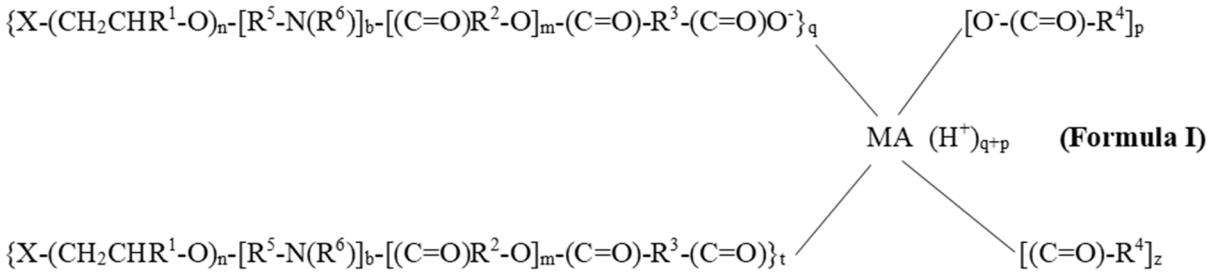
What is claimed is:

1. A dispersant of the following structure:



wherein

X is R-Q or a cyclic secondary amine, wherein when X is R-Q, R is a hydrocarbon chain containing 1 to 50 carbon atoms and Q is Oxygen, or NR^7, or NH, with the proviso that Q can only be NH when n is 0 and b is 0, and R^7 is a hydrocarbon chain containing between 1 and 18 carbon atoms;

R^1 is H, methyl, or ethyl;

R^5 is a hydrocarbon chain containing up to 3 carbon atoms;

R^6 is hydrogen, a hydrocarbyl group containing 1 to 22 carbon atoms, or the residue of an alkyl (meth)acrylate or (meth) acrylamide;

b is 0 or 1, with the proviso that b can only be 1 when both n and m are both at least 1;

R^2 is a hydrocarbon chain containing 1 to 15 carbon atoms or $-R^8(C=O)YR^9-$, where Y is O or NH or NR^{10}, R^8 is a hydrocarbon chain containing 1 to 10 carbon atoms, R^9 is a hydrocarbon chain containing 2 to 10 carbon atoms, and R^{10} is a hydrocarbon chain containing 1 to 20 carbon atoms;

n is any integer from 0 to 65 and m is any integer from 0 to 35, with the proviso that m + n is at least 3;

R^3 is a hydrocarbon containing between 2 and 80 carbons;

q and t are each at least 1;

MA is a polyamine species having a number average molecular weight of 600 to 10,000 g/mol;

R^4 is carbon chain containing between 1 and 4 carbons, preferably between 1 and 2; and

p + z is 0 or any integer from 1 to 200; and wherein the number average molecular weight is measured by ebullioscopic method.

2. The dispersant of claim 1, wherein X is R-Q and Q is Oxygen.

3. The dispersant of claim 1, wherein X is R-Q and Q is NR^7.

4. The dispersant of claim 1, wherein X is R-Q and Q is NH and n is 0 and b is 0.

5. The dispersant of claim 1, wherein X is a cyclic secondary amine, selected from piperidine, morpholine, 4-methylpiperidine, 4-phenylpiperidine, thiomorpholine, azetidine, 1-methylpiperazine, 2-methylpiperazine, and pyrrolidine and mixtures thereof.

6. The dispersant of any of claims 1 to 5, wherein R is a hydrocarbon chain containing 1 to 30 carbon atoms.

7. The dispersant of any of claims 1 to 6, wherein R is a branched or linear, saturated or unsaturated, alkyl, aryl, aralkyl, or alkylaryl hydrocarbon chain.

8. The dispersant of any of claims 1 to 7, wherein R further contains a halogen group.

9. The dispersant of any of claims 1 to 7, wherein R contains a heteroatom selected from N or O.

10. The dispersant of any of claims 1 to 7, wherein R^7 contains a functional group selected from the groups consisting of ether, ester, or amides.

11. The dispersant of any of claims 1 to 10, wherein R^6 is H.

12. The dispersant of any of claims 1 to 10, wherein R^6 is a hydrocarbon chain containing 1 to 22 carbon atoms.

13. The dispersant of any of claims 1 to 10, wherein R^6 is the residue of an alkyl (meth)acrylate or (meth)acrylamide.

14. The dispersant of any of claims 1 to 13, wherein R^2 is $-R^8(C=O)YR^9-$.

15. The dispersant of claim 14, wherein Y is NH.

16. The dispersant of claim 14, wherein Y is NR^{10} where R^{10} is a hydrocarbon chain containing 1 to 20 carbon atoms.

