Response to Reviewer 1 Comments

Title: Open pore ultrafiltration hollow fiber membrane fabrication method visa dual pore former with dual dope solution phase

We are very grateful to the Editor and the reviewers for the valuable suggestions and constructive comments, which have helped us improve the quality of the manuscript. Our detailed responses to the reviewers' comments follow below and revisions in the manuscript text are highlighted in yellow.

Reviewer #1: *This work fabricated dual-layer hollow fiber membranes for ultrafiltration experiments. Some interesting and significant works were carried out in this work. However, this manuscript suffers from some shortcomings. And some improvements should be made before the paper meets the requirement for publication. The authors should pay more attention to the following points.*

Point 1: More work is needed to improve the level of English throughout the entire manuscript.

Response 1: We have improved English for the whole manuscript (MS). The revisions/corrections were highlighted in the revised MS.

Point 2: Does the molecular weight of PEG affect the membrane structure and performance?

Response 2: We appreciate this question. It has been reported that the molecular weight of PEG can affect the membrane structure and performance of UF membranes (JMS, 2006, p. 920-927; JMS, 2008, p. 209-221; Desalination, 2011, p.51-58). These works just focused on fabricating a single layer of HF membrane. Their study indicated that pure water permeability and porosity of membranes increase with an increase in molecular weight of PEG; however, adding a high MW of PEG can result in larger pore size of the skin layer; thus, decreasing a BSA rejection. MW of PEG plays a substantial role in precipitation. With an increase in the molecular weight of PEG, more PEG molecules are permanently trapped in the membrane because of their lower mobility after phase separation in the coagulation bath. As a result, the polymer lean phase becomes less in quantity and larger in vacancy which results in the formation of larger pores in the skin layer. For our study, although PEG is used in the outer layer, PEG can also diffuse into the inner side and cause affecting on the properties of the inner surface (pore size). A low MW of PEG (400 Da) is

selected for study to obtain a higher BSA rejection (less BSA loss), which is favorable for hemodialysis. However, we also acknowledge the reviewers' question, this fact helps us think about further investigating the effect of different PEG on the properties of an outer layer in a dual-layer HF membrane.

Point 3: Error bars should be added in Figure 8.

Response 3: Thanks for your helpful suggestion. We just conducted a duplicate experiment. Therefore, the value shown in Figure is average. Typically, for statistical data, an error bar should be added as a triplicate experiment is conducted.

Point 4: How about the service life of the membrane?

Response 4: We acknowledge this comment. Testing the cycle stability of the hollow fiber membranes is just for the application to water treatment/water desalination, which can indicate the service life of the membrane. However, we aim to fabricate the membrane for the hemodialysis application. Typically, a dialyzer (hemodialysis membrane) is used only once per patient during treatment (for 4-6 h operation). This operation is also clarified by previous works studying hemodialysis membranes in clinical tests. Therefore, based on the experiment of urea clearance, our membrane is totally to meet this requirement.

Point 5: Some comparison between the results in this work and those reported in literature should be added.

Response 5: Thanks for your nice suggestion. Comparisons with the previous works have been added and discussed in MS in terms of PWP

- ⇨ This modification can be found on page 21 (lines 404-407).