Electronic Supplementary Material (ESI) for Green Chemistry.
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Supporting Information for:

Simultaneous and selective transformation of glucose to arabinose and nitrosobenzene to azoxybenzene driven by visible-light

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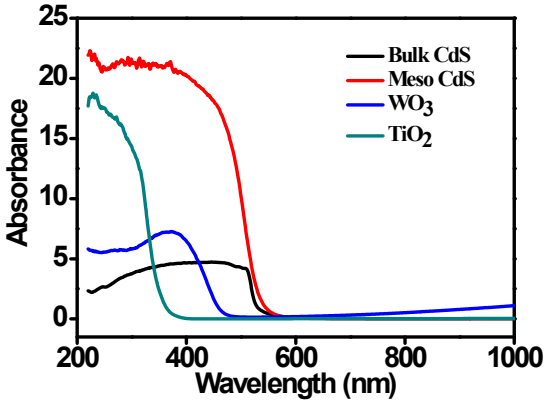


Fig. S1. UV/Vis diffuse reflectance spectra of various supports.

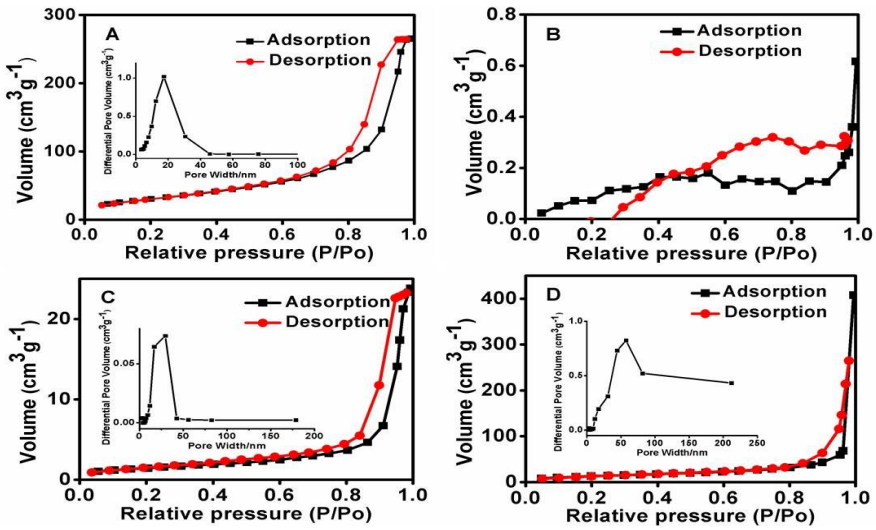


Fig. S2. The N_2 adsorption-desorption isotherms of different supports. (A) mesoporous CdS, (B) bulk CdS, (C) WO_3, and (D) TiO_2.

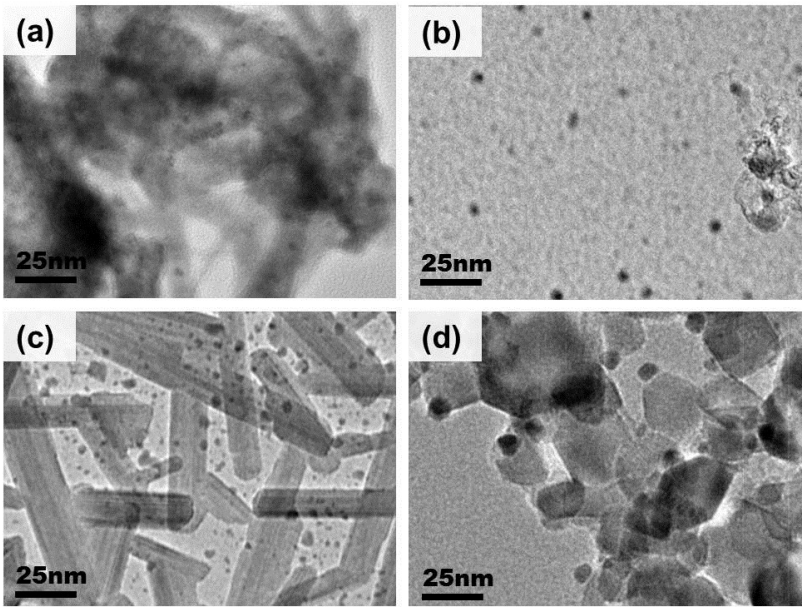


Fig. S3. Transimission electron microscopy images for different supports decorated with palladium. (a) Pd/Meso CdS, (b) Pd/bulk CdS, (c) Pd/WO_3, and (d) Pd/TiO_2.

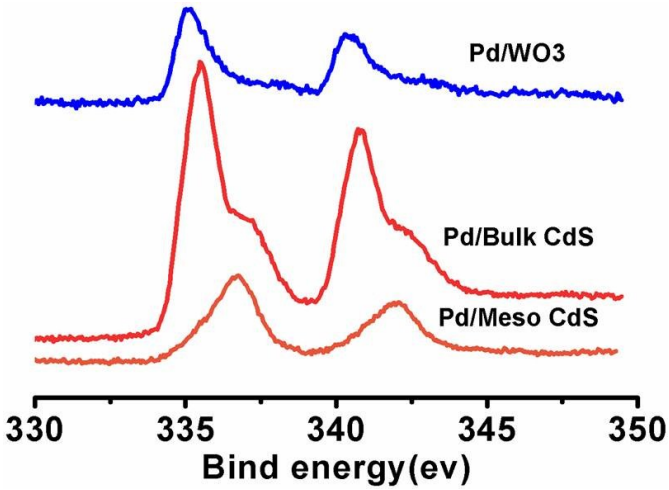


Fig. S4. XPS results for the catalysts.

