Confined PtNi catalysts for enhanced catalytic performances in one-pot cellobiose conversion to hexitols: a combined experimental and DFT study

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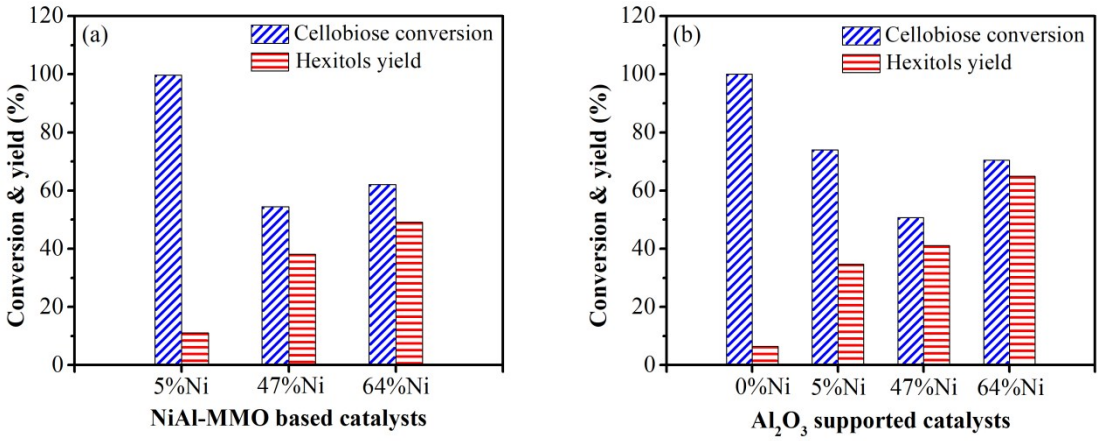


Fig. S1 Catalytic performances of cellobiose conversion on monometallic Ni-based catalysts: (a) NiAl-MMO based catalysts with different Ni contents; (b) Al_2O_3 supported catalysts with different Ni loadings. Reaction conditions: cellobiose, 0.75 mmol; catalyst, 75 mg; water, 30 ml; reaction time, 180 min; reaction temperature 185 °C; $p(H_2)$ = 5.0 MPa (RT).

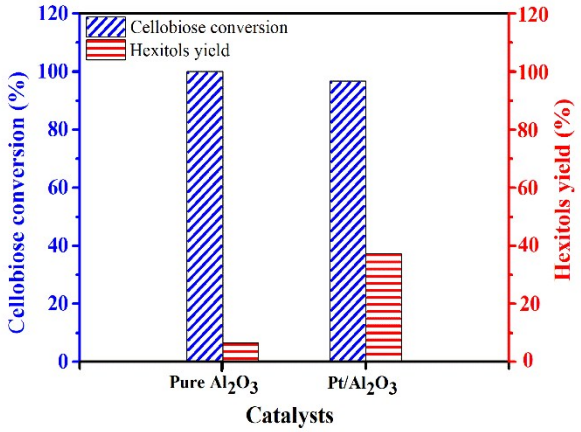
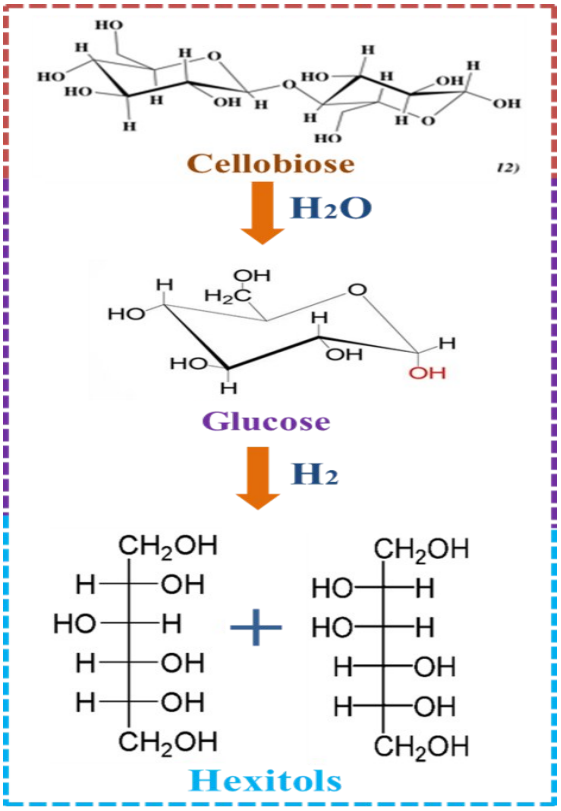


Fig. S2 Catalytic performances of cellobiose conversion on Al_2O_3 support and Pt/Al_2O_3 catalyst. Reaction conditions: cellobiose, 0.75 mmol; catalyst, 75 mg; water, 30 ml; reaction time, 180 min; reaction temperature 185 ^oC; $p(H_2)$ = 5.0 MPa (RT).

Table S1 Textural property of the Ni-based catalyst.

Sample	Specific surface area [a] (m^2/g)	Pore volume [a] (cm^3/g)	Pore size [a] (nm)
Ni/Al_2O_3	188.2	0.41	8.7
NiAl-MMO	272.6	0.45	6.6

[a] Determined by nitrogen adsorption/desorption isotherms.



Scheme S1 Conversion of cellobiose to hexitols

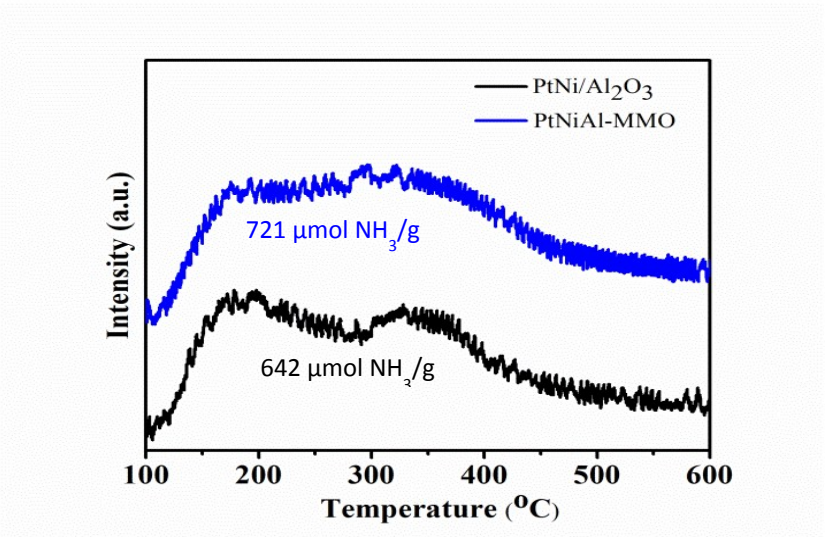


Fig. S3. NH_3-TPD patterns on the reduced catalysts: $PtNi/Al_2O_3$ and PtNiAl-MMO.