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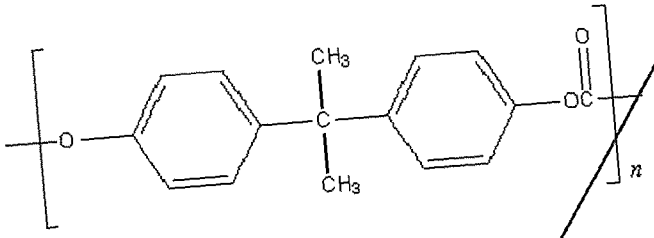

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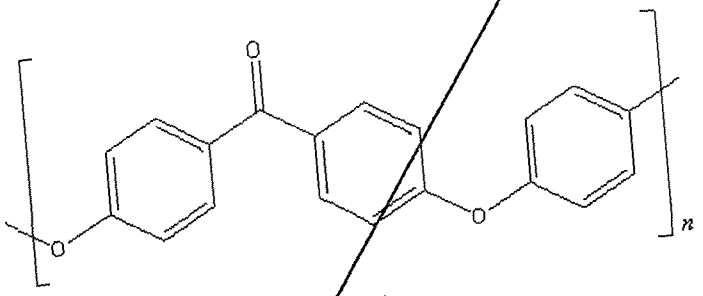

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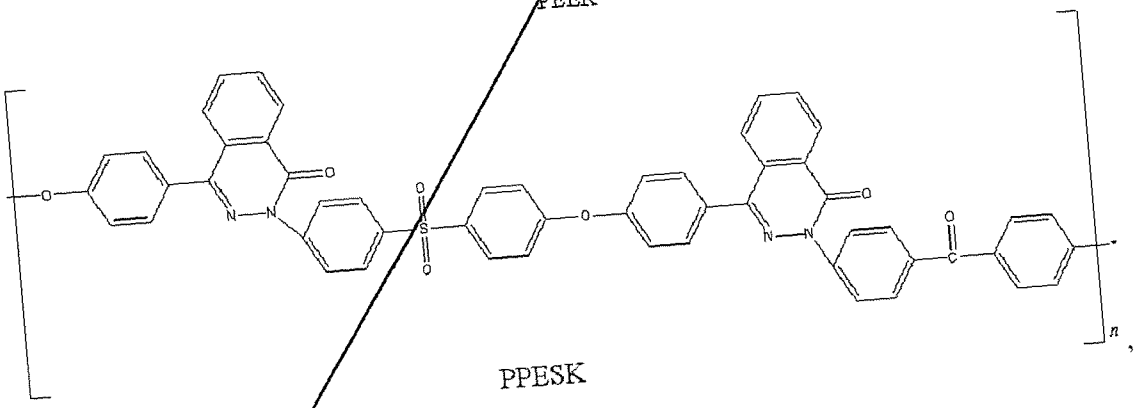

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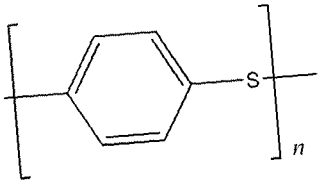
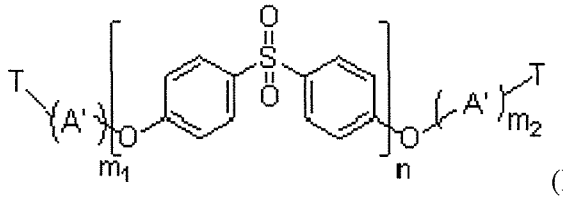


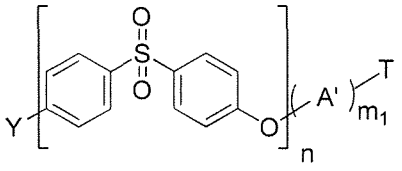
PPS ,

[0022] The number average molecular weight of the block copolymer is in the range of from about 5,000 to about 50,000 grams/mole, preferably about 10,000 to about 40,000 grams/mole.

