



Fig. S1. The size distribution plots for the different $VO_2@SiO_2$ samples (a-i) in Figure 2.



Fig. S2.The SEM picture of VO₂@SiO₂ Sample a after size measuring.



Fig. S3.The SEM picture of VO₂@SiO₂ Sample b after size measuring.



Fig. S4.The SEM picture of VO₂@SiO₂ Sample c after size measuring.



Fig. S5.The SEM picture of $VO_2@SiO_2$ Sample d after size measuring.



Fig. S6.The SEM picture of VO₂@SiO₂ Sample e after size measuring.



Fig. S7.The SEM picture of VO₂@SiO₂ Sample a after size measuring.



Fig. S8.The SEM picture of VO₂@SiO₂ Sample g after size measuring.



Fig. S9.The SEM picture of VO₂@SiO₂ Sample h after size measuring.



Fig. S10.The SEM picture of $VO_2@SiO_2$ Sample i after size measuring.



Fig. S11. The size distribution plots of Au particles on the SiO_2 @Au for the different samples in Figure 5.