Electronic Supplementary Information

Photocatalytic chemoselective cleavage of C-O bonds under hydrogen gas- and acid-free conditions

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Experimental method for TEM observation

High-resolution transmission electron microscopy (HR-TEM) images were obtained on a JEOL/JEM-2100F (JEOL, Japan) operated at 200 kV. The samples were dispersed in methanol, dropped onto a carbon-coated copper grid, and dried at ambient temperature for 5 h.

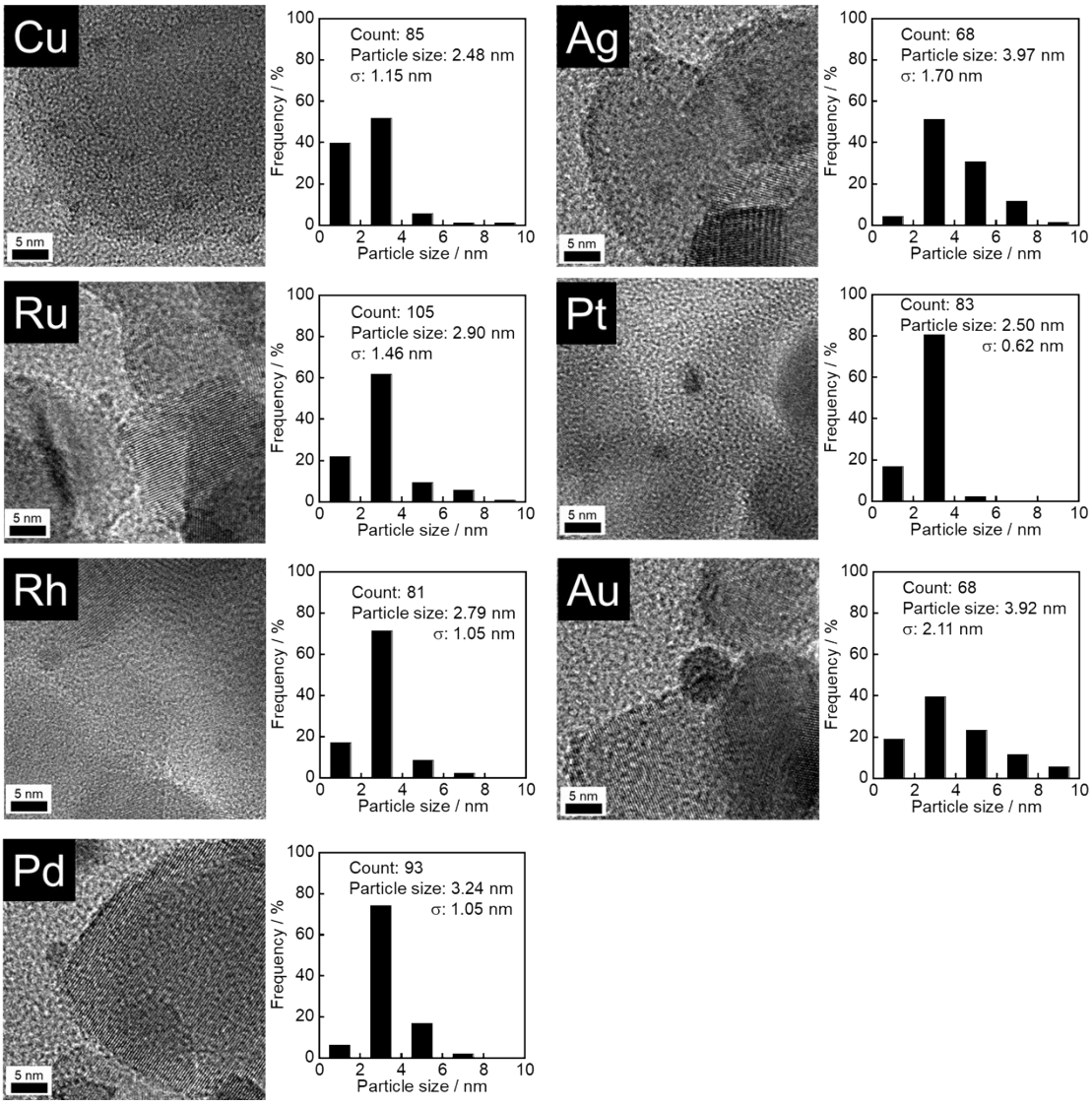

Fig. S1 TEM image of metal nanoparticles, and their size and distribution (σ).

