## **Electronic Supplementary Information (ESI)**

## Controllable synthesis of hierarchical Au/PdAg heterostructures consisting of nanosheets on nanorods with plasmon-enhanced electrocatalytic properties

Zhiqiang Ge, ‡ Cheng Wang ‡ and Limin Qi\*

Beijing National Laboratory for Molecular Sciences (BNLMS), College of Chemistry, Peking University, Beijing 100871, China. E-mail: liminqi@pku.edu.cn

## Contents

| Figure S1. Length and width distribution diagram of GNRs                           | .2 |
|--|----|
| Figure S2. TEM and HRTEM images of Au/Pd NRNBs                                     | .2 |
| Figure S3. TEM and HRTEM images of Au/PdAg NRNDs                                   | .2 |
| Figure S4. Length and width distribution diagram of Au/PdAg NRNSs                  | .3 |
| Figure S5. TEM and HRTEM images of Au/PdAg NRNSs                                   | .3 |
| Figure S6. TEM images of Au/PdAg nanostructures with different CTAB concentrations | .4 |
| Figure S7. TEM images of Au/PdAg nanostructures with different DTAB concentrations | .4 |



Fig. S1 Length and width distribution diagram of GNRs.



**Fig. S2** TEM (a) and HRTEM (b) images of Au/Pd NRNBs. The HRTEM image in panel b corresponds to the framed area in panel a.



**Fig. S3** TEM (a) and HRTEM (b) images of Au/PdAg NRNDs. The HRTEM image in panel b corresponds to the framed area in panel a.



Fig. S4 Length and width distribution diagram of Au/PdAg NRNSs.



**Fig. S5** TEM (a) and HRTEM (b) images of Au/PdAg NRNSs. The HRTEM image in panel b corresponds to the framed area in panel a.



**Fig. S6** TEM images of Au/PdAg hybrid nanostructures obtained in the mixed DTAB/CTAB system with different CTAB concentrations: (a) 0.12 mM; (b) 0.17 mM; (c) 5.0 mM; (d) 10 mM. The DTAB concentration was kept 3 mM.



**Fig. S7** TEM images of Au/PdAg hybrid nanostructures obtained in the mixed DTAB/CTAB system with different DTAB concentrations: (a) 0 mM; (b) 10 mM. The CTAB concentration was kept 1 mM.