

C–O Hydrogenolysis of C3–C4 Polyols Selectively to Terminal Diols over Pt/W/SBA-15 Catalysts

- Figure S1** Platinum particle size distribution patterns for xPt/1W/SBA-15 catalysts.
- Figure S2** Nitrogen-physisorption isotherms and pore size distribution profile of 2Pt/1W/SBA-15.
- Figure S3** (a) High-angle annular dark field image and elemental mapping of (b) Pt and (c) W of 2Pt/1W/SBA-15.
- Figure S4** FT-Raman spectrum of 2Pt/1W/SBA-15.
- Figure S5** NH₃-TPD profiles of 4Pt/SBA-15 and xPt/1W/SBA-15.
- Table S1** Catalytic activity data for erythritol hydrogenolysis over xPt/W/SBA-15 catalysts.
- Table S2** Catalytic activity data for glycerol hydrogenolysis over xPt/1W/SBA-15 catalysts.

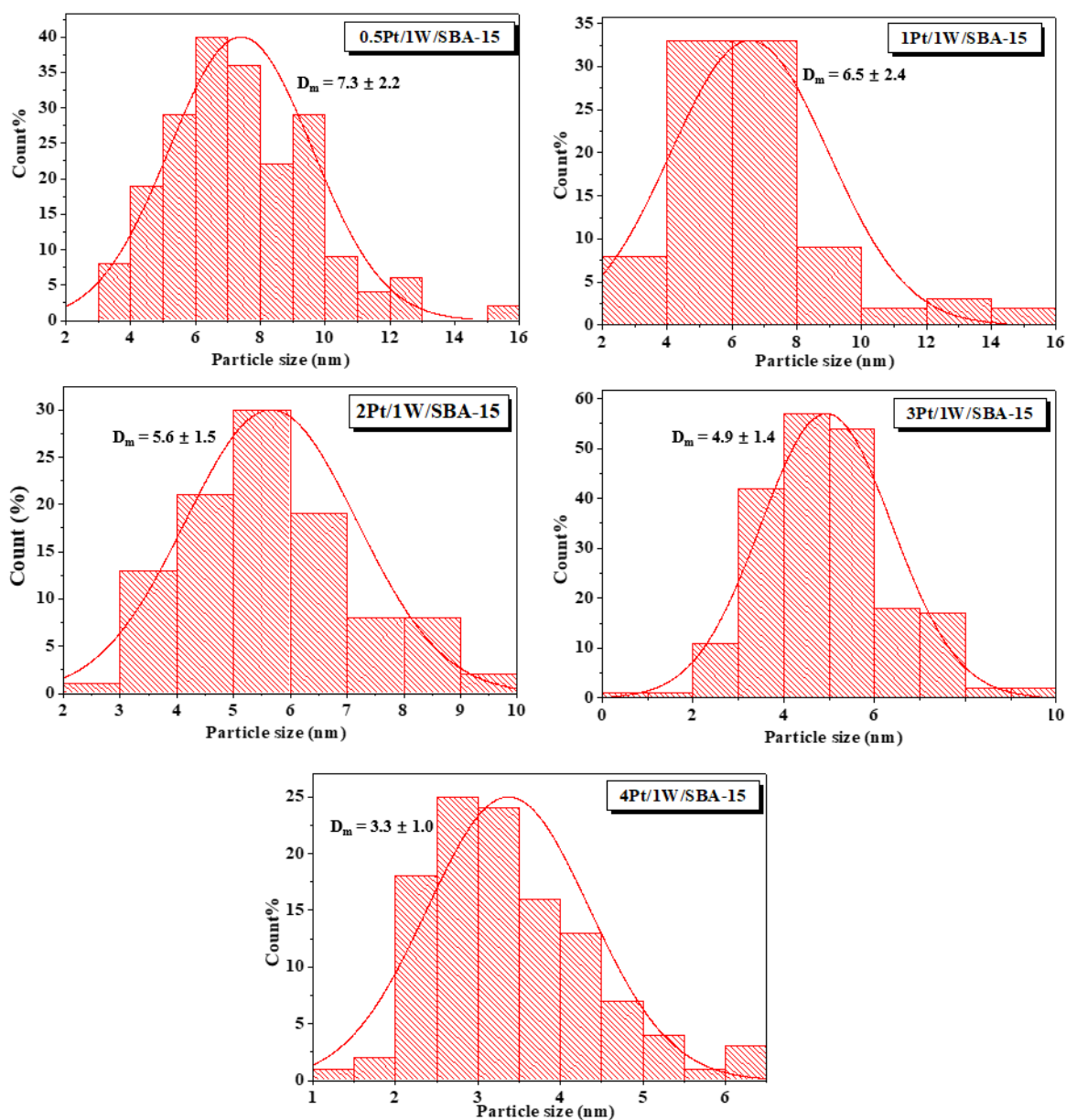


Figure S1. Platinum particle size distribution patterns for xPt/1W/SBA-15 catalysts.

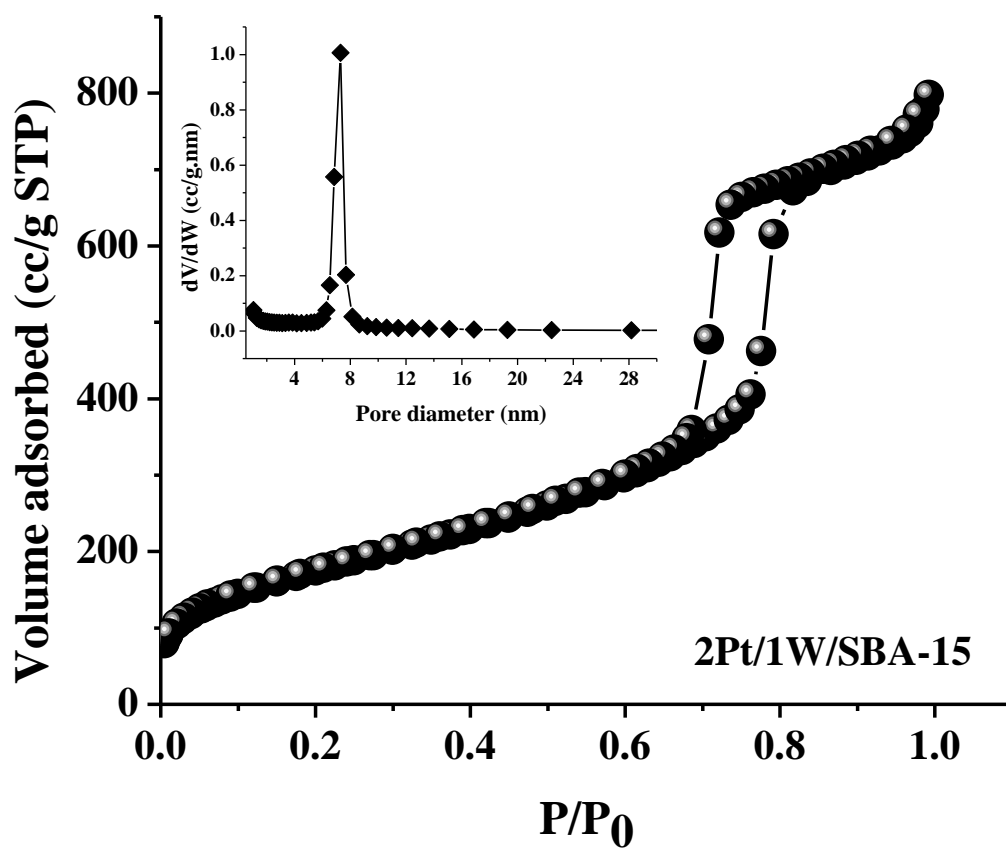


Figure S2. Nitrogen-physisorption isotherms and pore size distribution profile of 2Pt/1W/SBA-15.