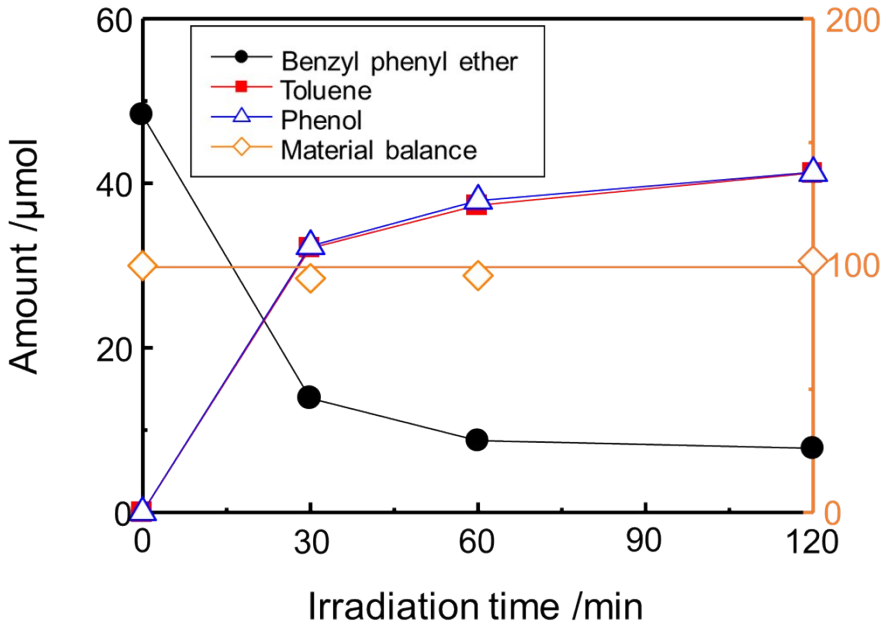

Fig. S2 Time courses of amounts of benzyl phenyl ether, toluene, and phenol, along with material balance, during photocatalytic cleavage of benzyl phenyl ether in a methanolic suspension containing 0.5 wt% Pd-TiO_2.

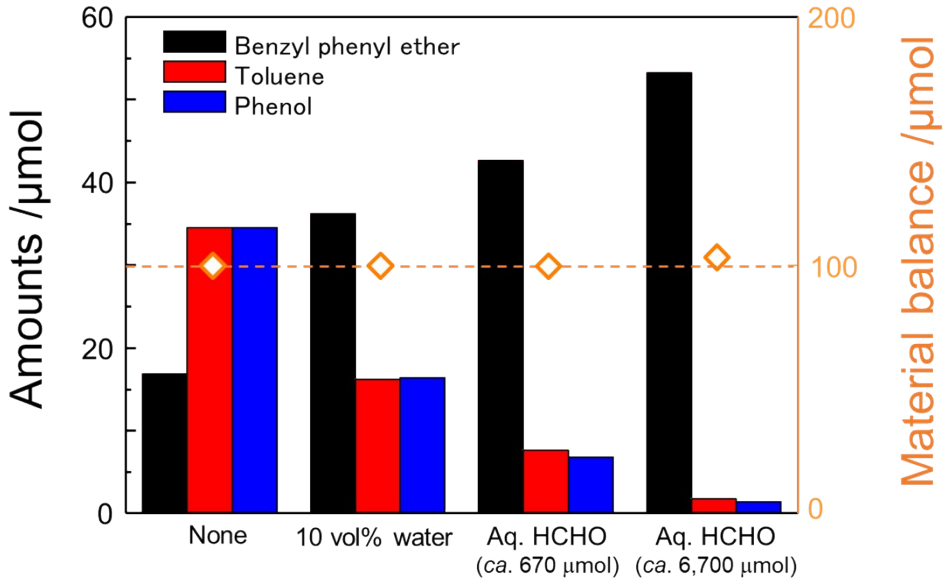

Fig. S3 Effects of water and aqueous formaldehyde (HCHO) on photocatalytic cleavage of benzyl phenyl ether after 30-min photoirradiation.

