

Biomimetic seaweed absorbable membrane for dye adsorption in wastewater treatment

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1. BSAM has super hygroscopicity. When taking a scanning electron microscope, in order to ensure that its structure is not damaged as much as possible, after freeze-drying, it should be wrapped with plastic wrap. If it cannot be sprayed with gold immediately, it should be put in a drying oven. Try not to let it touch the air as much as possible, immediately spray gold and take a scanning electron microscope.
2. After the film is accidentally squeezed, the surface thickness of the film is not uniform, and it is interesting that some places are shaped like fish heads.

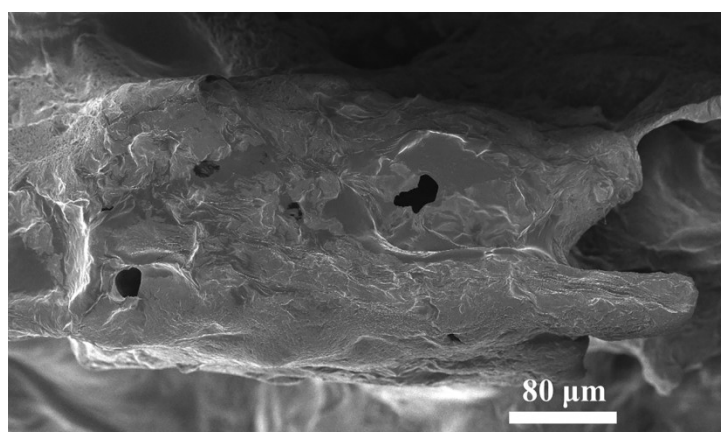


Figure S1: Scanning electron microscope images of some sections.

3. After BSAM adsorbs dye solution, it is easy to lose the solution by

filtering this part. Among them, there will be a few drops of water in the suction bottle that can't be completely dried during the suction filtration process, but because of its small amount, it has little influence on the final tested performance.

4. When the concentration of rhodamine 6G is large, the UV-vis curve is prone to be abnormal, as shown in the following figure:

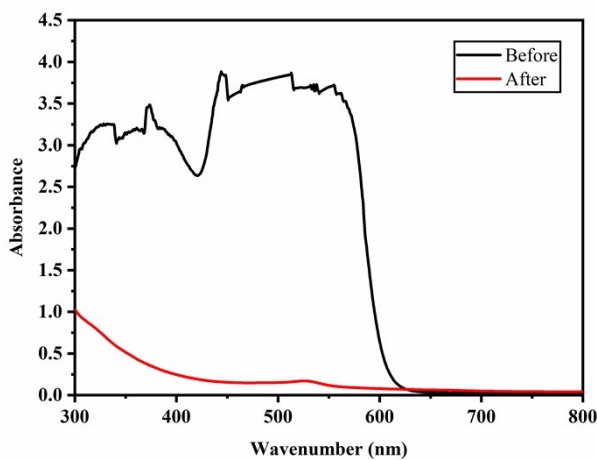


Figure S2: UV-vis curve of rhodamine 6G at 700 mg/l.

5. UV-vis curves before and after adsorption of pH values of different solutions.

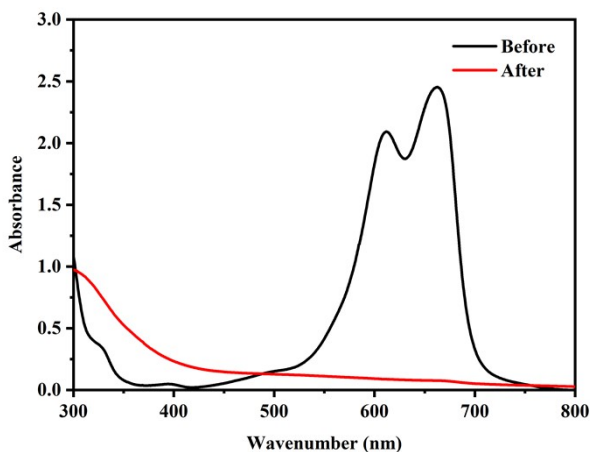


Figure S3: UV curve before and after adsorption with pH=2.