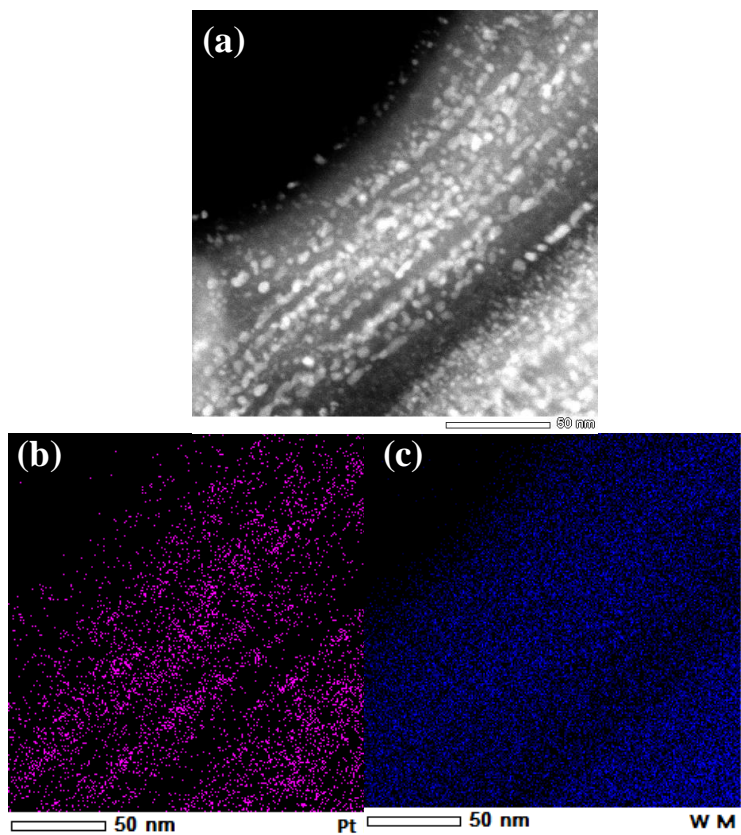


Figure S3. (a) High-angle annular dark field image and elemental mapping of (b) Pt and (c) W of 2Pt/1W/SBA-15.

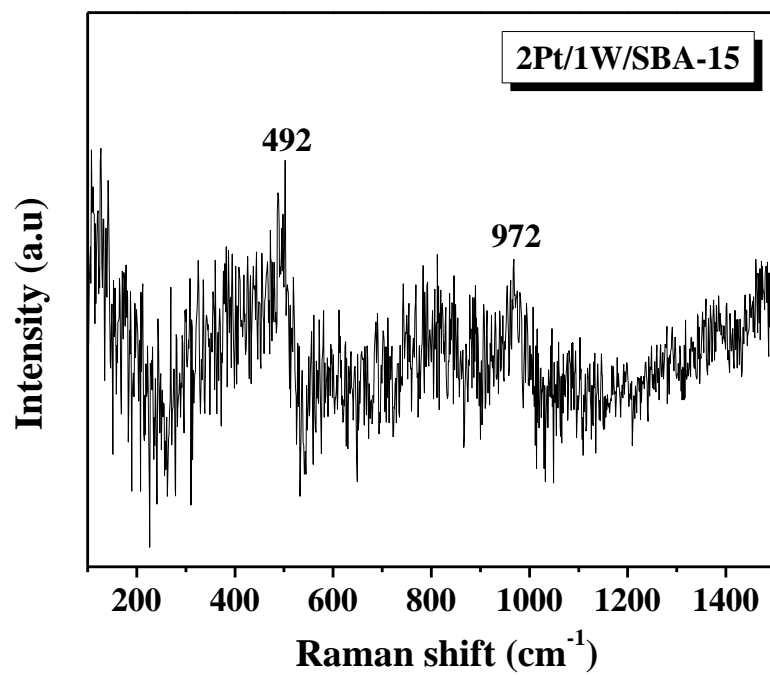


Figure S4. FT-Raman spectrum of 2Pt/1W/SBA-15.