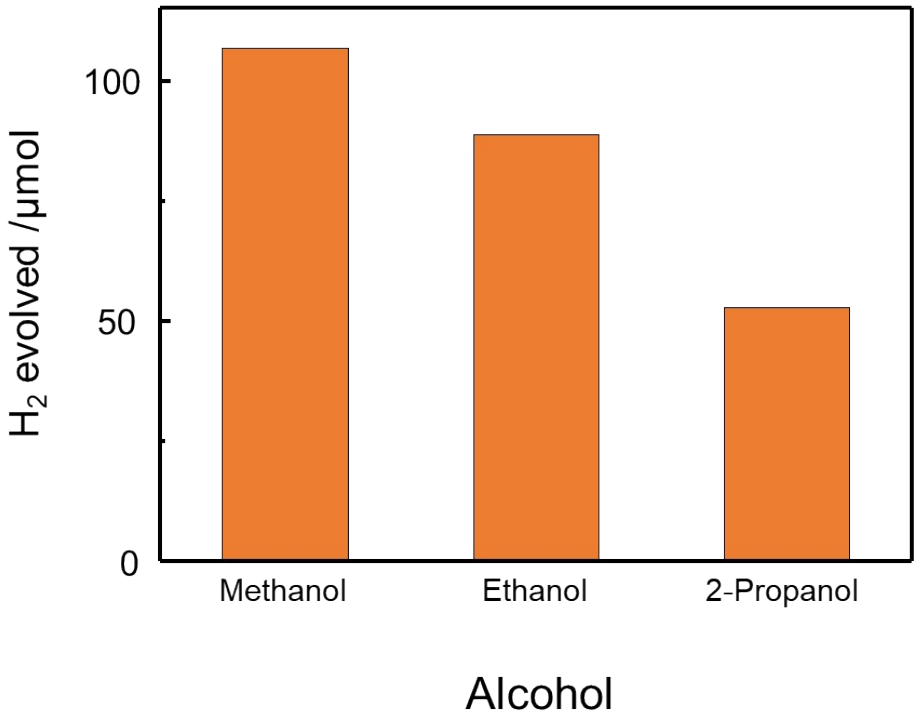

Fig. S4 Effect of alcohol on photocatalytic H_2-evolution over 0.5 wt% Pt-TiO_2 after 30-min photoirradiation.

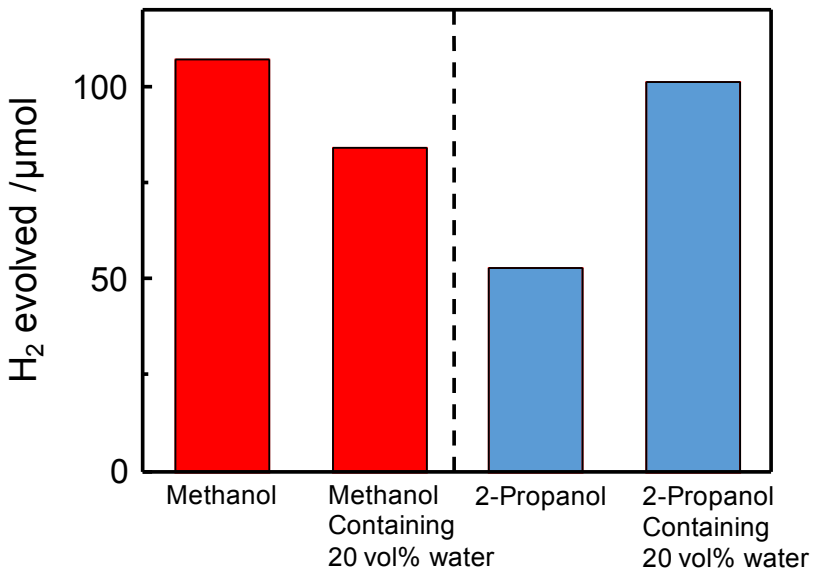

Fig. S5 Effect of water adding on photocatalytic H_2 evolution from methanol and 2-propanol over 0.5 wt% Pt-TiO_2 after 30-min photoirradiation.