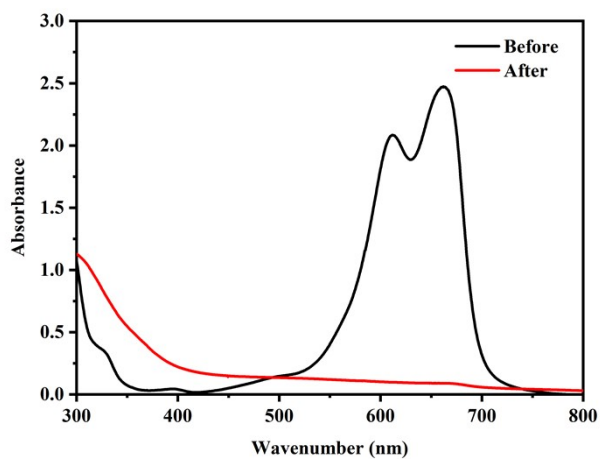


Figure S4: UV curve before and after adsorption with pH=4.

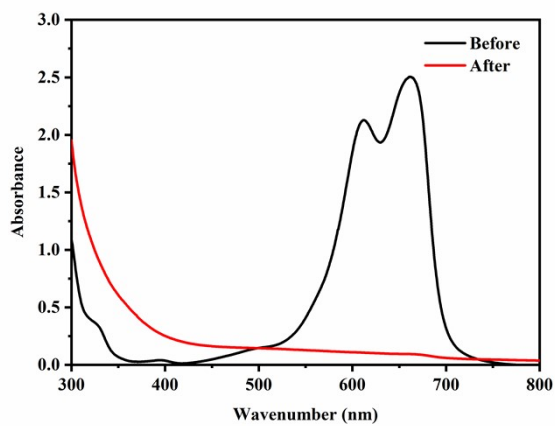


Figure S5: Uv curve before and after adsorption with pH=6.

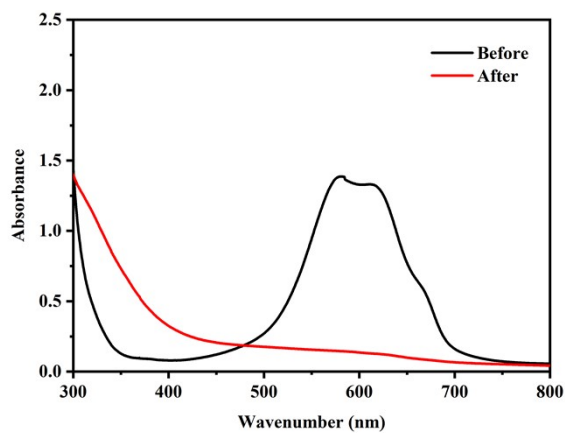


Figure S6: UV curve before and after adsorption with pH=8.

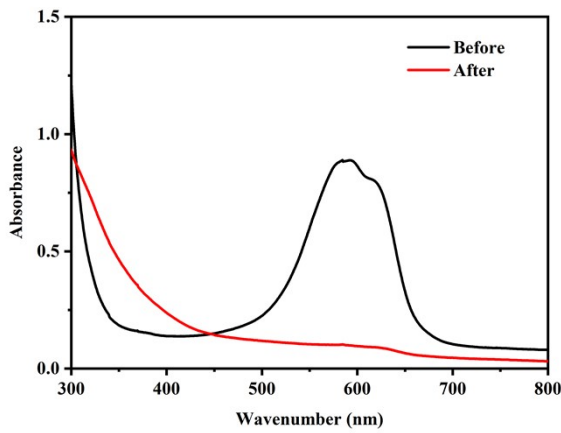


Figure S7: UV curve before and after adsorption with pH=10.