[0023] In accordance with an embodiment, the copolymer is of the formula (Ia) or (Ib):



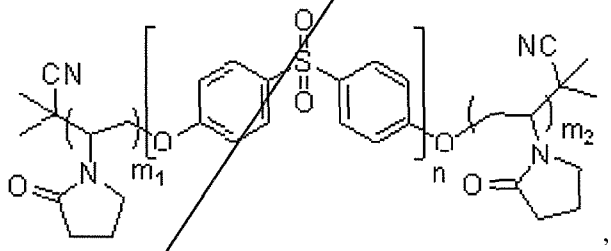
(Ia),



(Ib),

wherein A' is a polymeric segment of the hydrophilic monomer, T is an end group, and Y is chloro or fluoro.

[0024] Specific examples of the copolymer include:



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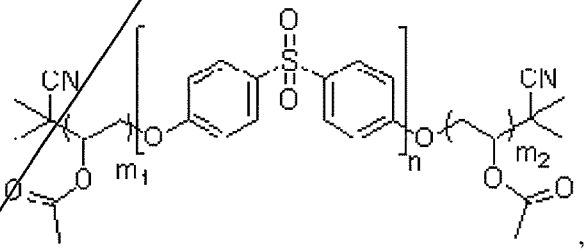

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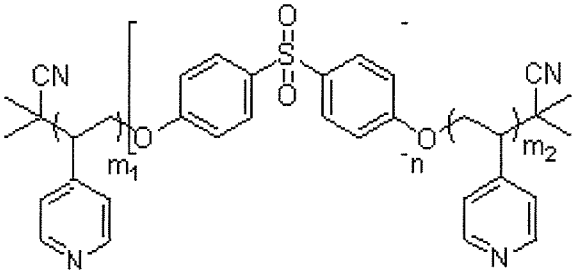
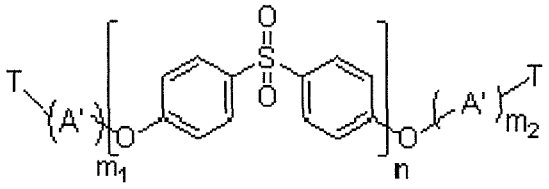
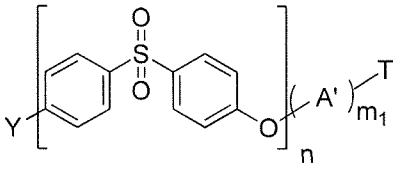


6. The self-wetting porous membrane of any one of claims 1-5, wherein the copolymer is of the formula (Ia):



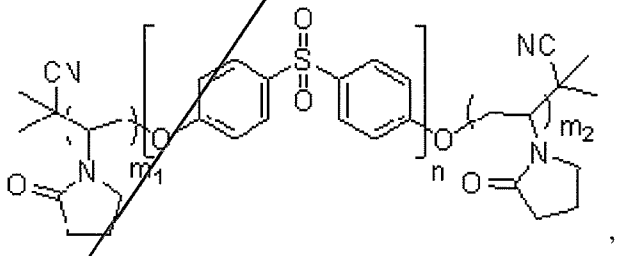
(Ia),



(Ib)

wherein A' is a polymeric segment of the hydrophilic monomer, T is an end group, and Y is chloro or fluoro.

7. The self-wetting porous membrane of any one of claims 1-6, wherein the copolymer is of the formula:



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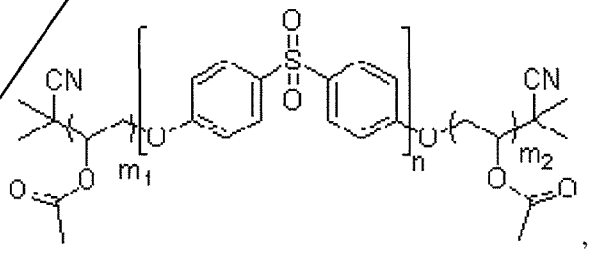

