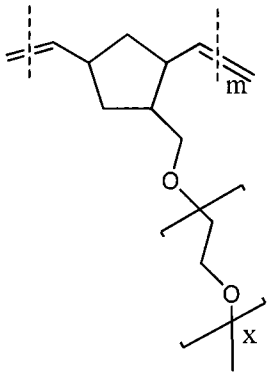
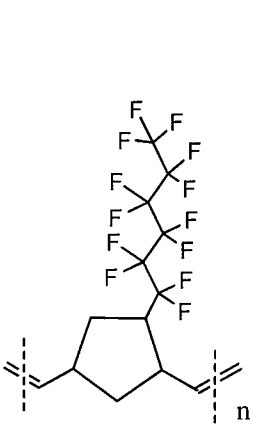
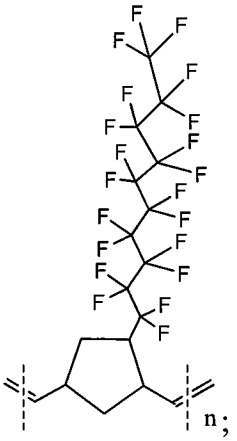
CLAIMS:

1. A composite hydrophilic porous membrane comprising a porous fluoropolymer support and a coating comprising a copolymer, wherein the copolymer comprises repeat units A and B, wherein A is of the formula:



and B is of the formula  or ;

wherein:

the copolymer is a block copolymer or a random copolymer;

x is 3 to about 10;

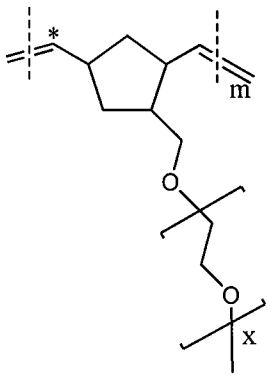
n and m, the number of repeat units B and A present in the copolymer, range from 1 to about 1000, provided the sum of n and m is equal to or greater than 10,

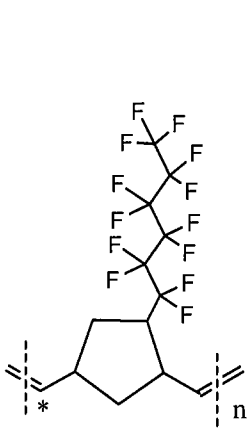
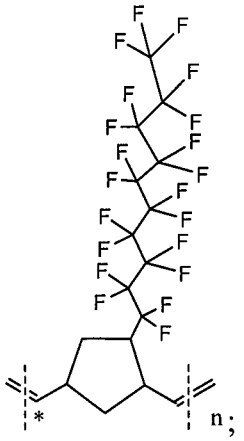
wherein the copolymer is optionally crosslinked.

2. The composite hydrophilic porous membrane of claim 1, wherein the copolymer has chain end groups selected from aryl groups and alkoxy groups.

3. The composite hydrophilic porous membrane of claim 1 or 2, wherein the copolymer is of one of the following formulae:

comprises repeat units A and B and one or more chelating or ion-exchange functionalities attached to one or more repeat units A, wherein A is of the formula:



and B is of the formula  or ;

wherein:

* is the point of attachment of the chelating or ion-exchange functionality;

the copolymer is a block copolymer or a random copolymer;

x is 3 to about 10;

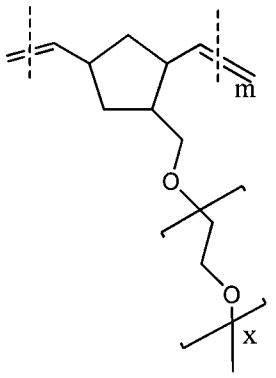
n and m, the number of repeat units B and A present in the copolymer, range from 1 to about 1000, provided the sum of n and m is equal to or greater than 10;

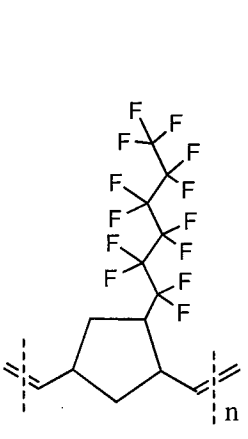
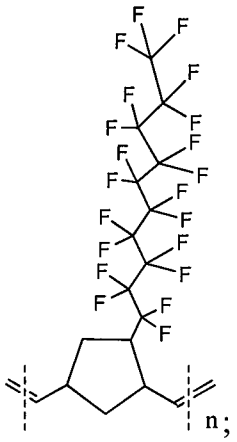
wherein the copolymer is optionally crosslinked.

7. The composite hydrophilic porous membrane of claim 6, wherein the copolymer has chain end groups selected from aryl groups and alkoxy groups.

8. The composite hydrophilic porous membrane of claim 6 or 7, wherein the chelating or the ion-exchange functionality is selected from carboxyl alkylthio, sulfonyl alkylthio, and glyceryl thio groups, and combinations thereof.

(ii) coating the porous fluoropolymer support with a solution comprising a solvent and a copolymer wherein the copolymer comprises repeat units A and B, wherein A is of the formula:



and B is of the formula  or ;

wherein:

the copolymer is a block copolymer or a random copolymer;

x is 3 to about 10;

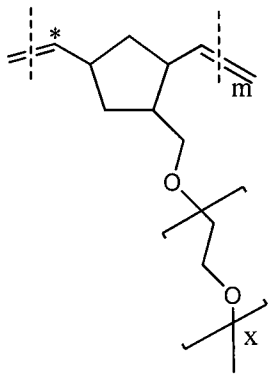
n and m, the number of repeat units B and A present in the copolymer, range from 1 to about 1000, provided the sum of n and m is equal to or greater than 10,

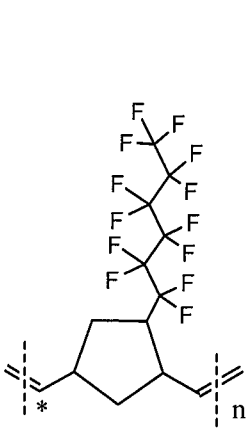
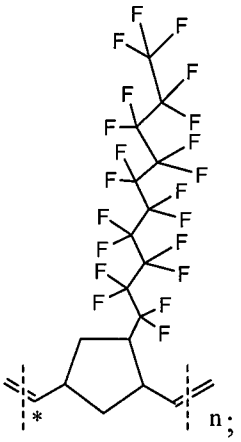
(iii) drying the coated support from (ii) to remove at least some of the solvent from the solution comprising said copolymer; and optionally

(iv) crosslinking said copolymer present in the coated membrane.

11. The method of claim 10, wherein the copolymer is of the formula:

chelating or ion-exchange functionalities attached to one or more repeat units A, wherein A is of the formula:



and B is of the formula  or ;

wherein:

* is the point of attachment of the chelating or ion-exchange functionality;

the copolymer is a block copolymer or a random copolymer;

x is 3 to about 10;

n and m, the number of repeat units B and A present in the copolymer, range from 1 to about 1000, provided the sum of n and m is equal to or greater than 10;

(iii) drying the coated support from (ii) to remove at least some of the solvent from the solution comprising said copolymer; and optionally

(iv) crosslinking said copolymer present in the coated membrane.

13. The method of claim 12, wherein the copolymer is of the formula: