CLAIMS:

1. A process for isolating humins from a feed source, comprising:

providing a feed source to a thin-film evaporator, wherein the feed source comprises:

65-90 wt.% of a multicomponent solvent comprising water and a water-miscible aprotic organic solvent; and

10-35 wt. % of a dissolved dry residue comprising, in wt.% or ppm of the total feed source:

a sugar content of 30,000-120,000 ppm;

a furan containing compound content of 2-5 wt.%;

a humin compound content of 24,000-100,000 ppm;

an organic acid content of 0.2-0.7 wt%;

a homogenous acid;

a salt; and

a metal;

wherein the feed source has a pH of between 1-4 pH; and

processing the feed source within the thin-film evaporator to provide an isolated solid material comprising:

a moisture content of 0.3-2 wt.%;

a furan containing compound content of 0.9-5 wt.%;

a sugar content of 0.1-2 wt.%;

a dioxane content of 0.02-1 wt.%;

an ash content of 0.1-6 wt.%; and

wherein the isolated solid material further comprises a humin compound content,

wherein the organic acid is selected from the group consisting of levulinic acid, formic acid, acetic acid, and combinations thereof,

wherein the homogenous acid is selected from the group consisting of HCl, HBr, HI, H_2SO_4, H_3PO_4, oxalic acid, triflic acid, methane sulfonic acid, boron trihalides, and combinations thereof; and

wherein the furan containing compound is selected from the group consisting of 5-hydroxymethylfurfural, 5-hydroxymethyl-2-furancarboxylic acid, 2,5-furandicarboxylic acid, furfural, 2-furoic acid, furfuryl alcohol, and furyl hydroxymethylketone.

2. The process of Claim 1, further comprising washing and drying the isolated solid material to produce a washed and dried solid material.

3. The process of Claim 2, further comprising exposing the washed and dried solid material to a high temperature carbonization process to produce a carbonized solid material.

4. The process of anyone of Claims 1-3, wherein the thin-film evaporator is a horizontal thin film evaporator.

5. The process of any one of claims 1-3, wherein the thin-film evaporator is orientated at an angle between 0° to 90°, wherein 0° corresponds to the heated thin film evaporator being oriented straight down, toward the Earth's center of mass and 180° corresponds to the heated thin film evaporator being oriented straight up, away from the Earth's center of mass.

6. The process of any one of claims 1-3, wherein the salt is selected from the group consisting of sodium bromide, calcium bromide, sodium chloride, calcium chloride, potassium chloride, magnesium chloride, and combinations thereof.

7. A process for recovering solvent from a feed source, comprising:

providing a feed source to a thin-film evaporator, wherein the feed source comprises:

65-90 wt.% of a multicomponent solvent comprising water and a water-miscible aprotic organic solvent; and

10-35 wt. % of a dissolved dry residue comprising, in wt.% or ppm of the total feed source:

a sugar content of 30,000-120,000 ppm;

a furan containing compound content of 2-5 wt.%;

a humin compound content of 24,000-100,000 ppm;

an organic acid content of 0.2-0.7 wt%;

a homogenous acid;

a salt; and

a metal;

wherein the feed source has a pH of between 1-4 pH;

wherein the organic acid is selected from the group consisting of levulinic acid, formic acid, acetic acid, and combinations thereof,

wherein the homogenous acid is selected from the group consisting of HCl, HBr, HI, H_2SO_4, H_3PO_4, oxalic acid, triflic acid, methane sulfonic acid, boron trihalides, and combinations thereof; and

wherein the furan containing compound is selected from the group consisting of 5-hydroxymethylfurfural, 5-hydroxymethyl-2-furancarboxylic acid, 2,5-furandicarboxylic acid, furfural, 2-furoic acid, furfuryl alcohol, and furyl hydroxymethylketone; and

processing the feed source within the thin-film evaporator to provide a recovered solvent material comprising:

a sugar content of at most 500 ppm;

a furan containing compound content of at most 1.6 wt.%;

a humin compound content of 300-700 ppm;

an organic acid content of at most 2 wt.%.

8. The process of Claim 7, further comprising providing the recovered solvent material to a condenser.

9. The process of Claim 7, further comprising providing the recovered solvent material to a continuous distillation column.

10. The process of Claim 7, wherein the recovered solvent is further purified or isolated by fractional distillation.

11. The process of any one of Claims 7-10, wherein the thin-film evaporator is a horizontal thin film evaporator.

12. The process of any one of claims 7-10, wherein the thin-film evaporator is orientated at an angle between 0° to 90°, wherein 0° corresponds to the heated thin film evaporator being oriented straight down, toward the Earth's center of mass and 180° corresponds to the heated thin film evaporator being oriented straight up, away from the Earth's center of mass.

13. A composition of a solid material isolated from a feed source, comprising:

a furan containing compound content of 0.9-5 wt.%;

a sugar content of 0.1-2 wt.%;

a moisture content of 0.3-2 wt.%;;

a dioxane content of 0.02-1 wt.%;

an ash content of 0.1-6 wt.%;

wherein the feed source was processed within a thin-film evaporator, and

wherein the isolated solid material further comprises a humin compound content, and

wherein the furan containing compound is selected from the group consisting of 5-hydroxymethylfurfural, 5-hydroxymethyl-2-furancarboxylic acid, 2,5-furandicarboxylic acid, furfural, 2-furoic acid, furfuryl alcohol, and furyl hydroxymethylketone.

14. The composition of Claim 13, wherein the ash content is at most 1 wt.%.

15. The composition of Claim 13, wherein the ash content is at most 0.5 wt.%.

16. The composition of Claim 13, wherein the ash content is at most 0.1 wt.%.

17. A process for isolating humins from a feed source, comprising:

providing a feed source to a thin-film evaporator, wherein the feed source comprises:

a multicomponent solvent comprising water and a water-miscible aprotic organic solvent; and

a dissolved dry residue comprising a humin compound content;

wherein the feed source has a pH of between 1-4 pH; and

processing the feed source within the thin-film evaporator to provide an isolated solid material comprising:

a moisture content of 0.3-2 wt.%;

a furan containing compound content of 0.9-5 wt.%;

a sugar content of 0.1-2 wt.%;

a dioxane content of 0.02-1 wt.%;

an ash content of 0.1-6 wt.%; and

wherein the isolated solid material further comprises a humin compound content; and

wherein the furan containing compound is selected from the group consisting of 5-hydroxymethylfurfural, 5-hydroxymethyl-2-furancarboxylic acid, 2,5-furandicarboxylic acid, furfural, 2-furoic acid, furfuryl alcohol, and furyl hydroxymethylketone.

18. A process for recovering solvent from a feed source, comprising:

providing a feed source to a thin-film evaporator, wherein the feed source comprises:

a multicomponent solvent comprising water and a water-miscible aprotic organic solvent; and

a dissolved dry residue comprising a humin compound content;

wherein the feed source has a pH of between 1-4 pH; and

processing the feed source within the thin-film evaporator to provide a recovered solvent material comprising:

a sugar content of at most 500 ppm;

a furan containing compound content of at most 1.6 wt.%;

a humin compound content of 300-700 ppm; and

an organic acid content of at most 2 wt.%

wherein the organic acid is selected from the group consisting of levulinic acid, formic acid, acetic acid, and combinations thereof; and

wherein the furan containing compound is selected from the group consisting of 5-hydroxymethylfurfural, 5-hydroxymethyl-2-furancarboxylic acid, 2,5-furandicarboxylic acid, furfural, 2-furoic acid, furfuryl alcohol, and furyl hydroxymethylketone.