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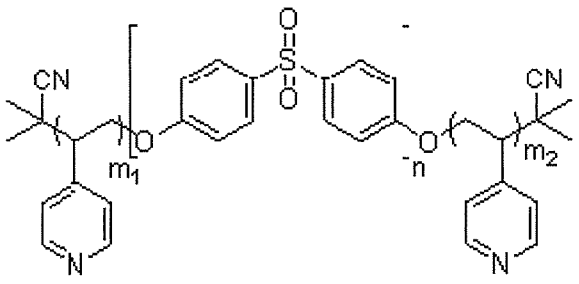


,

wherein m_1 or m_2 is from about 5 to about 80 and n is from about 20 to about 200.

8. A method of preparing a self-wetting porous membrane comprising:

(i) casting a solution comprising a solvent, an aromatic hydrophobic polymer, and a copolymer of formula A-B or A-B-A, wherein A is a hydrophilic segment comprising a polymerized monomer or mixture of monomers, wherein the monomer is of the formula (I):

$$CH_2=C(R^1)(R^2) \quad (I),$$

wherein R^1 is hydrogen or alkyl, and R^2 is selected from substituted or unsubstituted heterocyclyl, substituted or unsubstituted heteroaryl, formylamino, formylaminoalkyl, aminocarbonyl, alkylcarbonyloxy, and aminocarbonylalkyl substituted with a zwitterionic group,

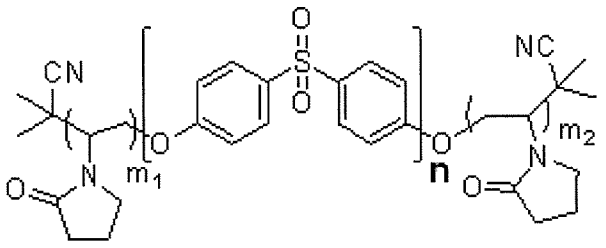
and B is polyethersulfone, wherein segments B and A are linked through an oxygen atom, to a desired shape;

(ii) subjecting the cast solution to phase inversion to form the self-wetting porous membrane; and

(iii) optionally rinsing the self-wetting porous membrane with water.

9. The method of claim 8, wherein R^1 is hydrogen or methyl, and R^2 is selected from pyrrolidinonyl, pyridinyl, imidazolyl, N-methylimidazolyl, formylamino, formylaminomethyl, aminocarbonyl, methylcarbonyloxy, and aminocarbonylpropyl substituted with a zwitterionic group.

10. The method of claim 8 or 9, wherein the monomer of A is selected from 1-vinylpyrrolid-2-one, N-[3-(dimethylamino)propyl]methacrylamide, vinyl acetate, 1-vinylimidazole, 1-vinyl-3-methylimidazole, 1-vinyl-2-pyridine, 1-vinyl-4-pyridine,



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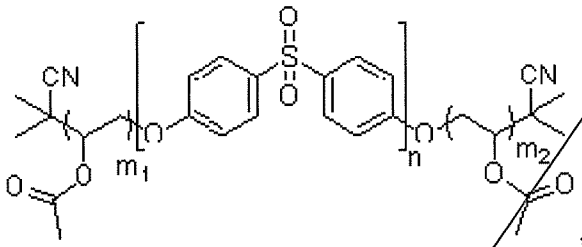

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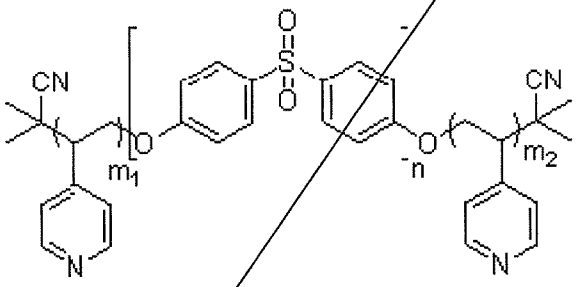
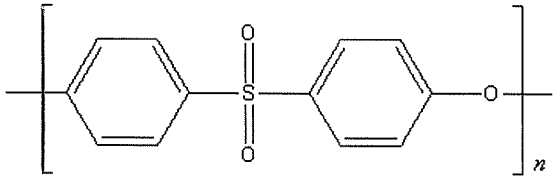


,

wherein m_1 or m_2 is from about 5 to about 80 and n is from about 20 to about 200.

