We Claim:

1. An ion exchange resin composition comprising:

(a) a metal-functionalized exchange resin comprising from 3 % to 94 % metal-functionalized active sites; and

(b) a non-metal-functionalized exchange resin comprising non-metal-functionalized active sites.

2. The ion exchange resin composition of claim 0, wherein the amounts of (a) and (b) correspond, within a ± 25% margin of error, to an iodide content and a corrosion metal content, respectively, in a crude acetic acid composition.

3. The ion exchange resin composition of claim 0, wherein the amounts of (a) and (b) correspond, within a ± 10% margin of error, to an iodide content and a corrosion metal content, respectively, in a crude acetic acid composition.

4. The ion exchange resin composition of claim 0, wherein the ratio of metal-functionalized active sites to non-metal-functionalized active sites corresponds to a molar ratio of iodides to corrosion metals in a crude acetic acid composition.

5. The ion exchange resin composition of claim 0, wherein the ratio of non-metal-functionalized active sites to metal-functionalized active sites ranges from 1:0.05 to 1:35.

6. The ion exchange resin composition of claim 0, wherein the ion exchange resin composition comprises at least 3 % metal-functionalized active sites, and at least 3 % non-metal-functionalized active sites

7. The ion exchange resin composition of claim 0, wherein the ion exchange resin composition comprises at least 10 % metal-functionalized active sites, and at least 10 % non-metal-functionalized active sites.

8. The ion exchange resin composition of claim 0, wherein the ion exchange resin composition comprises:

from 1 wt.% to 99 wt.% metal-functionalized exchange resin; and
from 1 wt.% to 99 wt.% non-metal-functionalized exchange resin.

9. The ion exchange resin composition of claim 0, wherein the ion exchange resin composition comprises:
from 10 wt.% to 90 wt.% metal-functionalized exchange resin; and
from 10 wt.% to 90 wt.% non-metal-functionalized exchange resin.

10. The ion exchange resin composition of claim 0, wherein the ion exchange resin composition comprises:
from 25 wt.% to 75 wt.% metal-functionalized exchange resin; and
from 25 wt.% to 75 wt.% non-metal-functionalized exchange resin.

11. The ion exchange resin composition of claim 0, wherein the ion exchange resin composition has a metal content ranging from 1 wt.% to 35 wt.%.

12. The ion exchange resin composition of claim 0, wherein the metal-functionalized exchange resin is functionalized with a metal selected from the group consisting of mercury, palladium, and rhodium.

13. The ion exchange resin composition of claim 0, wherein the metal-functionalized exchange resin is functionalized with silver.

14. The ion exchange resin composition of claim 0, wherein the ion exchange resin composition comprises a base resin selected from the group consisting of polystyrene, styrene/divinyl benzene polymer, polyvinyl pyrrolidone, polyvinyl pyridine, and macroreticulated strong acid cation exchange resins.

15. The ion exchange resin composition of claim 0, wherein the ion exchange resin composition comprises a base resin comprising styrene/divinyl benzene polymer, and wherein the metal-functionalized exchange resin is functionalized with silver.

16. The ion exchange resin composition of claim 0, wherein the metal-functionalized exchange resin comprises a first base resin and the non-metal functionalized exchange resin comprises a second base resin, different from the first base resin.

17. The ion exchange resin composition of claim 0, wherein the metal-functionalized exchange resin comprises a first base resin and the non-metal functionalized exchange resin comprises a second base resin, and wherein the first and second base resins are the same material.

18. A guard bed for purifying a crude acetic acid composition comprising iodides and corrosion metals, the guard bed comprising the ion exchange resin composition of claim 0.

19. A process for purifying a crude acetic acid composition comprising acetic acid, iodides, and corrosion metals, the process comprising:

contacting the crude acetic acid composition with an ion exchange resin composition comprising:

(a) a metal-functionalized exchange resin comprising from 3 % to 94 % metal-functionalized active sites; and

(b) a non-metal-functionalized exchange resin comprising non-metal-functionalized active sites;

to form a purified acetic acid product.

20. The process of claim 19, wherein the amounts of (a) and (b) correspond, within a ± 25% margin of error, to the iodide content and a corrosion metal content, respectively, in the crude acetic acid composition.

21. The process of claim 19, wherein the ratio of metal-functionalized sites to non-metal-functionalized sites corresponds, within a ± 25% margin of error, to the molar ratio of iodides to corrosion metals in the crude acetic acid composition.

22. The process of claim 19, wherein the ratio of non-metal-functionalized active sites to metal-functionalized active sites ranges from 1:0.05 to 1:35.

23. The process of claim 19, wherein the ion exchange resin composition comprises at least 3 % metal-functionalized active sites, and at least 3 % non-metal-functionalized active sites.

24. The process of claim 19, wherein the ion exchange resin composition comprises at least 10 % metal-functionalized active sites, and at least 10 % non-metal-functionalized active sites.

25. The process of claim 19, wherein the ion exchange resin composition comprises:
from 1 wt.% to 99 wt.% metal-functionalized exchange resin; and
from 1 wt.% to 99 wt.% non-metal-functionalized exchange resin.

26. The process of claim 19, wherein the ion exchange resin composition comprises:
from 10 wt.% to 90 wt.% metal-functionalized exchange resin; and
from 10 wt.% to 90 wt.% non-metal-functionalized exchange resin.

27. The process of claim 19, wherein the ion exchange resin composition comprises:
from 25 wt.% to 75 wt.% metal-functionalized exchange resin; and
from 25 wt.% to 75 wt.% non-metal-functionalized exchange resin.

28. The process of claim 19, wherein the metal content of the ion exchange resin composition ranges from 1 wt.% to 35 wt.%.