17. The dispersant of claim 16, wherein R^{10} includes an ester, ether, or amide group.

18. The dispersant of any of claims 1 to 13, wherein R^2 is a linear or branched, saturated or unsaturated, hydrocarbon chain containing 1 to 10 carbon atoms.

19. The dispersant of claim 18, wherein R^2 is a hydrocarbon chain containing 2 to 7 carbon atoms.

20. The dispersant of any of claims 1 to 13, wherein R^2 is a hydrocarbon chain containing 2 to 15 carbon atoms and includes an amide functional group having the formula, $-N(R^{11})-(C=O)-$, where R^{11} is H or a hydrocarbon chain containing 1 to 4 carbon atoms.

21. The dispersant of any of claims 1 to 20, wherein R^3 is a branched or linear, saturated or unsaturated hydrocarbon chain containing 2 to 20 carbon atoms.

22. The dispersant of any of claims 1 to 21, wherein MA has at least 4 amine groups.

23. The dispersant of any of claims 1 to 22 wherein MA comprises polyethyleneimine or modified polyethyleneimine.

24. The dispersant of claim 23, wherein the dispersant is modified by reacting the dispersant with (a) an isocyanate, lactone, epoxy, anhydride, cyclic carbonate, (meth)acrylate via Michael addition reaction, and/or a polymeric species having a group that reacts with a primary or secondary amine to form a salt or covalent bond, (b) an oxidizing species that

could convert the amine group to a nitric oxide, (c) a salification agent, or (d) a tertiary amine group of said multi-amine species or the dispersant containing the multi-amine species is reacted with a quaternization agent to form a quaternized amine group.

25. The dispersant of any of claims 1 to 24, wherein R^4 contains 1 or 2 carbon atoms.

26. The dispersant of any of claims 1 to 25, wherein q + t is any integer from 2 to 200.

27. The dispersant of claim26, wherein q + t is any integer from 2 to 150.

28. The dispersant of any of claims 1 to 27, wherein q is greater than or equal to t.

29. The dispersant of any of claims 1 to 28, wherein p + z is 0.

30. The dispersant of any of claims 1 to 28, wherein p + z is any integer from 1 to 200.

31. The dispersant of any of claim 30, wherein p + z is any integer from 2 to 200.

32. The dispersant of any of claims 1 to 31, wherein n is any integer from 1 to 65.

33. The dispersant of any of claims 1 to 31, wherein n is 0.

34. The dispersant of any of claims 1 to 33, wherein m is any integer from 1 to 35.

35. The dispersant of any of claims 1 to 32, where m is 0.

36. The dispersant of claim34, wherein m is 5 to 16.

37. The dispersant of any of claims 1 to 36, wherein m + n is 3 to 65.

38. The dispersant of any of claims 1 to 36, wherein m + n is 5 to 30.

39. The dispersant of any of claims 1 to 31, wherein b is 1 and m + n is at least 4.

40. A method of preparing a dispersant, wherein the method comprises the steps of:

(a) providing an alcohol terminated polymer of the formula:

$X\text{-}(CH_2CHR^1\text{-}O)_n[R^5\text{-}N(R^6)]_b\text{-}[(C=O)R^2\text{-}O]_m\text{-}H$, wherein

X is R-Q or a cyclic amine, where R is a hydrocarbon chain containing 1 to 50 carbon atoms and Q is O, or NR^7, or NH, with the proviso that X is only NH when n is 0 and b is 0,

R^7 is a hydrocarbon chain containing between 1 and 18 carbon atoms;

R^1 is H, methyl, or ethyl,

R^5 is a hydrocarbon chain containing up to 3 carbon atoms;

R^6 is hydrogen, a hydrocarbyl group containing 1 to 22 carbon atoms, or the residue of an alkyl (meth)acrylate or (meth) acrylamide;

b is 0 or 1, with the proviso that b can only be 1 when both n and m are both at least 1;

R^2 is a hydrocarbon chain containing 1 to 15 carbon atoms or $-R^8(C=O)YR^9-$, where Y is O or NH or NR^{10}, R^8 is a hydrocarbon chain containing 1 to 10 carbon atoms, R^9 is a hydrocarbon chain containing 1 to 10 carbon atoms, and R^{10} is a hydrocarbon chain containing 1 to 20 carbon atoms,

n is any integer from 0 to 65 and m is any integer from 0 to 35, with the proviso that m + n is at least 3;

(b) reacting the alcohol ended polymer with a cyclic anhydride to provide an acid terminated polymer;

(c) reacting the acid terminated polymer with a non-cyclic anhydride to provide a mixture of anhydrides;

(d) reacting the mixture of anhydrides with a polyamine species, wherein the polyamine species has a number average molecular weight of 600 to 10,000 to form a dispersant molecule; and wherein the number average molecular weight is measured by ebullioscopic method.