16. A self-wetting porous membrane prepared by the method of any one of claims 8-15.

17. A method of filtering a fluid, the method comprising passing the fluid through the self-wetting porous membrane of any one of claims 1-7 or claim 16.



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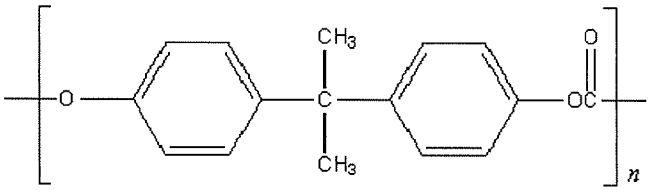

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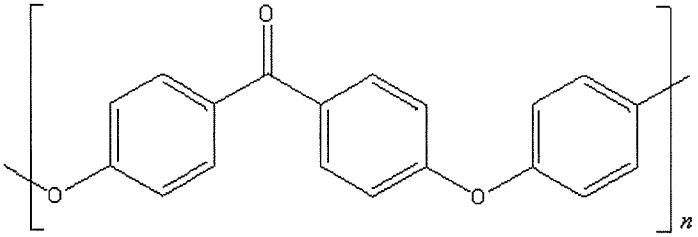

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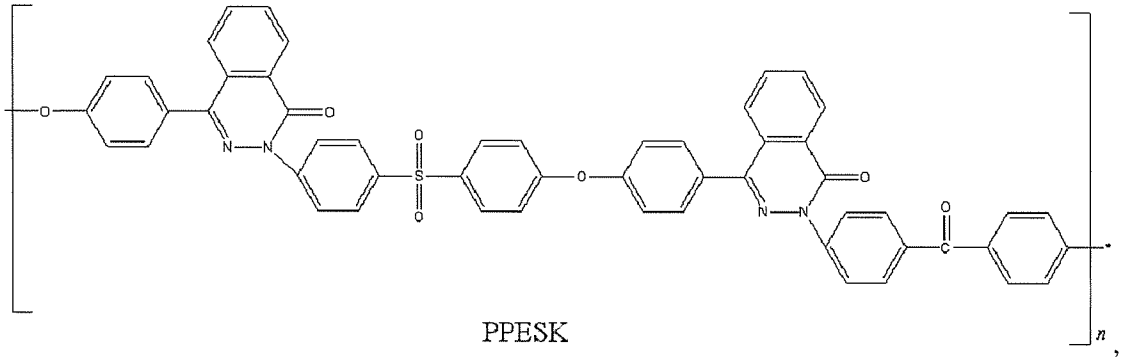

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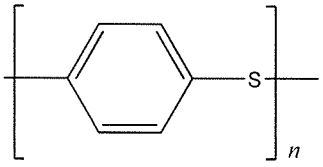

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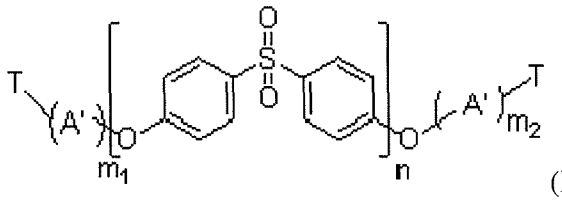
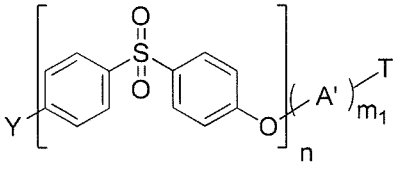
[0022] The number average molecular weight of the block copolymer is in the range of from about 5,000 to about 50,000 grams/mole, preferably about 10,000 to about 40,000 grams/mole.

