## CLAIMS

What is claimed is:

1. A process for producing a purified biodiesel from a feedstock containing unsaponifiable material, said method comprising:
    a. reacting the feedstock in a transesterification reactor with an alcohol to produce a crude biodiesel;
    b. separating the unsaponifiable material from the crude biodiesel to produce a purified biodiesel; and
    c. recovering at least a portion of the unsaponifiable material.
2. The process of claim 1 wherein the unsaponifiable material includes at least one of the following valuable chemicals: sterols, steryl esters, steryl glucosides, terpenes, tocopherols, vitamins, myriciyl esters of fatty acids, sulfolipids, proteins, hydroxycinnamic acids, waxes, flavonoids, carotenoids.
3. The process of claim 2 further comprising the step of removing at least one of the valuable chemicals from the unsaponifiable material using at least one of saponification, transesterification, esterification, hydrolysis, and solvent separation.
4. The process of claim 1 wherein the separating step includes using at least one of cold filtration, distillation, membrane separation, adsorption, and resin filtration.
5. The process of claim 1 wherein the unsaponifiable materials are recovered by solvent extraction.
6. The process of claim 1 further comprising introducing the feedstock to a pre-treatment process before transesterification.
7. A process for producing a purified biodiesel from a feedstock containing unsaponifiable material, said method comprising:
    a. introducing the feedstock to a pre-treatment process to produce a pretreated feedstock;
    b. introducing the pretreated feedstock to an FFA refining process to produce a refined feedstock;

c. reacting the refined feedstock in a transesterification reactor with an alcohol to produce a crude biodiesel;

d. purifying the crude biodiesel to produce a purified biodiesel and a biodiesel residue;

e. recovering unsaponifiable material from the biodiesel residue.

8. The process of claim 7 wherein the unsaponifiable material includes at least one of the following valuable chemicals: sterols, steryl esters, steryl glucosides, terpenes, tocopherols, vitamins, sulfolipids, proteins, hydroxycinnamic acids, fatty acid myricyl esters, waxes, flavonoids, carotenoids.

9. The process of claim 8 further comprising the step of removing at least one of the valuable chemicals from the unsaponifiable material using at least one of saponification, transesterification, esterification, hydrolysis, and solvent separation.

10. The process of claim 7 wherein the purification step includes using at least one of cold filtration, distillation, membrane filtration, and resin filtration.

11. The process of claim 7 wherein the purification is by distillation.

12. The process of claim 11 wherein the biodiesel distillation occurs between 170 - 300°C and 800 – 0 Torr.

13. The process of claim 7 further comprising drying the crude biodiesel using an alcohol stripper to remove the water and alcohol before separating the unsaponifiable material therefrom.

14. The process of claim 7 wherein the unsaponifiable materials are recovered by solvent extraction.

15. A process for recovering a valuable chemical while producing purified biodiesel from a feedstock, said process comprising:

a. reacting the feedstock in a transesterification reactor with an alcohol to produce a crude biodiesel stream;

b. purifying the crude biodiesel stream by distillation to produce a purified biodiesel stream and a distillation bottoms;

c. recovering the valuable chemical from the distillation bottoms.

16. The process of claim 15 wherein the valuable chemical includes at least one of the following: sterols, steryl esters, steryl glucosides, terpenes, tocopherols, vitamins,

sulfolipids, proteins, hydroxycinnamic acids, fatty acid myricyl esters, waxes, flavonoids, carotenoids.

17. The process of claim 16 further comprising the step of removing the valuable chemical from the unsaponifiable material using at least one of saponification, transesterification, esterification, hydrolysis, precipitation, sedimentation, crystallization, distillation, and solvent separation.

18. The process of claim 15 wherein the biodiesel distillation occurs between 170 - 300°C and 800 – 0 Torr.

19. The process of claim 15 further comprising drying the crude biodiesel using an alcohol stripper to remove the water and alcohol before separating the unsaponifiable material therefrom.

20. The process of claim 15 wherein the unsaponifiable materials are recovered by solvent extraction.