

Article

PVP-Assisted Shellac Nanofiber Membrane as Highly Efficient, Eco-Friendly, Translucent Air Filter

Shanshuai Lu ^{1,*}, Congling Li ^{1,*}, Rui Liu ² and Aifeng Lv ^{1,*}
¹ College of Chemistry and Chemical Engineering, Shanghai University of Engineering Science, Shanghai 201620, China; shanshuailu@sues.edu.cn

² Shanghai Key Lab of D&A for Metal-Functional Materials, School of Materials Science and Engineering, Tongji University, Shanghai 201804, China; ruiliu@tongji.edu.cn

* Correspondence: conglings@sues.edu.cn (C.L.); lvafeng@sues.edu.cn (A.L.)

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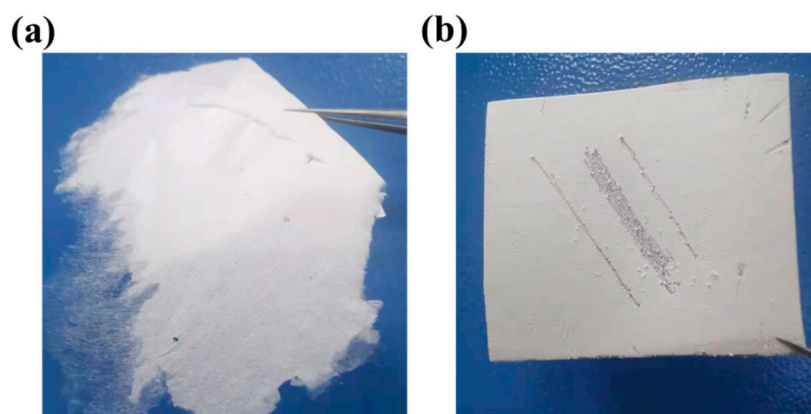


Figure S1. Optical images of P-shellac FME (a) and shellac fiber membrane (b) scratched by a tweezer.

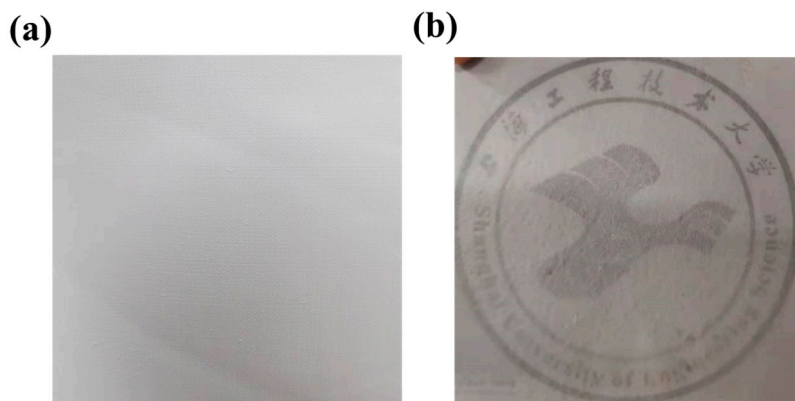


Figure S2. Optical images of pure shellac nanofiber membrane (a) and translucent P-Shellac FME (b).

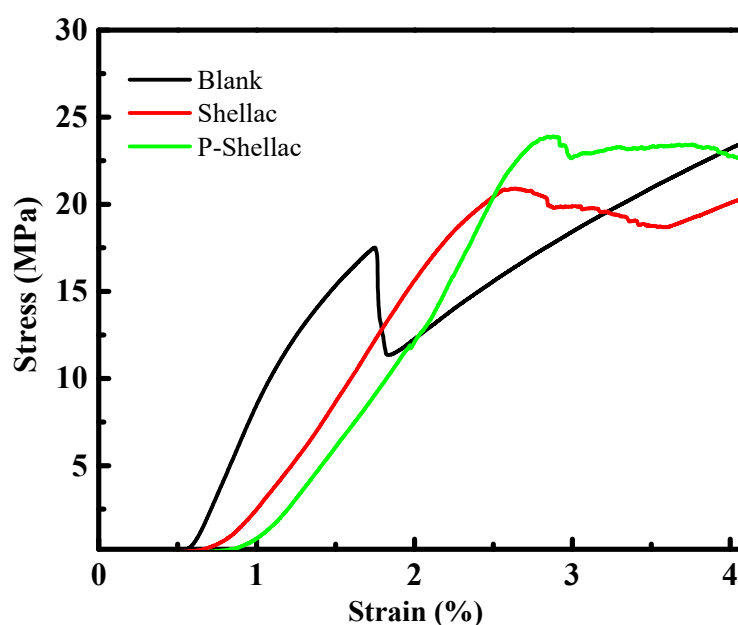


Figure S3. The tensile stress–strain curves of the blank (aluminum foil fixed on an elastic polyimide film), shellac and p-Shellac nanofiber films (deposited on aluminum foils which were then fixed on an elastic polyimide film). As the three nanofiber films are hard to peel off from the stainless-steel mesh, we directly deposited the electrospun nanofibers on the aluminum foil. The deposited three nanofiber films are too thin to get the stress-strain curves. Hence, we fixed the aluminum foil on a thick elastic polyimide film before stress-strain measurement.

