

## Review of surface modification of nanoporous polyethersulfone membrane as a dialysis membrane

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### Abstrak

Nanoporous polyethersulfone (PES) membrane is widely used as a filtration membrane in hemodialysis systems. Unfortunately, it has low blood compatibility, and induces blood clots that adhere to the membrane's surface during dialysis treatment. This paper reports on a review of surface modification that is used to improve the PES membrane's blood compatibility. The method consists of applying two coating materials, in the form of parylene and fluorinated diamond-like carbon (F-DLC) films, onto the membrane's surface. The parylene film is deposited on the diffusion layer of the membrane surface using glycerin liquid, while the F-DLC film is specially coated on the supporting layer of the membrane. The unique property of parylene, which has the characteristics of conformal coating, prevents the parylene from being coated on the supporting layer of the membrane. Conversely, F-DLC film, which is hard, fragile and has a less conformal coating than parylene, is only meant to be coated on the supporting layer. Finally, the coated membranes, along with the bare PES membrane, are compared and investigated under a long-term diffusion test to assess their permeability and blood compatibility. The experiment results show that both coating materials have the capacity to improve the membrane's blood compatibility in different ways.