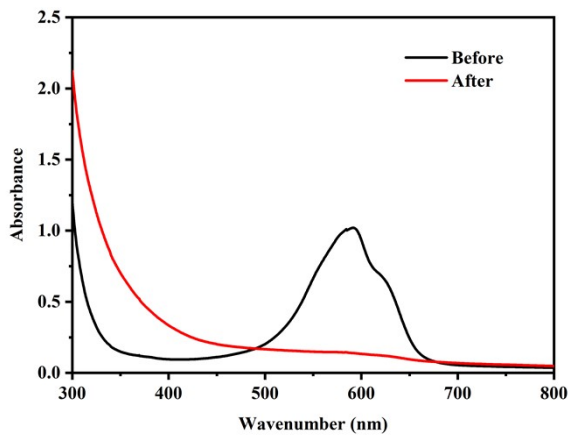


Figure S8: UV curve before and after adsorption with pH=12.

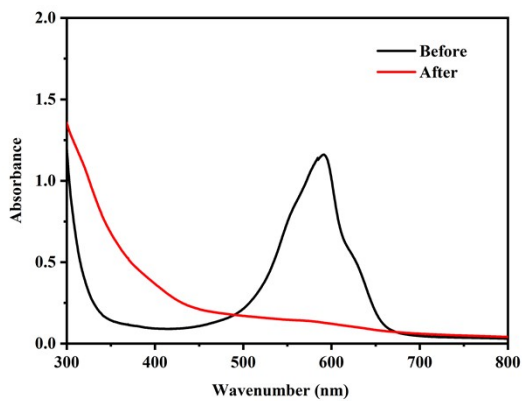


Figure S9: UV curve before and after adsorption with pH=14.

6. As shown in the figure below, the seaweed appears suspended and wet in the water. In order to mimic the state of seaweed in water, we

designed the film to be hydrophilic, so that when the hydrophilic film is in water, it will adsorb a small amount of water, thus showing a similar suspended state.

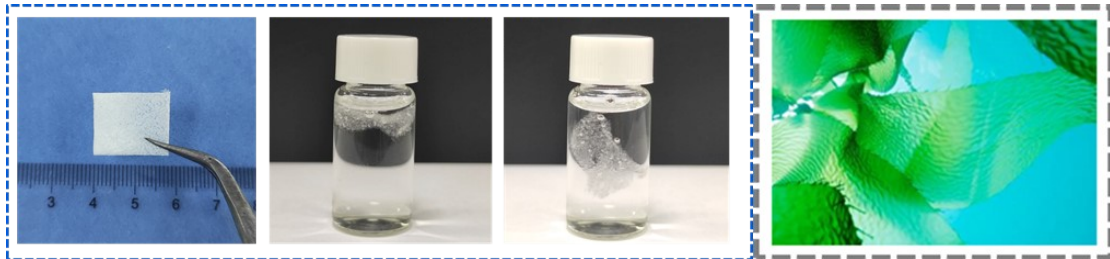


Figure S10: Optical pictures of BSAM in dry state and in water.

7. BSAM exhibits hydrophilicity and underwater lipophilicity.

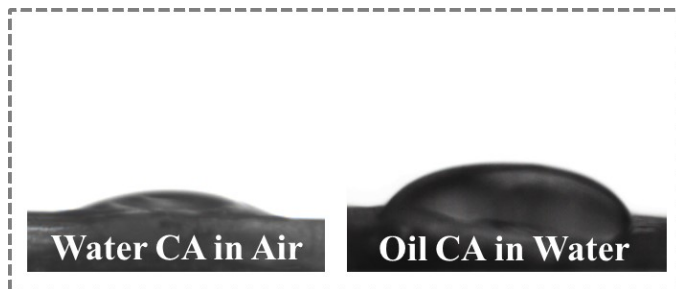


Figure S11: Water contact angle and underwater oil contact angle of BSAM.