Claims:

1. A coated filter membrane comprising:

a porous polymeric filter layer,

a crosslinked polyamide film coating surfaces of the porous polymeric filter layer, wherein the crosslinked polyamide film comprises a coagulated polyamide polymer that is soluble in a solvent other than formic acid or calcium chloride and is crosslinked on the polymeric filter layer with a free radical source material, and

residual free radical source material;

wherein the porous polymeric filter layer comprises a polyolefin, a polyhaloolefin, a polyimide, a polyetherimide, a polysulfone, a polyethersulfone, a polycarbonate, or a fluoropolymer and is a microporous filter membrane or an ultraporous filter membrane having a pore size in a range of from 0.001 to 10 microns, wherein the coated filter membrane is liquid permeable.

2. The coated filter membrane of claim 1, wherein the coagulated polyamide polymer comprises a backbone having a cyclic linkage.

3. The coated filter membrane of claim 2, wherein the cyclic linkage is a di-cyclohexenyl linkage.

4. The coated filter membrane of claim 1, wherein the coagulated polyamide polymer is derived from a linear monomer selected from caprolactam, and hexamethylenediamine adipate, and non-linear monomer selected from a cyclic reactive compound and a di-cyclic reactive compound.

5. The coated filter membrane of claim 4, wherein the non-linear monomer is 4,4-diamino-dicyclohexylmethane adipate.

6. The coated filter membrane of claim 1, wherein the membrane has a dye-binding capacity for methylene blue dye of at least 0.2 micrograms per milligram of the membrane.

7. The coated filter membrane of claim 1, wherein the porous polymeric filter layer has a porosity of from 50 percent to 98 percent.

8. The coated filter membrane of claim 1, wherein the porous polymeric filter layer is an ultraporous filter membrane having a pore size in a range from 0.001 to 0.05 microns.

9. The coated filter membrane of claim 1 having bubble point in a range from 2 to 400 psi, measured using HFE 7200, at a temperature of 20-25 degrees Celsius.

10. The coated filter membrane of claim 1, wherein the porous polymeric filter layer has a thickness in a range from 5 to 100 microns.

11. The coated filter membrane of claim 1, wherein the porous polymeric filter layer comprises a polymer selected from polyethylene and polypropylene.

12. The coated filter membrane of claim 1, wherein the porous polymeric filter layer is ultra high molecular weight polypropylene.

13. The coated filter membrane of claim 1, wherein the crosslinked polyamide film is resistant to propylene glycol methyl ether (PGME), propylene glycol methylether acetate (PGMEA), or cyclohexanone.

14. The coated filter membrane of claim 1, wherein the crosslinked polyamide film coating is porous.

15. The coated filter membrane of claim 1, wherein the crosslinked polyamide film coating is non-porous.

16. The coated filter membrane of claim 1, wherein the porous polymeric filter layer is an ultrahigh molecular weight polyethylene (UPE).

17. A filter cartridge that includes the membrane of claim 1.

18. A filter that includes the membrane of claim 1.

19. A method of using the coated filter membrane of claim 1, the method comprising passing solvent-based liquid through the membrane.

20. The method of claim 19, wherein the liquid comprises solvent selected from propylene glycol methyl ether (PGME), propylene glycol methylether acetate (PGMEA), and cyclohexanone.

21. A method of preparing a coated filter membrane of claim 1, the method comprising:

coating polymer solution onto a surface of a porous polymeric filter layer, wherein the porous polymeric filter layer comprises a polyolefin, a polyhaloolefin, a polyimide, a polyetherimide, a polysulfone, a polyethersulfone, a polycarbonate, or a fluoropolymer, the polymer solution comprising: polyamide polymer, solvent, and free-radical source material;

causing polyamide of the polymer solution to coagulate on the surface; and

crosslinking the polyamide, wherein the porous polymeric filter layer is a microporous filter membrane or an ultraporous filter membrane having a pore size in a range of from 0.001 to 10 microns.

22. The method of claim 21, wherein the solvent is selected from an aliphatic alcohol and a chlorinated hydrocarbon.

23. The method of claim 21, wherein the solvent is selected from methanol, ethanol, propanol, butanol, isopropanol, one or more chlorinated hydrocarbon, and combinations thereof.

24. The method of claim 21, wherein the solvent contains an amount of water.

25. The method of claim 21, wherein the solvent comprises propanol and up to 20 weight percent water based on total weight solvent.