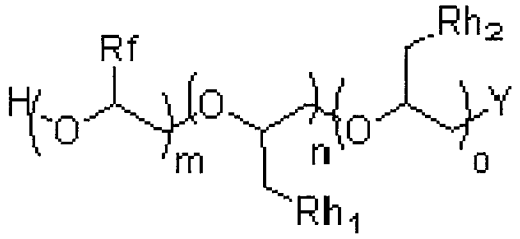
CLAIMS:

1. A hydrophilic porous membrane comprising polytetrafluoroethylene (PTFE) and an amphiphilic copolymer of formula (I):



(I)

wherein the amphiphilic copolymer is a random or block copolymer, Rf is a perfluoro-substituted group, wherein Rh_1 and Rh_2 are independently selected from hydroxyl, acyloxy, trifluoroacetyl, alkyloxy, chlorine, allyloxy, alkylthio, and alkylthiopropyloxy, wherein the alkyl portion of alkylthio and alkylthiopropyloxy are optionally substituted with hydroxyl, carboxylic acid, sulfonic acid, phosphonic acid, quaternary ammonium, alkylsulfonyl, or heterocyclyl, m and n are independently from 10 to 1000, o is 0 to 1000, and Y is hydroxyl.

2. The hydrophilic porous membrane of claim 1, wherein Rf is perfluoro-substituted alkyl, where alkyl chain may optionally contain one or more oxygen atoms in the chain.

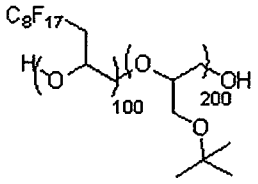
3. The hydrophilic porous membrane of claim 1 or 2, wherein Rf is C_pF_{2p+1}-$(CH_2)_q$ $(OCH_2)_r$, wherein p is 1 to 12, q is 0 to 3, and r is 0 to 2.

4. The hydrophilic porous membrane of claim 3, wherein Rf is independently selected from $C_8F_{17}CH_2$, $C_6F_{13}(CH_2)_2OCH_2$, $C_4F_9CH_2$ and CF_3.

5. The hydrophilic porous membrane of claim 4, wherein Rf is selected from $C_8F_{17}CH_2$ and $C_6F_{13}(CH_2)_2OCH_2$.

6. The hydrophilic porous membrane of claim 1, wherein Rh_1 and Rh_2 are selected from hydroxyl and trifluoroacetyl.

7. The hydrophilic porous membrane of claim 1, wherein the amphiphilic copolymer is selected from:



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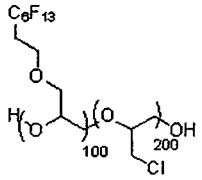

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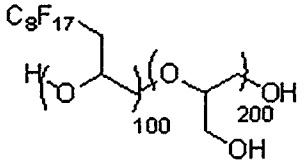

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8. A method of preparing a hydrophilic porous PTFE membrane comprising:

(i) preparing a blend comprising PTFE and a amphiphilic copolymer, and optionally a lubricant;

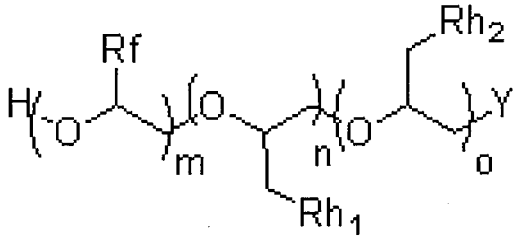
(ii) extruding the blend into a tape;

(iii) biaxially stretching the tape to obtain a hydrophilic porous membrane; optionally

(iv) reacting the hydrophilic porous membrane with an agent to modify the chemical structure of the amphiphilic copolymer; and optionally

(v) annealing the hydrophilic porous membrane;

wherein the amphiphilic copolymer is of formula (I):

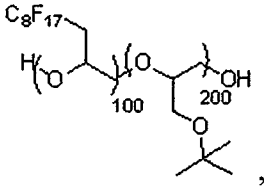


(I)

wherein the amphiphilic copolymer is a random or block copolymer, Rf is a perfluoro-substituted group, wherein Rh_1 and Rh_2 are independently selected from hydroxyl, acyloxy, trifluoroacetyl, alkyloxy, chlorine, allyloxy, alkylthio, and alkylthiopropyloxy, wherein the alkyl portion of alkylthio and alkylthiopropyloxy are optionally substituted with hydroxyl, carboxylic acid, sulfonic acid, phosphonic acid, quaternary ammonium, alkylsulfonyl, or heterocyclyl, m and n are independently from 10 to 1000, o is 0 to 1000, and Y is hydroxyl.

9. A method of filtering a fluid, the method comprising passing the fluid through the hydrophilic porous membrane of any one of claims 1-7.

10. The method of claim 8, wherein the amphiphilic copolymer is selected from:



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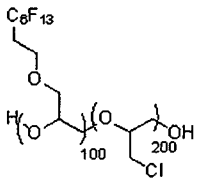

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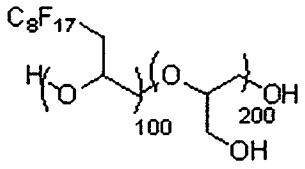

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