

**L-CO₂ based coating for modification of poly(vinylidene) fluoride ultrafiltration membrane:
The study of monomer concentration effect**

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Membrane fouling due to adsorption and accumulation of proteins, cells, colloids and other rejected NOM on the top surface and in the internal pore wall of the membrane causes decrease in flux, increase in energy demand for filtration and increase in operational and maintenance costs. Hydrophilicization of conventional hydrophobic PVDF has been done by inducing crosslinking reaction of PEGDA on the surface/pore of the PVDF membrane in L-CO₂ with AIBN as radical polymerization initiator. The effect of PEGDA concentration on the surface composition was characterized in detail using XPS, FT-IR, EPMA, SEM while the performance of the modified membrane was measured by conducting flux test in dead end filtration apparatus by flowing DDI water and BSA solution as a protein model. The results were compared with pristine PVDF and commercial hydrophilic PvDF. The results show that in the presence of protein, modified membrane has higher flux compared with pristine PvDF and even commercial hydrophilic PvDF. It also showed better internal fouling resistance.