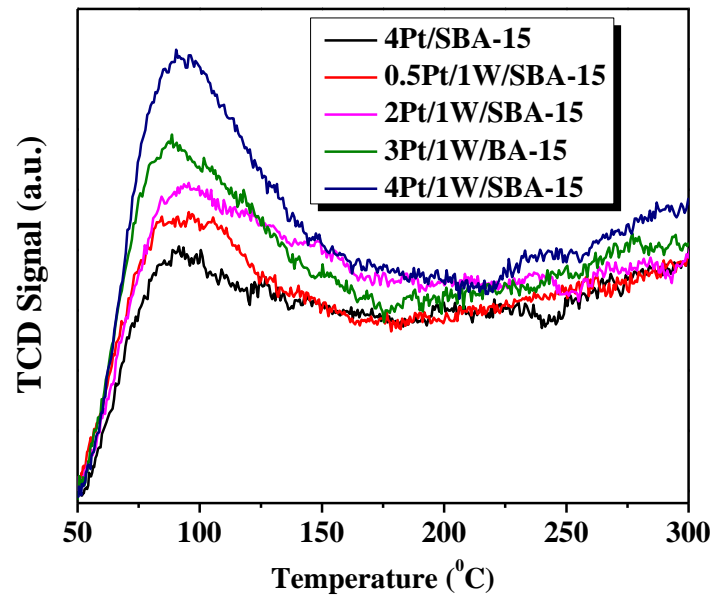


Figure S5. NH₃-TPD profiles of 4Pt/SBA-15 and xPt/1W/SBA-15.

Table S1. Catalytic activity data for erythritol hydrogenolysis over xPt/W/SBA-15 catalysts^a

Entry No.	Catalyst	Erythritol conversion (%)	Products selectivity (%)							Yield of 1,4-BDO (%)
			1,2,3-BTO	1,2,4-BTO	1,4-BDO	2,3-BDO	1-BO	2-BO	Others	
1	1W/SBA-15	6.2	0	0	0	0	0	0	100	0
2	4Pt-SBA-15	4.8	11.6	18.4	37.1	0	0	0.4	32.5	1.8
3	0.5Pt/1W/SBA-15	3.6	0	0	0	0	0	0	100	0
4	1Pt/1W/SBA-15	2.1	5.2	3.3	11.5	0	0	0	80.0	0.2
5	2Pt/1W/SBA-15	14.7	6.0	53.0	24.4	4.5	2.1	0	10.0	3.6
6	3Pt/1W/SBA-15	48.2	7.5	38.1	32.9	8.4	6.3	2.2	4.6	15.9
7	4Pt/1W/SBA-15	58.1	7.4	32.2	34.8	10.1	7.4	2.8	5.3	20.2

Reaction conditions: Erythritol = 0.375 g, water = 12.125 g, catalyst = 0.3125 g, reaction temperature = 190 °C, initial H₂ pressure = 50 bar, reaction time = 12 h, reactor volume = 50 ml, stirring speed = 600 rpm. 1,2,3-BTO = 1,2,3-butanetriol, 1,2,4-BTO = 1,2,4-butanetriol, 1,4-BDO = 1,4-butanediol, 2,3-BDO = 2,3-butanediol, 1-BuOH = 1-butanol, 2-BuOH = 2-butanol. Others = 1,4-anhydroerythritol + furans.

Table S2. Catalytic activity data for glycerol hydrogenolysis over xPt/1W/SBA-15 catalysts^a

Run No.	Catalyst	Glycerol conversion (mol%)	Product selectivity (mol%)				Yield of 1,3-PDO (mol%)	1,3 – PDO / 1,2 – PDO (molar ratio)
			1,3-PDO	1,2-PDO	1-PO	2-PO		
1	0.5Pt/1W/SBA-15	8.9	30.0	20.1	40.1	9.9	2.7	1.5
2	1Pt/1W/SBA-15	19.2	30.0	19.7	39.7	9.9	5.8	1.5
3	2Pt/1W/SBA-15	41.3	47.3	15.8	26.3	10.5	19.4	3.0
4	3Pt/1W/SBA-15	86.2	39.9	2.6	48.2	9.3	34.4	15.3
5	4Pt/1W/SBA-15	86.2	40.0	5.3	45.4	9.3	34.4	7.5

^a*Reaction conditions:* Glycerol = 0.75 g, water = 24.25 g, catalyst = 0.625 g, reaction temperature = 190 °C, H₂ pressure = 50 bar, reaction time = 12 h, reactor volume = 100 ml, stirring speed = 600 rpm.