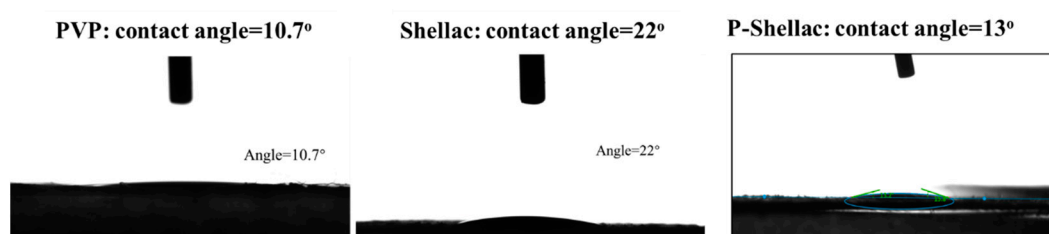


Figure S4. Contact angles of FME PVP, shellac FME, and P-Shellac FME.

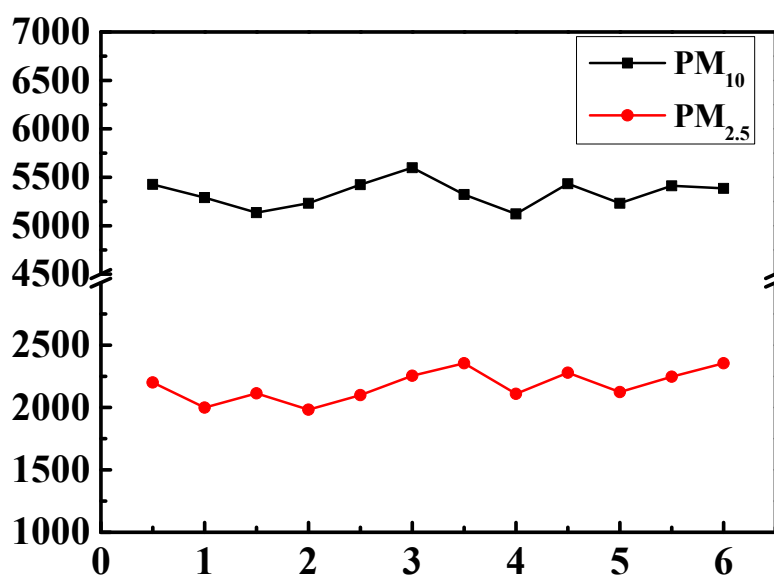


Figure S5. The concentrations of PM₁₀ and PM_{2.5} in CBi'.

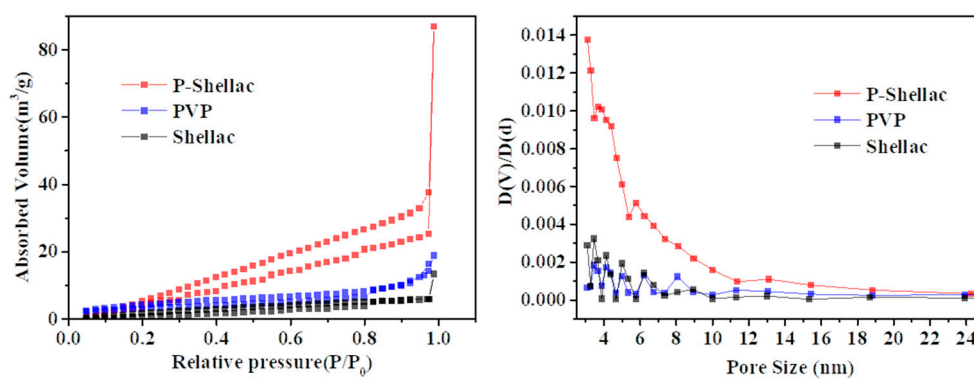


Figure S6. The N₂ adsorption–desorption isotherms (left) and pore size distributions (right) of nanofiber films of P-Shellac, PVP and shellac.

Table S1. Surface area and pore size distribution summary.

Samples	Surface Area (m ² /g)	Pore size distribution (nm)
P-Shellac	67.9	3.9, 5.9, 13
PVP	10.7	3.6, 4.2, 5.1, 8.2, 11.4
Shellac	1.9	3.5, 4.3, 5.1, 6.2, 9.0

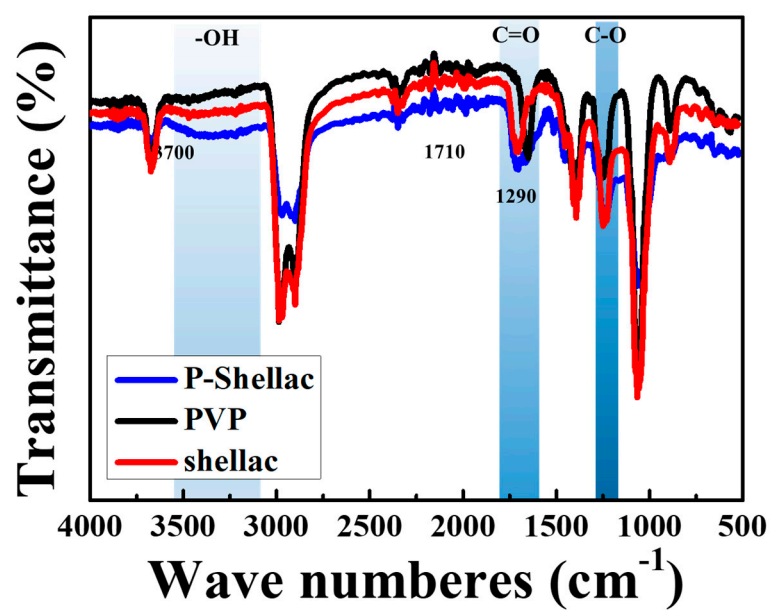


Figure S7. FTIR of three kinds of nanofibers films after air filtration for three hours.