Electronic Supplementary Material (ESI) for Green Chemistry.

Supporting Information

Macroporous-Mesoporous Carbon Supported Ni Catalysts for the Conversion of Cellulose to Polyols

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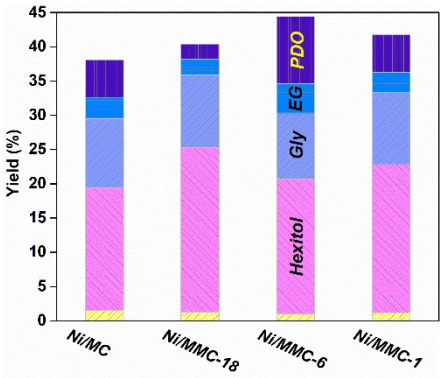


Figure S1. The bar chart of yield distribution of polyols over Ni/MMC catalysts with different ratio of mesopore to macropore (18, 6, 1 respectively).

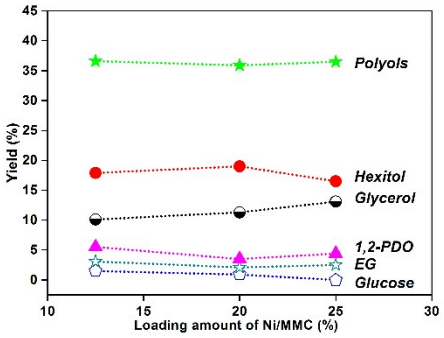
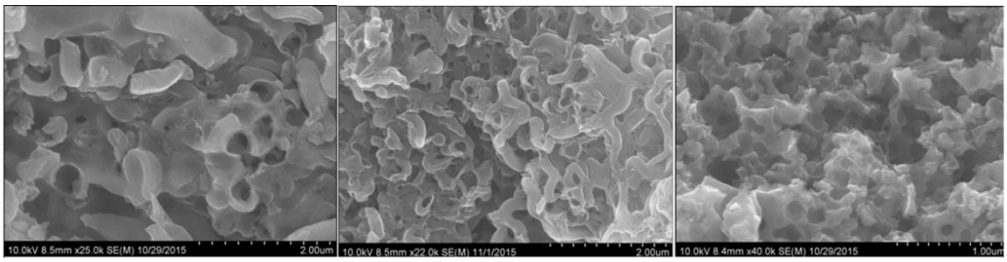


Figure S2. The tendency of polyol yield over the loading amount of nickel of Ni/MMC catalysts in cellulose conversion. The catalysts with the loading amount of Ni between 12.5% and 25% are tested, and are found there are no difference in yield of polyols.

Figure S3. SEM images of MMC materials in the proportion of TEOS/PS (18:1, 6:1,1:1), which was denoted as the ratio of mesopore to macropore.



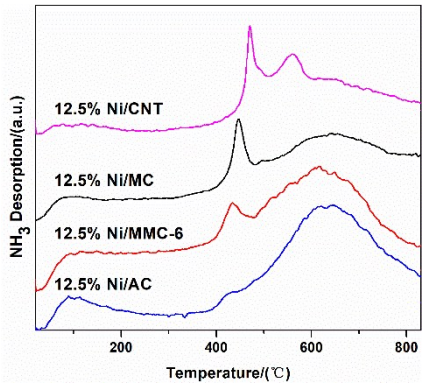


Figure S4. NH_3-TPD profile of carbon series supported 12.5% Ni catalysts.

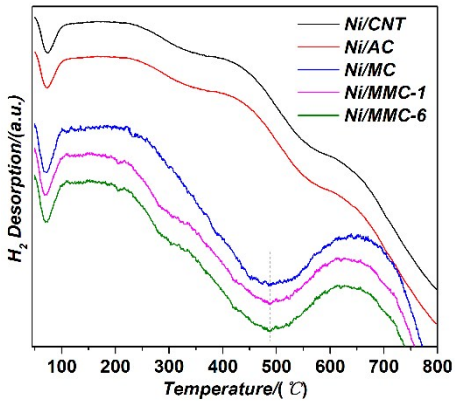


Figure S5. H_2-TPD profile of carbon series supported 12.5% Ni catalysts. The low-temperature desorption peak (< 100 ℃) appears to be larger in the hierarchical MMC and MC catalysts than with the CNT and AC catalysts.

Table S1. Physic structural properties of carbon catalysts.

Entry	Sample	BET surface area (m^2 g^{-1})	Micropore Volume (cm^3 g^{-1})[a]	Mesopore Volume (cm^3 g^{-1})[b]	Mesopore diameter (nm)[c]
1	Ni/AC	244	0.11	-	1.6
2	Ni/CNT	276	0.09	1.04	3.8
3	Ni/MC	1083	0.42	1.47	3.4
4	Ni/MMC-18	1116	0.44	1.21	3.8
5	Ni/MMC-6	1324	0.53	1.43	3.4
6	Ni/MMC-1	1173	0.47	1.22	3.4

[a] HK method micropore volumes.

[b] BJH mesopore volumes from the desorption isotherm.

[c] BJH average pore diameters from desorption isotherm.

Table S2. Boehm titration of catalysts.

Catalyst	M (mg)	V (0.05M $NaOC_2H_5$)	0.05M HCl titration volume (ml)			total acid amount (mmol/g)
			jump 1	jump 2	total	
Ni/CNT	10.3	10	2.67	7.11	9.78	1.07
Ni/AC	19.6	20	9.67	7.99	17.66	5.97

Ni/MMC-6	25	25	14.85	8.3	23.15	13.7