

Electronic Supplementary Information (ESI) for New Journal of Chemistry

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**Promotional effect of Pd single atoms on Au nanoparticles
supported on silica for selective hydrogenation of acetylene in
excess ethylene**

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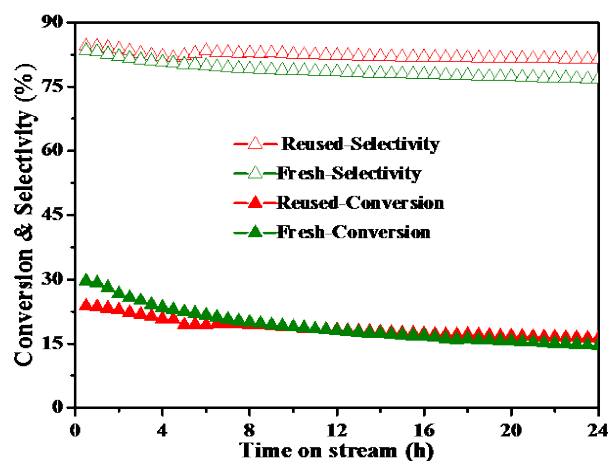


Fig. S1 Stability of the $\text{AuPd}_{0.01}/\text{SiO}_2$ and the reused $\text{AuPd}_{0.01}/\text{SiO}_2$ catalysts at 160 °C. Retreatment condition: 10 vol.% O_2 balanced with He, kept at 500 °C for 1h. Prior to the activity tests all the catalysts were reduced at 250 °C under flowing H_2/He (20 $\text{mL} \cdot \text{min}^{-1}$, volume ratio: 4/1) for 1 h, then purged with He. The space velocity was 240,000 $\text{mL} \cdot \text{h}^{-1} \cdot \text{g}^{-1}$.

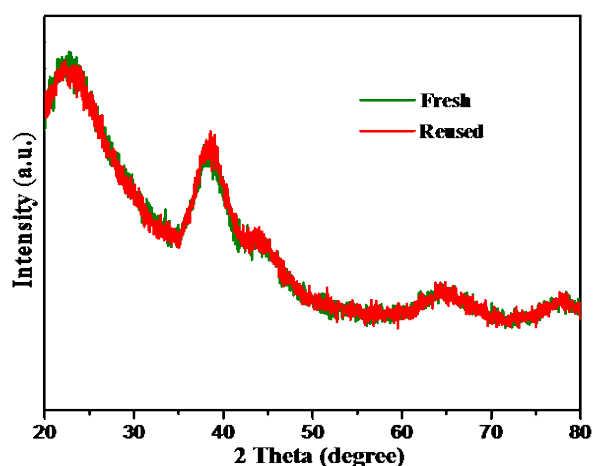


Fig. S2 XRD patterns of $\text{AuPd}_{0.01}/\text{SiO}_2$ catalysts before and after the stability tests.

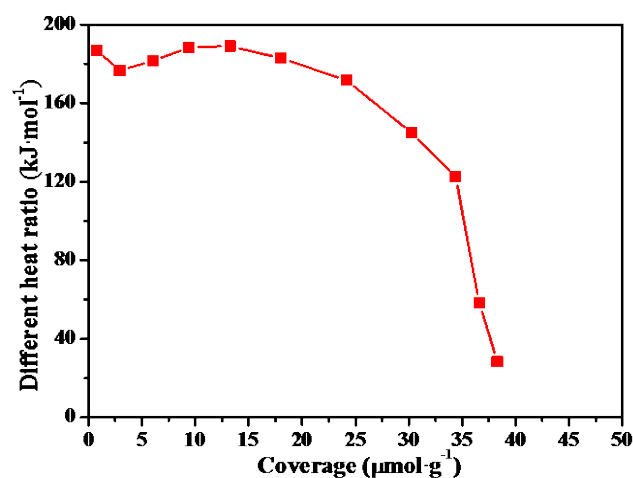


Fig. S3 Differential heat of C_2H_4 adsorption on Pd/SiO_2 catalyst, with the metal loading of 2.0 wt%.