29. The process of claim 19, wherein the metal-functionalized exchange resin is functionalized with a metal selected from the group consisting of mercury, palladium, and rhodium.

30. The process of claim 19, wherein the metal-functionalized exchange resin is functionalized with silver

31. The process of claim 19, wherein the ion exchange resin composition comprises a base resin selected from the group consisting of polystyrene, styrene/divinyl benzene

polymer, polyvinyl pyrrolidone, polyvinyl pyridine, and macroreticulated strong acid cation exchange resins.

32. The process of claim 19, wherein the ion exchange resin composition comprises a base resin comprising styrene/divinyl benzene polymer, and wherein the metal-functionalized exchange resin is functionalized with silver.

33. The process of claim 19, wherein the metal-functionalized exchange resin comprises a first base resin and the non-metal functionalized exchange resin comprises a second base resin, different from the first base resin.

34. The process of claim 19, wherein the metal-functionalized exchange resin comprises a first base resin and the non-metal functionalized exchange resin comprises a second base resin, and wherein the first and second base resins are the same material.

35. The process of claim 19, wherein the ion exchange resin composition is provided in a guard bed.

36. The process of claim 19, wherein the contacting is conducted at a temperature ranging from 25 °C to 120 °C.

37. The process of claim 19, wherein at least 25 wt.% of the iodides and at least 25 wt.% of the corrosion metals are removed from the crude acetic acid product.

38. The process of claim 19, wherein the purified acetic acid product comprises:
less than 100 wppb iodides; and
less than 1,000 wppb corrosion metals.

39. The process of claim 19, wherein the crude acetic acid product is produced via a carbonylation method in which the concentration of water maintained in a liquid reaction composition ranges from 0.1 wt.% to 10 wt.%.

40. The process of claim 1, wherein the non-metal-functionalized exchange resin does not contain any metal-functionalized active sites.

41. The process of claim 19, wherein the non-metal-functionalized exchange resin does not contain any metal-functionalized active sites.

We claim:

1. An ion exchange resin composition comprising:
(a) a metal-functionalized exchange resin comprising from 3 % to 94 % metal-functionalized active sites; and
(b) a non-metal-functionalized exchange resin comprising non-metal-functionalized active sites.

2. The ion exchange resin composition of claim 1, wherein the amounts of (a) and (b) correspond, within a ± 25% margin of error, preferably within a ± 10% margin of error, to an
iodide content and a corrosion metal content, respectively, in a crude acetic acid composition;
and/or wherein the ratio of non-metal-functionalized active sites to metal-functionalized active sites ranges from 1:0.05 to 1:35.

3.. The ion exchange resin composition of claim 1, wherein the ion exchange resin composition comprises at least 3 % metal-functionalized active sites, preferably at least 10 % metal-functionalized active sites, and at least 3 % non-metal-functionalized active sites,
preferably at least 10 % metal-functionalized active sites.

4. The ion exchange resin composition of claim 1, wherein the ion exchange resin composition comprises:
from 1 wt.% to 99 wt.%, preferably from 10 wt.% to 90 wt.%, more preferably from 25 wt.% to 75 wt.%, metal-functionalized exchange resin; and from I wt.% to 99 wt.%, preferably from 10 wt.% to 90 wt.%, more preferably from 25
wt.% to 75 wt.% non-metal-functionalized exchange resin.

5. The ion exchange resin composition of claim 1, wherein the ion exchange resin composition has a metal content ranging from 1 wt.% to 35 wt.%.

6. The ion exchange resin composition of claim 1, wherein the metal-functionalized

exchange resin is functionalized with a metal selected from the group consisting of mercury,
palladium, silver, and rhodium; and/or wherein the ion exchange resin composition comprises a
base resin selected from the group consisting of polystvrene, stvrene/divinyl benzene polvmer,
polyvinyl pvrrolidone, polyvinyl pyridine, and macroreticulated strong acid cation exchange resins.

7. The ion exchange resin composition of claim 1, wherein the metal-functionalized exchange resin comprises a first base resin and the non-metal functionalized exchange resin
comprises a second base resin, different from the first base resin.

8. The ion exchange resin composition of claim 1, wherein the metal-functionalized exchange resin comprises a first base resin and the non-metal functionalized exchange resin
comprises a second base resin, and wherein the first and second base resins are the same
material.

9. A guard bed for purifying a crude acetic acid composition comprising iodides and corrosion metals, the guard bed comprising the ion exchange resin composition of claim 1.

10. A process for purifying a crude acetic acid composition comprising acetic acid, iodides,
and corrosion metals, the process comprising:
contacting the crude acetic acid composition with an ion exchange resin composition comprising:
(a) a metal-functionalized exchange resin comprising from 3 % to 94 % metal-functionalized active sites; and
(b) a non-metal-functionalized exchange resin comprising non-metal-functionalized active sites;

to form a purified acetic acid product.

11. The process of claim 10, wherein the ratio of metal-functionalized sites to non-metal-functionalized sites corresponds, within a ± 25% margin of error, to the molar ratio of iodides to corrosion metals in the crude acetic acid composition.

12. The process of claim 10, wherein at least 25 wt.% of the iodides and at least 25 wt.% of the corrosion metals are removed from the crude acetic acid product.

13. The process of claim 10, wherein the purified acetic acid product comprises:
less than 100 wppb iodides; and
less than 1,000 wppb corrosion metals.

14. The ion exchange resin composition of claim 1, wherein the non-metal-functionalized exchange resin does not contain any metal-functionalized active sites.

15.The process of claim 10, wherein the non-metal-functionalized exchange resin does not contain any metal-functionalized active sites.