CLAIM(S):

1. An anion exchange porous medium comprising a porous support and a crosslinked cationic polymer coating disposed thereon,

wherein the cationic polymer of the crosslinked cationic polymer coating comprises a polymer comprising at least one polymerized monomer (A), at least one polymerized monomer (B), and at least one polymerized crosslinking agent, wherein said polymer has been quaternized with a quaternizing agent,

wherein

monomer (A) has the formula:

$CH_2=C(R^1)–C(=O)–NH–(CH_2)_n–NR^2R^3$, wherein n is 1-6, and

monomer (B) has the formula:

$CH_2=C(R^4)–C(=O)–NR^5R^6$,

wherein

R^1 and R^4 are independently H or C_1-C_6 alkyl, and

R^2, R^3, R^5, and R^6 are independently H, C_1-C_6 alkyl, C_6-C_{10} aryl, ~~C_1-C_2 alkoxy C_1-C_2 alkyl,~~ methoxy methyl, or triphenylmethyl;

the crosslinking agent is ~~an agent having two, three, or more epoxy groups,~~ is selected from the group consisting of ethylene glycol diglycidyl ether, propylene glycol diglycidyl ether, glyceryl triglycidyl ether, polyethylene glycol diglycidyl ether, and any combination thereof; and

the quaternizing agent is a monoglycidyl ether.

2. The anion exchange porous medium of claim 1, wherein R^1 is C_1-C_6 alkyl and R^4 is H.

3. The anion exchange porous medium of claim 1 or 2, wherein R^1 is methyl.

4. The anion exchange porous medium of any one of claims 1-3, wherein R^2 and R^3 are H, and R^5 and R^6 are independently C_1-C_6 alkyl,

5. The anion exchange porous medium of any one of claims 1-4, wherein R^2 and R^3 are H, and R^5 and R^6 are methyl.

6. The anion exchange porous medium of any one of claims 1-3, wherein R^2, R^3, R^5, and R^6 are independently H, methyl, phenyl, methoxy methyl, or triphenylmethyl.

7. The anion exchange porous medium of any one of claims 1-3, wherein R^2 and R^3 are H, and R^5 and R^6 are independently methyl, phenyl, methoxy methyl, or triphenylmethyl.

8. The anion exchange porous medium of any one of claims 1-7, wherein the crosslinked cationic polymer comprises two different polymerized monomers (A) and one polymerized monomer (B).

9. The anion exchange porous medium of any one of claims 1-7, wherein the crosslinked cationic polymer comprises two different polymerized monomers (A) and two different polymerized monomers (B).

10. The anion exchange porous medium of any one of claims 1-7, wherein the crosslinked cationic polymer comprises one polymerized monomer (A) and two different polymerized monomers (B).

11. The anion exchange porous medium of any one of claims 1-10, which is a membrane.

12. A method for producing an anion exchange porous medium comprising:

(i) polymerizing a monomer mixture comprising at least one monomer (A) and at least one monomer (B) to obtain a copolymer,

wherein

monomer (A) has the formula:

$CH_2=C(R^1)–C(=O)–NH–(CH_2)_n–NR^2R^3$, wherein n is 1-6, and

monomer (B) has the formula:

$CH_2=C(R^4)–C(=O)–NR^5R^6$

wherein

R^1 and R^4 are independently H or C_1-C_6 alkyl, and

R^2, R^3, R^5, and R^6 are independently H, C_1-C_6 alkyl, C_6-C_{10} aryl, ~~, C_1-C_2 alkoxy C_1-C_2 alkyl,~~methoxy methyl, or triphenylmethyl;

(ii) coating a solution of the copolymer obtained in (i) and a crosslinking agent selected from the group consisting of ethylene glycol diglycidyl ether, propylene glycol diglycidyl ether, glyceryl triglycidyl ether, polyethylene glycol diglycidyl ether, and any combination thereof~~, the crosslinking agent having two, three, or more epoxy groups,~~ on a porous support and crosslinking to obtain a crosslinked coating disposed on the porous support; and

(iii) quaternizing at least a portion of the amino groups present on the copolymer coating obtained in (ii) by reacting with a quaternizing agent selected from the group consisting of isopropyl glycidyl ether, phenyl glycidyl ether, tert-butyl glycidyl ether, ethylhexyl glycidyl ether, glycidyl methyl ether, and benzyl glycidyl ether.

13. The method of claim 12, wherein the crosslinking agent is ~~selected from the group consisting of ethylene glycol diglycidyl ether, propylene glycol diglycidyl ether, glyceryl triglycidyl ether,~~ polyethylene glycol diglycidyl ether~~, and any combination thereof~~.

14. A method of treating a fluid containing a desired protein and one or more negatively charged species, the method comprising contacting the fluid with the anion exchange porous medium of any one of claims 1-11 and recovering the desired protein with a reduced concentration of one or more of the negatively charged species.

15. The method of claim 14, wherein the fluid has a salt content such that the fluid exhibits an electrical conductivity of up to 30 mS/cm.

16. The method of claim 14 or 15, wherein the desired protein is an antibody.

17. The method of claim 14 or 15, wherein the desired protein is a biologic.

18. The anion exchange porous medium of any one of claims 1-7, wherein the crosslinking agent is ~~selected from the group consisting of ethylene glycol diglycidyl ether, propylene glycol diglycidyl ether, glyceryl triglycidyl ether,~~ polyethylene glycol diglycidyl ether~~, and any combination thereof~~.

19. The anion exchange porous medium of any one of claims 1-7, wherein the quaternizing agent is selected from the group consisting of isopropyl glycidyl ether, phenyl glycidyl ether, tert-butyl glycidyl ether, ethylhexyl glycidyl ether, glycidyl methyl ether, benzyl glycidyl ether, and any combination thereof.