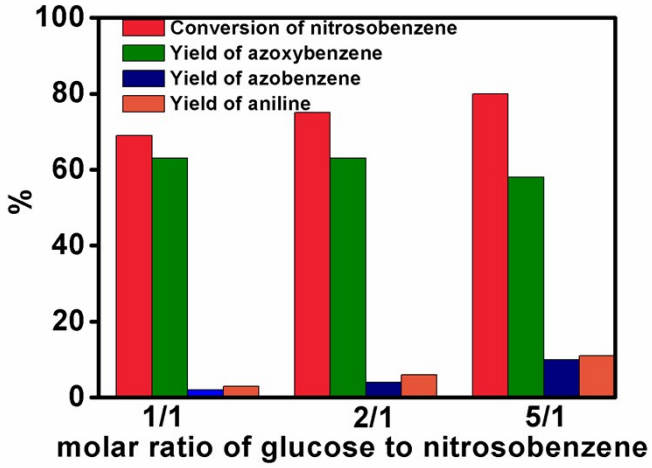


Fig. S5. Influence of the molar ratio of glucose to nitrosobenzene on the reaction. Reaction conditions: nitrosobenzene, 100 μmol; water, 1 mL; visible light irradiation (λ>420 nm) time, 2 hours; light intensity, 0.4 W/cm^2; illuminated area, 2 cm^2; temperature, 25 ^{o}C; 0.025g Pd/Meso CdS with 2wt% Pd.

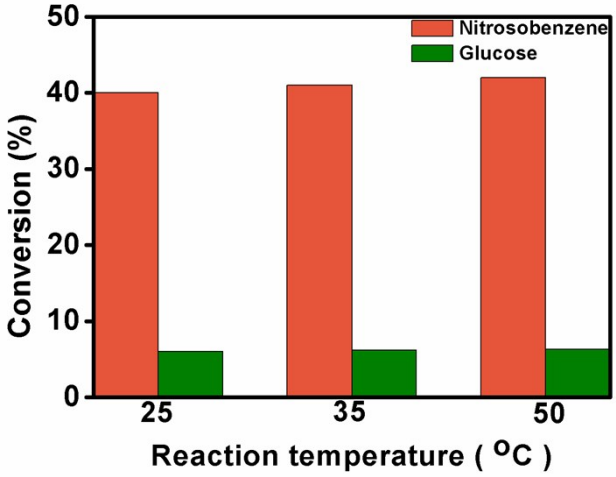


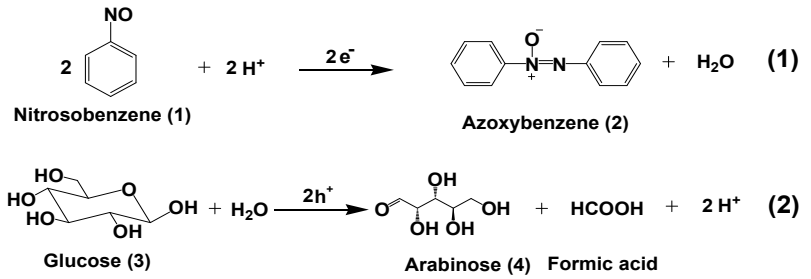
Fig. S6. Effect of reaction temperature on the conversion of nitrosobenzene and glucose. Reaction conditions: nitrosobenzene, 100 μmol; glucose, 100 μmol; water, 1 mL; visible light irradiation (λ>420 nm) time, 1 hour; light intensity, 0.4 W/cm^2; illuminated area, 2 cm^2; 0.025g Pd/Meso CdS with 2wt% Pd.

Table S1. Properties of the various supports.

Sample[a]	BET surface area (m^2/g)[b]	Pore volume (cm^3/g)[c]	Pore diameter (nm)[d]
Meso CdS	125.6	0.98	18
Bulk CdS	0.58	—	—
WO_3	5.2	0.07	35
TiO_2	50	0.80	60

[a]The samples were degassed at 120 °C for 12 h. [b]Surface area based on multipoint BET method. [c]Pore volume based on BJH method. [d]Pore diameter based on BJH method.

Table S2. Simultaneous transformation of glucose to arabinose and nitrosobenzene to azoxybenzene by photocatalysis in different inert atmospheres.[a]



Entry	Atmosphere	Conversion (%)		Selectivity (%)	
		1	3	2	4
1	Vacuum	40	6	90	63
2	N_2	39	6	91	62
3	Ar	41	5.8	90	64
4	Air	12	6.1	92	—

[a]Reaction conditions: nitrosobenzene, 100 μmol; glucose, 100 μmol; water, 1 mL; 0.025 g Pd/Meso CdS with 2 wt%Pd; visible light irradiation (λ>420 nm) time, 1 hour; light intensity, 0.4 W/cm^2; illuminated area, 2 cm^2; temperature, 25 °C.

Table S3. ICP results for the catalysts.

Entry	Catalysts	Metal loading (wt%)[a]
1	Pd/Meso CdS	2.03
2	Pd/Bulk CdS	1.96
3	Pd/WO_3	1.84
4	Pd/TiO_2	1.95
5	Ru/Meso CdS	2.06
6	Pt/Meso CdS	1.97
7	Rh/Meso CdS	1.89

The loading amount of metal was measured by inductively coupled plasma (ICP, PerkinElmer, Optima 2100DV)