WHAT IS CLAIMED IS:

1. A method of making a product, the method comprising:

saccharifying a cellulosic or lignocellulosic material to obtain a saccharified biomass sugar composition comprising xylose and glucose;

selectively fermenting glucose to produce a fermentation sugar composition comprising xylose;

producing one or more acids from the fermentation sugar composition;

converting the one or more acids into one or more esters; and

hydrogenating the one or more esters utilizing a catalyst and hydrogen to produce one or more products including alcohols.

2. The method of claim 1 wherein the one or more acids comprise butyric acid or acetic acid.

3. The method of claim 1 wherein the saccharified biomass sugars are produced by saccharification of a cellulosic or lignocellulosic biomass material with a method selected from the following group consisting of one or more enzymes, one or more acids, and combinations of these.

4. The method of claim 3 further comprising recalcitrance reducing the cellulosic or lignocellulosic material by electron beam irradiation.

5. The method of claim 4 wherein the dose of irradiation is between 10 and 200 Mrad.

6. The method of claim 1 wherein the catalyst includes a metal selected from the group consisting of Pt, Os, Re, Ru, Rb, Ni, Co, Mo, W, Zn, Cr, Cu, oxides of these and combinations of these.

7. The method of claim 6 further comprising applying a hydrogen pressure between about 5 and 120 atm. while utilizing catalyst to produce alcohols.

8. The method of claim 1 further comprising isolating at least one of the acids prior to converting the one or more acids into one or more esters.

9. The method of claim 1 wherein the ester is selected from the group consisting of ethyl butyrate, butyl butyrate, hexyl butyrate and octyl butyrate.

10. A method of making a product, the method comprising:

saccharifying a lignocellulosic material to obtain a saccharified biomass sugar composition comprising xylose and glucose;

selectively fermenting glucose to produce a product comprising xylose;

converting the product to an ester, and

producing an alcohol by passing the ester over a first catalyst in the presence of hydrogen.

11. The method of claim 10 further comprising passing the ester over a second catalyst.

12. The method of claim 11 wherein the first and second catalyst are different catalysts.

13. The method of claim 11 wherein the first and second catalyst are the same catalyst.

14. The method of claim 11 further comprising applying a first pressure of hydrogen while passing the ester over the first catalyst and applying a second pressure of hydrogen while passing the ester over the second catalyst, wherein the first pressure is higher than the second pressure by at least 10 psi.

15. The method of claim 11 further comprising heating the first catalyst to a first temperature while passing the ester over the first catalyst and heating the second catalyst to a second temperature while passing the ester over the second catalyst, wherein the first temperature is higher than the second temperature by at least 10°C.

16. The method of claim 11 wherein the first and second catalyst comprise metals selected from the group consisting of Pt, Re, Os, Ru, Rb, Ni, Co, Mo, W, Zn, Cr, oxides of these and combinations of these.

17. The method of claim 11 further comprising applying a hydrogen pressure between about 5 and 100 atm. while passing the hydrogen over the first and/or second catalyst.

18. The method of claim 11 wherein the product of the fermentation comprises a carboxylic acid.

19. The method of claim 18 wherein the carboxylic acid has from 1 to 20 carbons and 1 to 5 carboxylic acid groups.

20. The method of claim 18 or 19 wherein the carboxylic acid is butyric acid.

21. The method of claim 10 wherein the fermentation product comprises an alcohol.

22. The method of claim 10 wherein the ester is selected from the group consisting of ethyl butyrate, butyl butyrate, hexyl butyrate and octyl butyrate.

23. The method of claim 1 further comprising fermenting the saccharified biomass sugar composition to at least two fermentation products where the two of the products are an acid and an alcohol which are, in turn, reacted to form an ester.