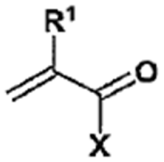
CLAIMS

We Claim:

1. A composition comprising a polymer derived from a condensation polymerization reaction of at least two monomers: acrylic-x and an alkylamine, wherein said acrylic-x has the following formula:



wherein X = OH and salts thereof or NHR^2 and
wherein R^1 and R^2 is H or an alkyl or aryl group, wherein the molecular weight of said polymer is between 500 to 200,000;
and wherein said polymer is modified to contain a functional group capable of scavenging one or more compositions containing one or more heavy metals.

2. The composition of claim 1, wherein the functional group contains a sulfide containing chemistry.

3. The composition of claim 1, wherein said functional group is a dithiocarbamate salt group and wherein said polymer has between 5 to 100 mole % of said dithiocarbamate salt group.

4. The composition of claim 1, wherein said alkylamine is at least one of the following: an ethyleneamine; a polyethylenepolyamine; a polyethyleneimine; ethylenediamine; diethylenetriamine; triethylenetetraamine; tetraethylenepentamine, and pentaethylenehexamine.

5. The composition of claim 1, wherein acrylic-x is at least one of the following: acrylic acid and salts thereof, methacrylic acid and salts thereof, acrylamide and methacrylamide.

6. The composition of claim 1, wherein the acrylic-x is acrylic acid or salts thereof and the alkylamine is pentaethylenehexamine or tetraethylenepentamine or diethylenetriamine or triethylenetetraamine or ethylenediamine, and wherein the molar ratio between acrylic-x and alkylamine is from 0.85 to 1.5.

7. The composition of claim 6, wherein the molecular weight of said polymer is from 1,500 to 8,000 and wherein the polymer is modified to contain more than 55 mole percent dithiocarbamic acid or salts thereof.

8. The composition of claim 1, wherein the acrylic-x is acrylamide and the alkylamine is pentaethylenehexamine or tetraethylenepentamine or diethylenetriamine or triethylenetetraamine or ethylenediamine, and wherein the molar ratio between acrylic-x and alkylamine is from 0.85 to 1.5.

9. The composition of claim 8, wherein the molecular weight of said polymer is 1,500 to 8,000 and wherein the polymer is modified to contain more than 55 mole percent dithiocarbamic acid or salts thereof.

10. The composition of claim 1 further comprising at least one metal selected from the group consisting of: copper, nickel, zinc, lead, mercury, cadmium, silver, iron, manganese, palladium, platinum, strontium, arsenic, cobalt, and gold.

11. The composition of claim 1 further comprising mercury.

12. The composition of claim 1 further comprising lead.

13. The composition of claim 1 further comprising cadmium.

14. The composition of claim 1 further comprising manganese.