

What is Claimed is:

1. A process for producing a C₃-C₆ diol from a corresponding C₃-C₆ polyol, the process comprising:
contacting the C₃-C₆ polyol with hydrogen in the presence of a hydrodeoxygenation catalyst comprising a porous, shaped metal-carbon product to form the corresponding C₃-C₆ diol, wherein the metal-carbon product comprises at least one metal component selected from the group consisting of Pd, Pt, Ir, Mo, W, V, Mn, Re, Zr, Ni, Cu, La, Sm, Y, Zn, Cr, Ge, Sn, Ti, Au, Rh, Co, and combinations thereof.
2. The process of claim 1, wherein the metal component comprises Mo, W, or a mixture thereof.
3. The process of claim 1, wherein the metal component is present at a metal loading in the range of from about 0.5 wt % to about 10 wt %.
4. The process of claim 1, wherein the C₃-C₆ polyol is selected from the group consisting of 1,2,6-hexanetriol, 1,2,5-pentanetriol, 2H-tetrahydropyran-2-methanol, tetrahydrofuran-2,5-dimethanol, furan-2,5-dimethanol, 2,5-dihydrofuran-2,5-dimethanol, levoglucosenone, levoglucosan, levoglucosenol, 1,6-anhydro-3,4-dideoxy-p-D-pyranose-2-one, isosorbide, hydroxymethylfurfural, sorbitol, glucose, fructose, xylitol, 3,4-dihydro-2H-pyran-2-carbaldehyde, 1,2,5,6-hexanetetraol, 1,2,3,5,6-hexanepentanol, 1,5-anhydro-3,4-dideoxyhexitol, 5-hydroxy-2H-tetrahydropyran-2 methanol, furfural, furfuryl alcohol, tetrahydrofurfuryl alcohol, a pentose, and a hexose.
5. The process of claim 1, wherein the C₃-C₆ diol is selected from the group consisting of 1,5-pentanediol and 1,6-hexanediol.
6. The process of claim 1, wherein the C₃-C₆ polyol comprises 1,2,6-hexanetriol and the C₃-C₆ diol comprises 1,6-hexanediol.
7. The process of claim 1, wherein the porous, shaped metal-carbon product further comprises a metal deposited on the surfaces of the porous, shaped metal-carbon product.
8. The process of claim 1, wherein the porous, shaped metal-carbon product further comprises Pt deposited on the surfaces of the porous, shaped metal-carbon product.
9. The process of claim 8, wherein the metal component of the porous, shaped metal-carbon product comprises W.
10. The process of claim 1, wherein the contacting step is carried out at a temperature in the range of from about 80° C to about 200° C.
11. The process of claim 1, wherein the hydrogen is present at a pressure in the range of from about 200 psig to about 3000 psig.
12. The process of claim 1, wherein the C₃-C₆ diol is produced at a selectivity of at least about 80%.
13. The process of claim 1, wherein the porous, shaped metal-carbon product exhibits a radial piece crush strength of greater than about 4.4 N/mm (1 lb/mm).

14. The process of claim 1, wherein no more than about 10% of the pore volume of the porous, shaped metal-carbon product is from pores having a pore diameter less than about 10 nm.
15. The process of claim 1, wherein the porous, shaped metal-carbon product comprises a specific pore volume of pores having a diameter in the range of from 1.7 nm to 100 nm, as measured by the BJH process, that is from about 0.1 cm³/g to about 1.5 cm³/g.
16. The process of claim 1, wherein the carbonaceous material comprises carbon black, activated carbon, and/or graphite.
17. The process of claim 1, wherein the carbonaceous material has a BET specific surface area of at least about 20 m²/g.
18. The process of claim 1, wherein the carbonaceous material has a BET specific surface area in the range of from about 20 m²/g to about 500 m²/g.
19. The process of claim 1, wherein the porous, shaped metal-carbon product is a carbonized product of a carbonaceous material with water, a water-soluble organic binder, and a metal precursor of the metal component selected from the group consisting of a metal carbonate, a metal oxide, a metal hydroxide, a salt of a metal acid, a heteropoly acid, a metal carboxylate, a metal carbide, a metal chloride, a metal amine complex-containing compound, a hydrate thereof, and a mixture of any two or more thereof.
20. The process of claim 19, wherein the water-soluble binder comprises a cellulose and/or a sugar.