[0023] In accordance with an embodiment, the copolymer is of the formula (Ia) or (Ib):



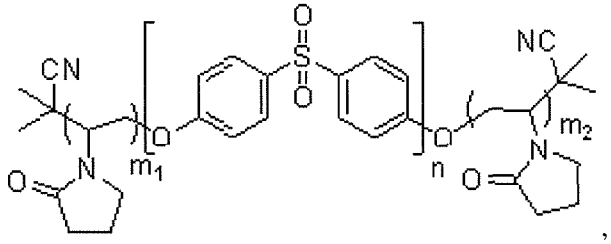
(Ia),



(Ib),

wherein A' is a polymeric segment of the hydrophilic monomer, T is an end group, and Y is chloro or fluoro.

[0024] Specific examples of the copolymer include:



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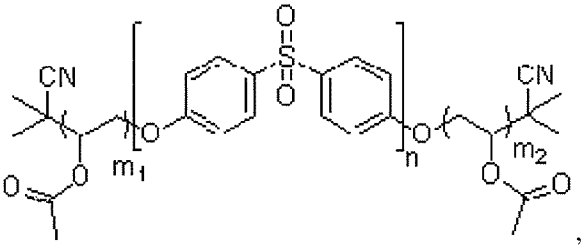

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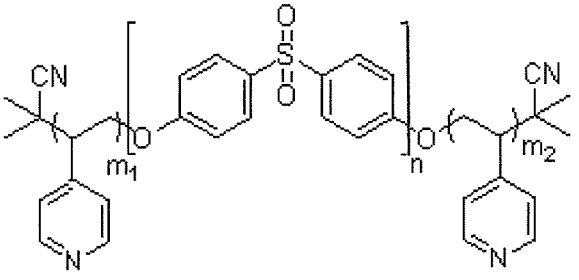
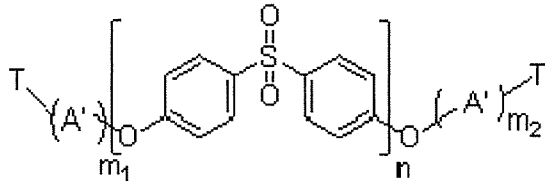
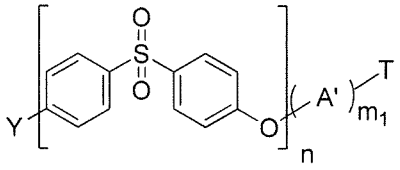


6. The self-wetting porous membrane of any one of claims 1-5, wherein the copolymer is of the formula (Ia):



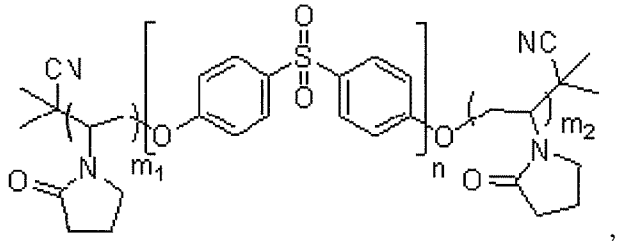
(Ia),



(Ib)

wherein A' is a polymeric segment of the hydrophilic monomer, T is an end group, and Y is chloro or fluoro.

7. The self-wetting porous membrane of any one of claims 1-6, wherein the copolymer is of the formula:



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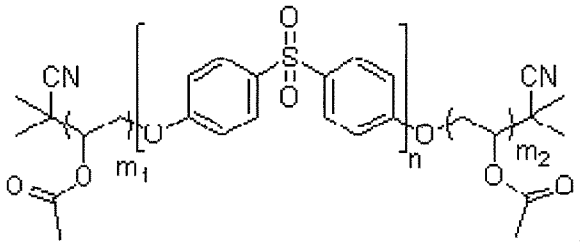

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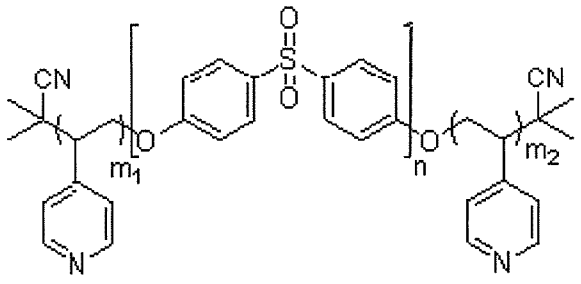


wherein m_1 or m_2 is from about 5 to about 80 and n is from about 20 to about 200.

