

What is claimed is:

1. A composite membrane comprising a porous base membrane and a polyamide coating disposed on said porous base membrane, said polyamide coating comprising a C₃-C₈ cyclic carbonyl compound and a C₁-C₈ amide compound, said amide compound comprising at least one N-H moiety.

2. The composite membrane according to claim 1, wherein the porous base membrane is selected from the group consisting of polysulfone, polyethersulfone, polyester, polyphenyleneoxide, polyphenylenesulfide, polyvinyl chloride, polyacrylonitrile, polyvinylidene fluoride, polytetrafluoroethylene, polycarbonate, polyimide, polyetherimide, polyetherketone, and polyetheretherketone.

3. The composite membrane according to claim 1, wherein the porous base membrane is a porous polysulfone film.

4. The composite membrane according to claim 1, wherein the cyclic carbonyl compound is selected from the group consisting of cyclobutanone, cyclohexanone, cyclopentanone, butyrolactone, valerolactone, ethylene carbonate, and propylene carbonate.

5. The composite membrane according to claim 1, wherein the cyclic carbonyl compound is cyclohexanone.

6. The composite membrane according to claim 1, wherein the amide compound is selected from the group consisting of formamide, acetamide, propionamide, butyramide, and succinimide.

7. The composite membrane according to claim 1, wherein the amide compound is acetamide.

8. A method of preparing a composite membrane comprising:

contacting under interfacial polymerization conditions an organic solution comprising a polyacid halide with an aqueous solution comprising a polyamine, said contacting being carried out on a surface of a porous base membrane, said organic

solution further comprising a C₃-C₈ cyclic carbonyl compound, said aqueous solution comprising a C₁-C₈ amide compound, said amide compound comprising at least one NH moiety.

9. The method according to claim 8, wherein the porous base membrane is selected from the group consisting of polysulfone, polyethersulfone, polyester, polyphényleneoxide, polyphenylenesulfide, polyvinyl chloride, polyacrylonitrile, polyvinylidene fluoride, polytetrafluoroethylene, polycarbonate, polyetherketone, and polyetheretherketone.

10. The method according to claim 8, wherein the porous base membrane is a porous polysulfone membrane.

11. The method according to claim 8, wherein the cyclic carbonyl compound is selected from the group consisting of cyclobutanone, cyclohexanone, cyclopentanone, butyrolactone, valerolactone, ethylene carbonate, and propylene carbonate.

12. The method according to claim 8, wherein the cyclic carbonyl compound is cyclohexanone.

13. The method according to claim 8, wherein the amide compound is selected from the group consisting of formamide, acetamide, propionamide, butyramide, and succinimide.

14. The method according to claim 8, wherein the amide compound is acetamide.

15. The method according to claim 8, wherein said C₃-C₈ cyclic carbonyl compound is present in an amount corresponding to from about 0.1 to about 3.5 weight percent of a total weight of the organic solution.

16. The method according to claim 8, wherein said C₁-C₈ amide compound is present in an amount corresponding to from about 0.1 to about 3.5 weight percent of a total weight of the aqueous solution.

17. The method according to claim 8, wherein said organic solution comprises an aliphatic hydrocarbon solvent.

18. The method according to claim 8, wherein said polyacid halide comprises trimesoyl chloride.

19. The method according to claim 8, wherein said polyamine comprises meta-phenylene diamine.

20. A method of preparing a composite membrane comprising:

contacting under interfacial polymerization conditions an organic solution comprising an organic triacid chloride, an aliphatic hydrocarbon solvent, and cyclohexanone, with an aqueous solution comprising an aromatic diamine, water, and acetamide, said contacting being carried out on a surface of a porous polysulfone membrane, said cyclohexanone being present in an amount corresponding to from about 0.1 to about 3.5 weight percent of a total weight of the organic solution, said acetamide being present in an amount corresponding to from about 0.1 to about 3.5 weight percent of a total weight of the aqueous solution, said contacting being carried out at a temperature in a range from about 0°C to about 80°C.

CLAIMS

What is claimed is:

1. A method of preparing a composite membrane comprising:

contacting under interfacial polymerization conditions an organic solution comprising a polyacid halide with an aqueous solution comprising a polyamine, said contacting being carried out on a surface of a porous base membrane, wherein

the organic solution further comprises about 0.5 wt % butyrolactone, and the aqueous solution further comprises about 3 wt % acetamide; or

the organic solution further comprises about 2.5 wt % cyclohexanone, and the aqueous solution further comprises about 3 wt % formamide or about 3 wt % acetamide; or

the organic solution further comprises about 2.5 wt % cyclohexanone, and the aqueous solution further comprises about 5 wt % succinamide.

2. The method according to claim 1, wherein the porous base membrane is selected from the group consisting of polysulfone, polyethersulfone, polyester, polyphosphazene, polyphenylenesulfide, polyvinyl chloride, polyacrylonitrile, polyvinylidene fluoride, polytetrafluoroethylene, polycarbonate, polyetherketone, and polyetheretherketone.

3. The method according to claim 1, wherein the porous base membrane is a porous polysulfone membrane.

4. The method according to claim 1, wherein the organic solution further comprises about 2.5 wt % cyclohexanone, and the aqueous solution further comprises about 3 wt % formamide, about 3 wt % acetamide, or about 5 wt % succinamide.

5. The method according to claim 1, wherein the organic solution further comprises about 0.5 wt % butyrolactone or about 2.5 wt % cyclohexanone, and the aqueous solution further comprises about 3 wt % acetamide.

6. The method according to claim 1, wherein said polyacid halide comprises trimesoyl chloride.

7. The method according to claim 1, wherein said polyamine comprises meta-phenylene diamine.
8. The method according to claim 1, wherein the organic solution further comprises about 2.5 wt % cyclohexanone, and the aqueous solution further comprises about 3 wt % formamide.
9. The method according to claim 1, wherein the organic solution further comprises about 2.5 wt % cyclohexanone, and the aqueous solution further comprises about 5 wt % succinamide.
10. A method of preparing a composite membrane comprising:
contacting under interfacial polymerization conditions an organic solution comprising an organic triacid chloride, an aliphatic hydrocarbon solvent, and cyclohexanone, with an aqueous solution comprising an aromatic diamine, water, and acetamide, said contacting being carried out on a surface of a porous polysulfone membrane, said cyclohexanone being present in an amount corresponding to about 2.5 weight percent of a total weight of the organic solution, said acetamide being present in an amount corresponding to about 3 weight percent of a total weight of the aqueous solution, said contacting being carried out at a temperature in a range from about 0° C. to about 80° C.