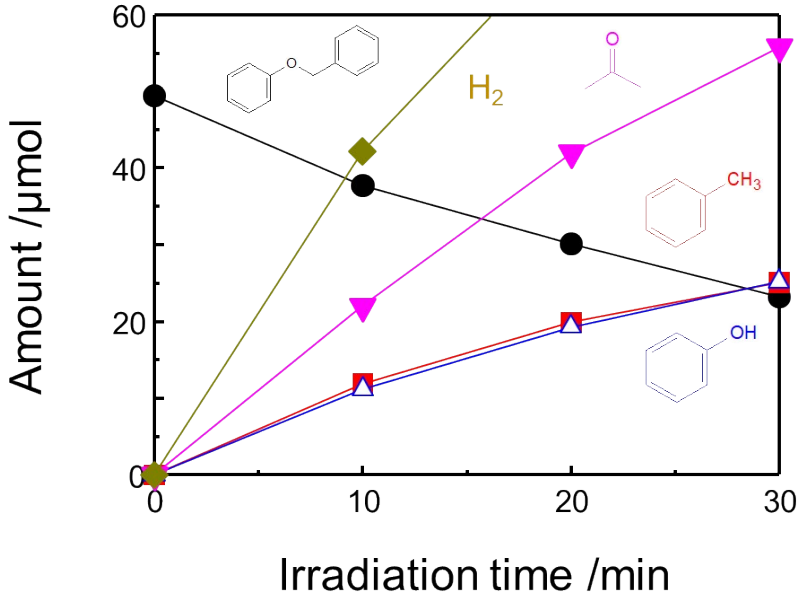

Fig. S6 Time courses of amounts of benzyl phenyl ether, toluene, phenol, acetone, and H_2, during photocatalytic cleavage of benzyl phenyl ether in a suspension in 2-propanol and 0.5 wt% Pd-TiO_2.

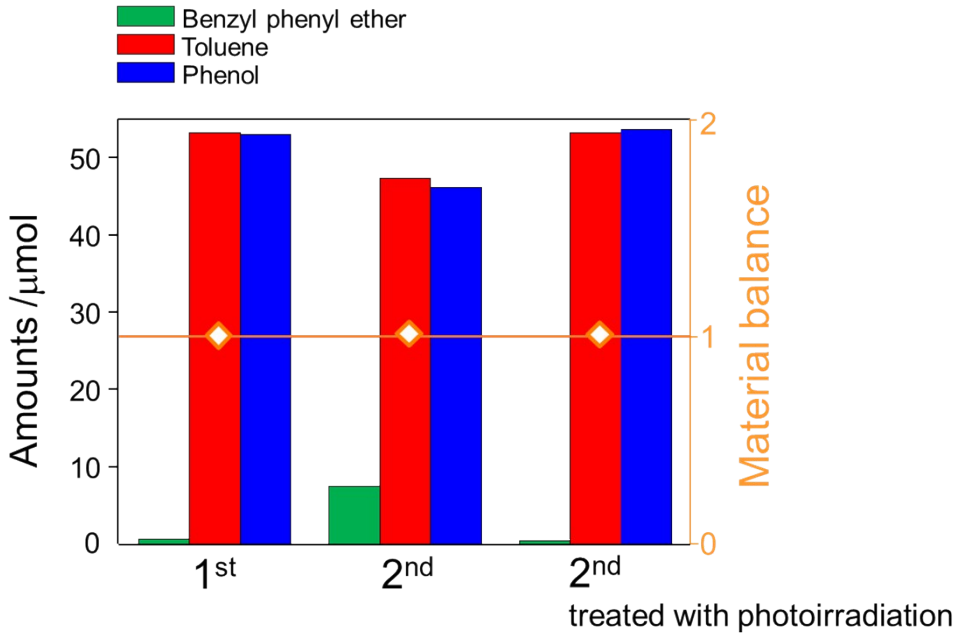

Fig. S7 Reusability of 0.5 wt% Pd-TiO_2 in photocatalytic cleavage of benzyl phenyl ether in a 20 vol% water containing 2-propanol solution.