8. A method of preparing a self-wetting porous membrane comprising:

(i) casting a solution comprising a solvent, an aromatic hydrophobic polymer, and a copolymer of formula A-B or A-B-A, wherein A is a hydrophilic segment comprising a polymerized monomer or mixture of monomers, wherein the monomer is of the formula (I):

$$CH_2=C(R^1)(R^2) \quad (I),$$

wherein R^1 is hydrogen or alkyl, and R^2 is selected from substituted or unsubstituted heterocyclyl, substituted or unsubstituted heteroaryl, formylamino, formylaminoalkyl, aminocarbonyl, alkylcarbonyloxy, and aminocarbonylalkyl substituted with a zwitterionic group,

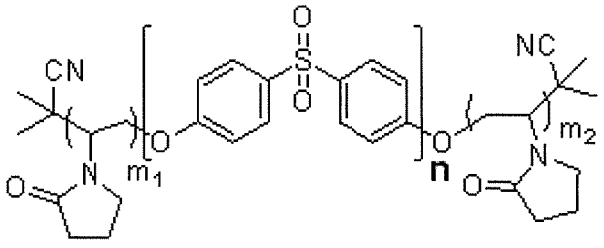
and B is polyethersulfone, wherein segments B and A are linked through an oxygen atom, to a desired shape;

(ii) subjecting the cast solution to phase inversion to form the self-wetting porous membrane; and

(iii) optionally rinsing the self-wetting porous membrane with water.

9. The method of claim 8, wherein R^1 is hydrogen or methyl, and R^2 is selected from pyrrolidinonyl, pyridinyl, imidazolyl, N-methylimidazolyl, formylamino, formylaminomethyl, aminocarbonyl, methylcarbonyloxy, and aminocarbonylpropyl substituted with a zwitterionic group.

10. The method of claim 8 or 9, wherein the monomer of A is selected from 1-vinylpyrrolid-2-one, N-[3-(dimethylamino)propyl]methacrylamide, vinyl acetate, 1-vinylimidazole, 1-vinyl-3-methylimidazole, 1-vinyl-2-pyridine, 1-vinyl-4-pyridine,



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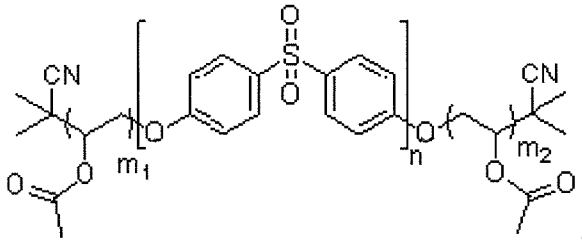

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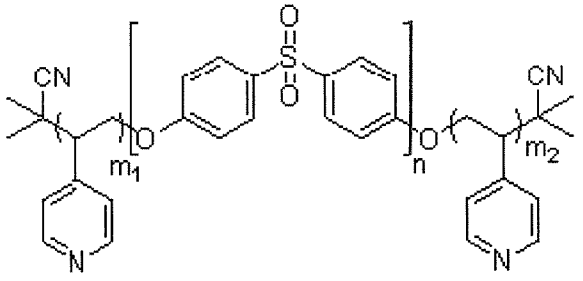

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wherein m_1 or m_2 is from about 5 to about 80 and n is from about 20 to about 200.

16. A self-wetting porous membrane prepared by the method of any one of claims 8-15.

17. A method of filtering a fluid, the method comprising passing the fluid through the self-wetting porous membrane of any one of claims 1-7 or claim 16.