CLAIMS:

1. A method for hydroprocessing a biocomponent feedstock, comprising:

exposing a biocomponent feedstock comprising at least a bio-derived fraction to a bulk mixed metal catalyst in the presence of hydrogen under effective deoxygenation conditions, the bulk mixed metal catalyst comprising at least one Group VI metal and at least one Group VIII metal;

wherein the effective deoxygenation conditions comprise: a hydrogen partial pressure of from about 200 psig (1.4 MPag) to about 2000 psig (13.8 MPag), a reaction temperature of from about 400°F to about 500°F (204°C to 260°C), a liquid hourly space velocity of from about 0.1 hr^{-1} to about 10 hr^{-1}, and a hydrogen treat gas rate from about 500 scf/B (84 Nm^3/m^3) to about 10,000 scf/B (1685 Nm^3/m^3),

wherein the bio-derived fraction makes up about 30 wt% to about 50 wt% of the biocomponent feedstock and comprises from about 1 wt% to about 14 wt% oxygen; and

forming a deoxygenated effluent wherein at least 75% of the oxygen has been removed from the biocomponent feedstock compounds.

2. The method of claim 1, wherein the biocomponent feedstock further comprises a mineral oil fraction.

3. The method of claim 1 or 2, wherein the at least one Group VI metal is selected from the group consisting of Mo and W and at least one Group VIII metal is selected from the group consisting of Co and Ni.

4. The method of any one of claims 1 to 3, wherein the total amount of the Group VI metals and Group VIII metals comprise at least 80 wt% of the bulk mixed metal catalyst.

5. The method of any one of claims 1 to 4, wherein the bulk mixed metal catalyst contains less than 15 wt% carrier or support material.

6. The method of any one of claims 1 to 5, wherein the bulk mixed metal catalyst is further combined with a binder.

7. The method of claim 6, wherein the binder is selected from the group consisting of silica, silica-alumina, alumina, titania, zirconia, and mixtures thereof.

8. The method of claim 6 or 7, wherein the amount of binder is from about 5 wt% to about 95 wt% binder based on the total weight of the bulk mixed metal catalyst and the binder.

9. The method of any one of claims 1 to 8, wherein the hulk mixed metal catalyst further comprises at least one organic compound.

10. The method of claim 9, wherein the bulk mixed metal catalyst is further sulfided prior to exposing the biocomponent feedstock to the bulk mixed metal catalyst, and the at least one organic is present on the bulk mixed metal catalyst at the time the catalyst is exposed to the sulfiding conditions.

11. The method of claim 9 or 10, wherein the at least one organic compound is a condensation/decomposition reaction product derived from an amine, a carboxylic acid, or combinations thereof.

12. The method of claim 11, wherein the amine, carboxylic acid, or combination thereof is subjected to a reaction temperature of from about 195°C to about 250°C (about 383°F to about 482°F) to form the condensation/decomposition reaction product.

13. The method of any one of claims 1 to 12, wherein the at least one Group VI metal is Mo and at least one Group ¯VIII metal is Co.

14. The method of any one of claims 1-8, wherein the bulk mixed metal catalyst comprises at least two Group VI metals, and at least one Group VIII metal selected from the group consisting of Co and Ni.

15. The method of claim 14, wherein the Group VI metals comprise Mo and W.

16. The method of any one of claims 1 to 15, wherein the bulk mixed metal catalyst is further sulfided prior to exposing the biocomponent feedstock to the bulk mixed metal catalyst.

17. The method of any one of claims 1-8 and 14-16, wherein the bulk mixed metal catalyst comprises Mo, W, and Ni.

18. The method of any one of claims 1-8 and 14-17, wherein the bulk mixed metal catalyst comprises at least 90 wt% Mo, W, and Ni, and this portion of the bulk mixed metal catalyst has the formula:

$$(Ni)_b(Mo)_c(W)_dO_z$$

wherein the molar ratio of b:(c+d) is 0.5:1 to 3:1; the molar ratio of Mo and W is 2:3 to 3:2; and z=[2b+6(c+d)]/2.

19. The method of claim 18, wherein the molar ratio of c:d is > 0.01:1.

20. The method of claim 1, wherein the effective deoxygenation conditions comprise a reaction temperature of from about 400°F to about 490°F (204°C to 254°C).

21. The method of any one of claims 1 to 20, further comprising:

exposing at least a portion of the deoxygenated effluent to a hydrodesulfurization catalyst under effective hydrodesulfurization conditions to produce a deoxygenated/desulfurized effluent having a sulfur content of about 100 wppm or less.

22. The method of claim 21, wherein the effective hydrodesulfurization conditions comprise:

a total pressure from about 200 psig (1.4 MPa) to about 3000 psig (20.7 MPa),

a temperature of from about 450°F (232°C) to about 750°F (399°C),

a liquid hourly space velocity of about 0.3 to about 5.0 hr^{-1},

a treat gas containing at least about 80% hydrogen, and

a hydrogen treat gas rate of about 500 scf/bbl (84 m^3/m^3) to about 10000 scf/bbl (1685 m^3/m^3).

23. The method of claim 21 or 21, wherein hydrodesulfurization catalyst comprises at least one Group VIB metal and at least one Group VIII metal deposited upon a support, wherein the support comprises a material selected from the group consisting of silica, silica-alumina, alumina, and titania.

24. The method of any one of claims 21-23, wherein the bulk mixed metal catalyst and the hydrodesulfurization catalyst are located in a common reactor.

25. The method of any one of claims 21-23, wherein the bulk metal catalyst and the hydrodesulfurization catalyst are each located in separate reactors and the effective hydrodesulfurization conditions comprise a temperature of from about 650°F (343°C) to about 750°F (399°C).