Supporting Information

Palladium nanoparticles embedded over mesoporous TiO_2 for chemical fixation of CO_2 under atmospheric pressure and solvent-free conditions

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Thermal analysis

To understand the thermal stability of Pd@$MTiO_2$ thermogravimetric analysis has been carried out at 10 °C temperature ramp per minute under air flow in the temperature range of 25 to 800 °C. Figure S1a represents the TGA profile diagram of Pd@$MTiO_2$ material where the first weight loss up to 101 °C could be attributed to vaporization of moisture molecules from the material surface and the second weight loss from 220 to 550 °C can be ascribed to the further condensation of the TiO_2 framework. The third weight loss is occurred beyond 550 °C due to decomposition of the residual part of the material. Thus, TG/DTA data revealed considerably high thermal stability upto 550 °C for the Pd@$MTiO_2$ material.

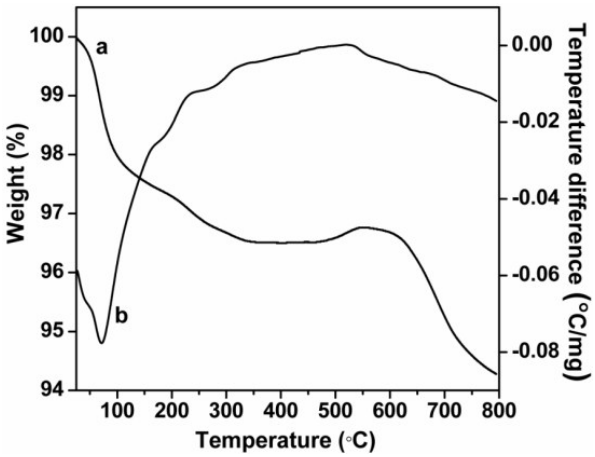

Figure S1. The TGA (a) and DTA (b) profile diagrams of Pd@$MTiO_2$ material.

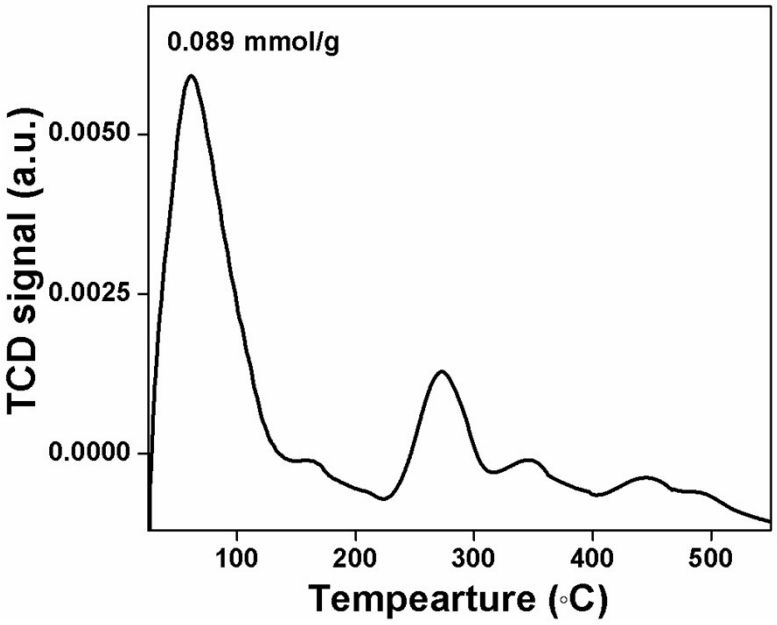

Figure S2. CO_2-TPD profile diagram of $MTiO_2$ material.

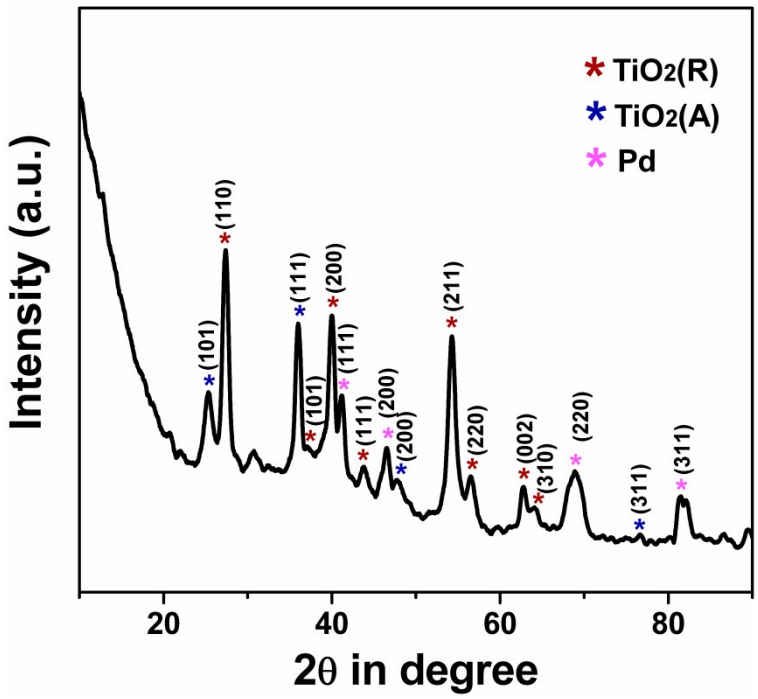

Figure S3. Wide angle powder XRD pattern of reused Pd@MTiO$_2$ catalyst.

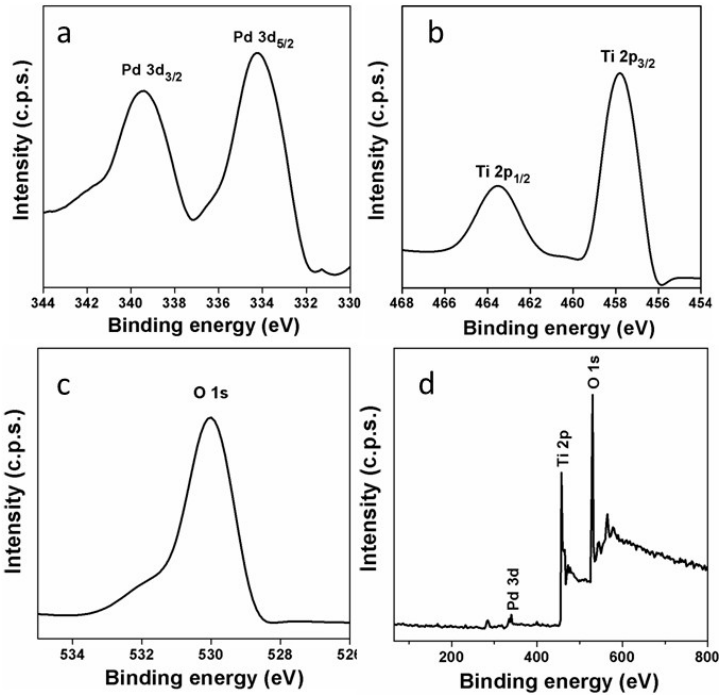

Figure S4. Narrow range XPS spectra of reused Pd@$MTiO_2$ catalyst containing elements Pd (a), Ti (b), O (c) and full range (d) XPS spectrum (d) of reused Pd@$MTiO_2$.