Preparation of nano-cellulose fiber aerogel

Experiment material: KP blanched pine leaves pulp, TEMPO, NaClO solution (contains 50% effective Cl), HCl solution (12mol/L), NaOH solution (1mol/L)

Equipment: magnetic stirrer, lyophilizer, liquid nitrogen

1, Pipette 100 ml 1% fiber pulp into a 250 ml beaker, then pipette 0.1g NaClO solution and certain amount of TEMPO solution. Stir the mixture on the magnetic stirrer.

2, Again, pipette certain amount of NaClO solution into the mixture. Use HCl solution to stabilize the PH of the system around 10.

3, During the reaction, continuously add NaOH solution to the system to maintain the PH as 10.

4, At the end of the reaction, filter the sample through a membrane which has a 0.22um bore diameter on the sanding core. Rinse the sample several times, and keep the sample in the refrigerator.

5, Disperse the oxidize fiber over distilled water. Adjust the concentration of the suspension to 0.2%. then treat the suspension with high pressure homogenization.

6, Freeze the nano-cellulose fiber suspicion with liquid nitrogen. Uses lyophilizer to dry the sample 48 hours at -55 centigrade.