However, these membranes do not exhibit entirely satisfactory behavior regarding permeability properties. Indeed, the permeability losses during filtration tests on river water are relatively large.

It would therefore be advantageous to provide an additive for manufacturing polymeric filtration membranes such that said membranes have improved permeability properties.

Summary

In one aspect of the present disclosure, there is provided an amphiphilic diblock copolymer consisting of:

- from 45 to 55% by weight, relative to the weight of the copolymer, of a hydrophilic block comprising at least one unit derived from an n-butyl acrylate monomer and at least one unit derived from a hydroxyethyl methacrylate monomer, and
- from 45 to 55% by weight, relative to the weight of the copolymer, of a hydrophobic block comprising at least one unit derived from a methyl methacrylate monomer.

In another aspect of the present disclosure, there is provided a use of a copolymer disclosed herein as additive for the manufacture of a polymeric filtration membrane.

In a further aspect of the present disclosure, there is provided a polymeric membrane, characterized in that it comprises at least one hydrophobic polymeric matrix and at least one copolymer disclosed herein.

In another aspect of the present disclosure, there is provided a use of a polymeric membrane disclosed herein, for the treatment of effluents, in particular water.

Description

Therefore, a subject of the present invention is an amphiphilic diblock copolymer consisting of:

- from 40 to 60% by weight, relative to the weight of the copolymer, of a hydrophilic block comprising at least one unit derived from an n-butyl acrylate monomer and at least one unit derived from a hydroxyethyl methacrylate monomer, and

- from 40 to 60% by weight, relative to the weight of the copolymer, of a hydrophobic block comprising at least one unit derived from a methyl methacrylate monomer.

Another subject of the present invention is the use of the copolymer according to the invention as additive for the manufacture of a polymeric filtration membrane.

Another subject of the present invention is a polymeric membrane comprising at least one hydrophobic polymeric matrix and at least one copolymer according to the invention.

Finally, a subject of the invention is the use of said polymeric membrane comprising at least one copolymer according to the invention for the treatment of effluents such as water.

Other advantages and characteristics of the invention will become more clearly apparent on examining the detailed description and the appended drawings, in which:

- figure 1A is a schematic representation of a filtration membrane comprising several copolymers according to the invention;
- figure 1B is a close-up of figure 1A representing copolymers according to the invention, consisting of a hydrophilic block and a hydrophobic block anchored in the filtration membrane;
- figures 2 and 3 are graphs illustrating the permeability losses as a function of the filtered volume of filtration membranes.

CLAIMS

1. An amphiphilic diblock copolymer consisting of:

- from 45 to 55% by weight, relative to the weight of the copolymer, of a hydrophilic block comprising at least one unit derived from an n-butyl acrylate monomer and at least one unit derived from a hydroxyethyl methacrylate monomer, and
- from 45 to 55% by weight, relative to the weight of the copolymer, of a hydrophobic block comprising at least one unit derived from a methyl methacrylate monomer.

2. The copolymer as claimed in claim 1, characterized in that the content of said hydrophilic block of said copolymer is, relative to the weight of the copolymer, 50% by weight.

3. The copolymer as claimed in claim 1 or 2, characterized in that the content of said hydrophobic block of said copolymer is, relative to the weight of the copolymer, 50% by weight.

4. The copolymer as claimed in any one of the preceding claims, characterized in that said hydrophilic block is composed of a statistical copolymer containing at least one unit derived from an n-butyl acrylate monomer and at least one unit derived from a hydroxyethyl methacrylate monomer.

5. The copolymer as claimed in any one of the preceding claims, characterized in that said hydrophilic block comprises:

- from 50 to 99% by weight, preferentially from 70 to 95% by weight, of units derived from an n-butyl acrylate monomer, relative to the weight of said hydrophilic block, and
- from 1 to 50% by weight, preferentially from 5 to 30% by weight, of units derived from a hydroxyethyl methacrylate monomer, relative to the weight of said hydrophilic block.

6. The copolymer as claimed in any one of the preceding claims, characterized in that said hydrophobic block comprises at least 50% by weight of polymethyl methacrylate, preferentially at least 70% by weight, more preferentially at least 90% by weight, relative to the weight of said hydrophobic block.

7. The copolymer as claimed in any one of the preceding claims, characterized in that said copolymer is a (poly-n-butyl acrylate - co -