- the random or gradient copolymer is prepared by controlled radical polymerization,

- the random or gradient copolymer is prepared by nitroxide-controlled radical polymerization,

- the nitroxide is N-(tert-butyl)-1-diethylphosphono-2,2-dimethylpropyl nitroxide,

- the block copolymer is chosen from linear or star diblock copolymers or triblock copolymers,

- the block copolymer comprises at least one PLA block and at least one PDMS block,

- the random or gradient copolymer comprises methyl methacrylate and styrene,

- the annealing treatment is obtained by thermal or solvent-vapor treatment or microwave treatment.

[0024a] In another aspect, there is provided a film obtained by means of the process as defined above.

[0025] The disclosure also relates to the use of a film obtained by means of the process previously described, as a mask for lithography applications, a support for discretized information storage or guides for the formation of inorganic structures.

[0025a] In another aspect, there is provided the use of a film as defined above, as a mask for lithography applications or a support for the localization of magnetic particles for information storage or guides for the formation of inorganic structures.

[0026] The disclosure also relates to the use of a film obtained by means of the process previously described, as a porous membrane or a catalyst support.

[0026a] In another aspect, there is provided the use of a film as defined above, as a porous membrane or a catalyst support after elimination of one of the domains of the block copolymer.

8. The process as claimed in any one of the preceding claims, characterized in that the block copolymer comprises at least one PLA block and at least one PDMS block.

9. The process as claimed in claim 5, characterized in that the random or gradient copolymer comprises methyl methacrylate and styrene.

10. The process as claimed in any one of the preceding claims, characterized in that the annealing treatment is obtained by thermal or solvent-vapor treatment or microwave treatment.

11. A film obtained by means of the process as claimed in claims 1 to 10.

12. The use of a film as claimed in claim 11, as a mask for lithography applications or a support for the localization of magnetic particles for information storage or guides for the formation of inorganic structures.

13. The use of a film as claimed in claim 11, as a porous membrane or a catalyst support after elimination of one of the domains of the block copolymer.