9. The composite hydrophilic porous membrane of any one of claims 1-5, wherein the porous fluoropolymer support is selected from PTFE, PVDF, PVF (polyvinyl fluoride), PCTFE (polychlorotrifluoroethylene), FEP (fluorinated ethylene-propylene), ETFE (polyethylenetetrafluoroethylene), ECTFE (poly ethylenechlorotrifluoroethylene), PFPE (perfluoropolyether), PFSA (perfluorosulfonic acid), and perfluoropolyoxetane.

10. A method of filtering a fluid, the method comprising passing the fluid through the porous membrane of any of claims 1-5 or 9.

11. The hydrophilic porous membrane of any one of claims 1-5 or 9, which is configured in a planar, flat sheet, pleated, tubular, spiral, or hollow fiber configuration.