Claims

1. A liquid filtering structure comprising a filtering layer, the filtering layer comprising:

a plurality of nanopores comprising radicals on the internal walls of the nanopores; and

a functional group-containing compound comprising functional groups,

wherein the nanopores penetrate the filtering layer in a thickness direction of the filtering layer and have a minimum diameter of 10 nm or less, and

the functional group-containing compound is chemically combined with the radicals on the internal walls of the nanopores.

2. The liquid filtering structure of claim 1, wherein the nanopore has a bottleneck shape in the thickness direction of the filtering layer.

3. The liquid filtering structure of claim 2, wherein the nanopore has a tapered shape in the thickness direction of the filtering layer.

4. The liquid filtering structure of claim 1, wherein the nanopore structure unit is made of one or more types of materials selected from a polymer, a copolymer, an organic compound, an inorganic compound, a metal compound, and a carbon compound.

5. The liquid filtering structure of claim 4, wherein the copolymer comprises one or more types selected from PS-b-PAA, PS-b-PEO, PS-b-PLA, PS-b-PMMA, PS-b-PB, and PS-b-PVP.

6. The liquid filtering structure of claim 1, wherein at least part of the filtering layer has a thickness of 100 nm or less.

7. The liquid filtering structure of claim 1, wherein the functional group-containing compound comprises functional groups having selectivity for water molecules.

8. The liquid filtering structure of claim 1, wherein functional groups of the functional group-containing compound comprise one or more types of functional groups having positive charges and negative charges.

9. The liquid filtering structure of claim 1, wherein functional groups of the functional group-containing compound comprise one or more types of polar and non-polar functional groups.

10. The liquid filtering structure of claim 1, wherein the functional group-containing compound comprises one or more arginine (R)-phenylalanine (F) units.

11. The liquid filtering structure of claim 1, wherein the liquid

comprises water.

12. The liquid filtering structure of any one of claims 1 to 11, further comprising a porous support layer supporting the filtering layer.

13. The liquid filtering structure of claim 12, wherein the filtering layer is embedded in the porous support layer.

14. The liquid filtering structure of claim 12, wherein the porous support layer is made of a polymer, anodized aluminum, or monochloroacetic acid.

15. The liquid filtering structure of claim 14, wherein the polymer comprises one or more types selected from, for example, polysulfone, polyethersulfone, polyphenylsulfone, polyetherethersulfone, polyetherketone, polyetheretherketone, polyphenylene ether, polydiphenylphenylene ether, polyvinylene cellulose acetate, cellulose diacetate, cellulose triacetate, polyphenylene sulfide, nitrocellulose, acetylated methylcellulose, polyacrylonitrile, polyvinyl alcohol, polycarbonate, organic siloxane carbonate, polyester carbonate, organic polysiloxane, polyethylene oxide, polyamide, polyimide, polyamideimide, and polybenzimidazole.

16. The liquid filtering structure of claim 12, wherein the porous support layer has a thickness of 40 to 100 μm.