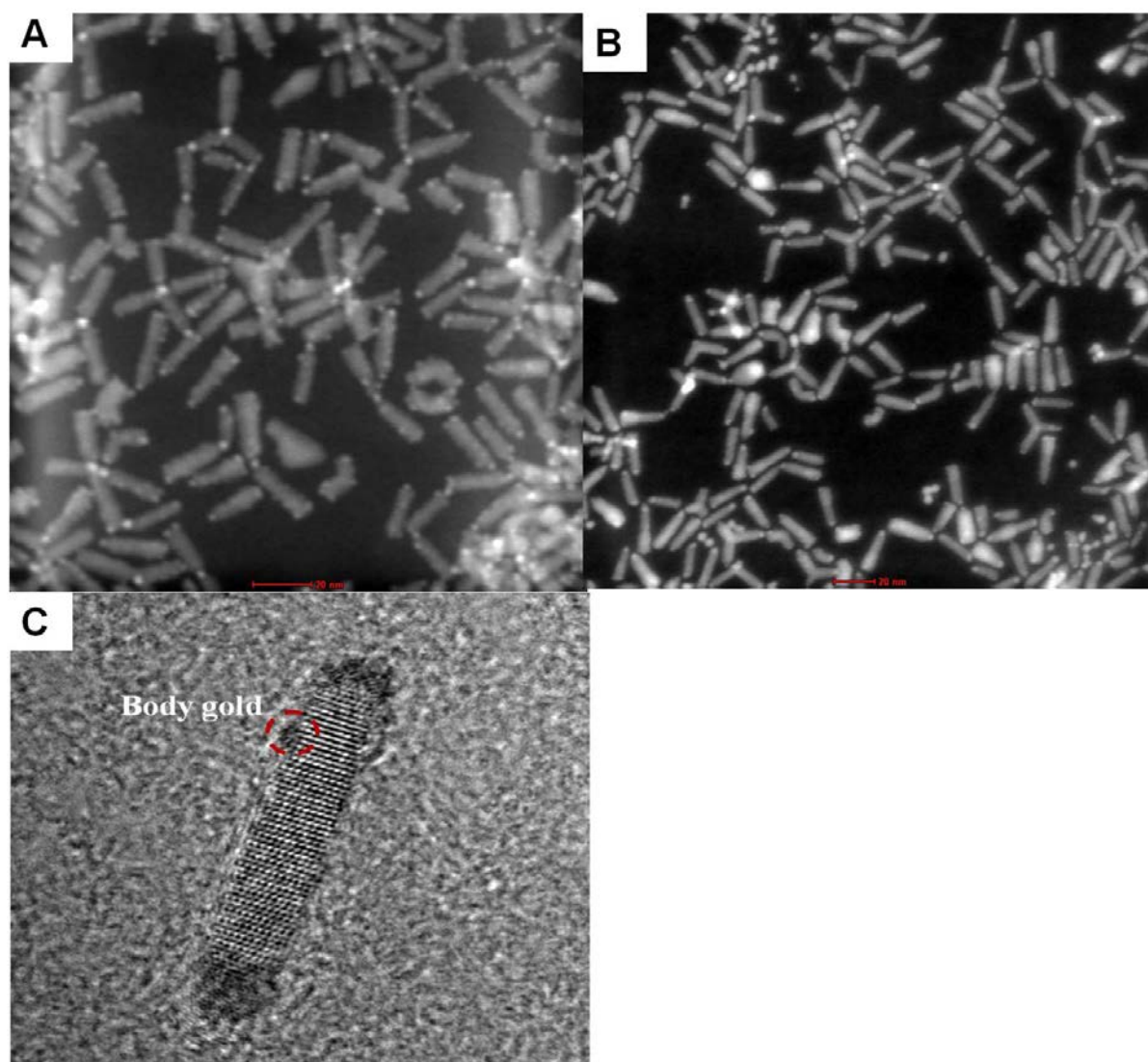


Fig. S4 EFTEM images of gold-tipped CdSe@CdS NRs (A), and Pd₄S-tipped CdSe@CdS NRs (B) and TEM image of a gold-tipped CdSe@CdS NR. Small body gold nanoparticles were clearly seen.

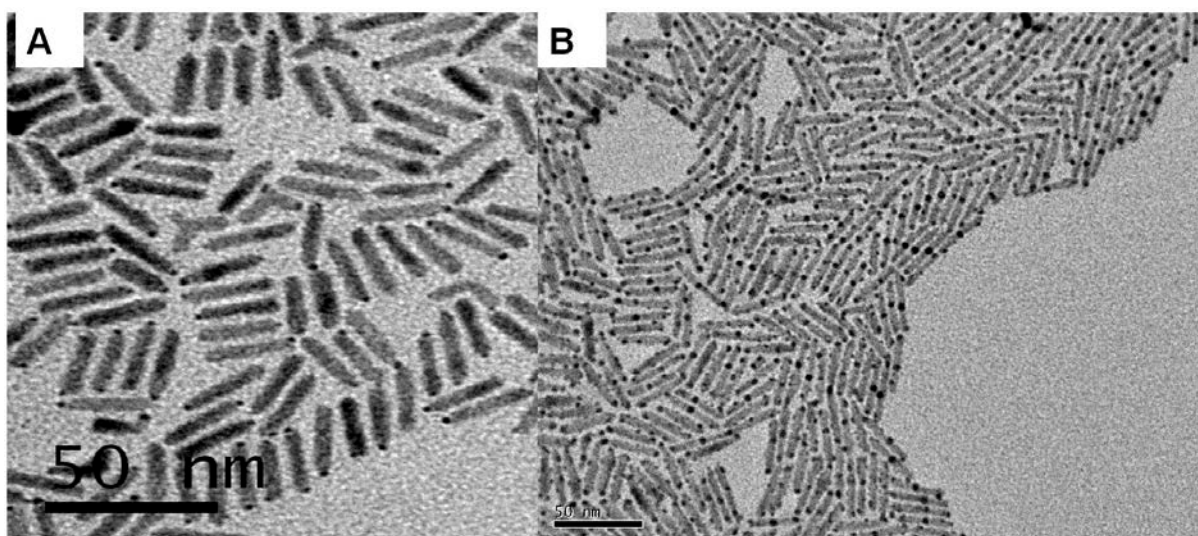


Fig. S5 TEM images of the CdSe@CdS NRs with one gold tip (A) and the CdSe@CdS NRs with gold all around its body (B). For the CdSe@CdS NRs with one gold tip, its selectivity reached ca. 85%. For the CdSe@CdS NRs with gold all around its body, gold size got bigger but still occupied very few percent of the surface area. Scale bar is 50nm.