

1. TGA data and reaction condition variations

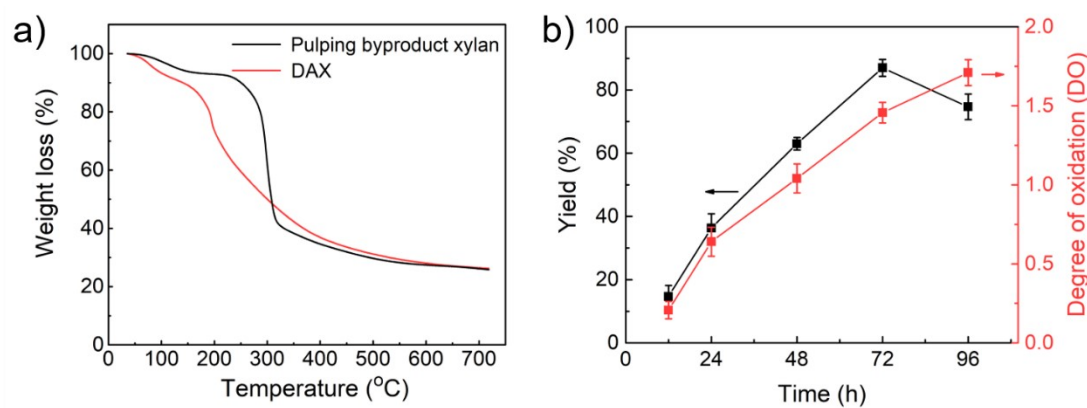


Figure S1. a) TGA spectra of industrial hemicellulose xylan and DAX, respectively. b) Yield and degree of oxidation of the DAX as a function of time at room temperature.

2. TEM data

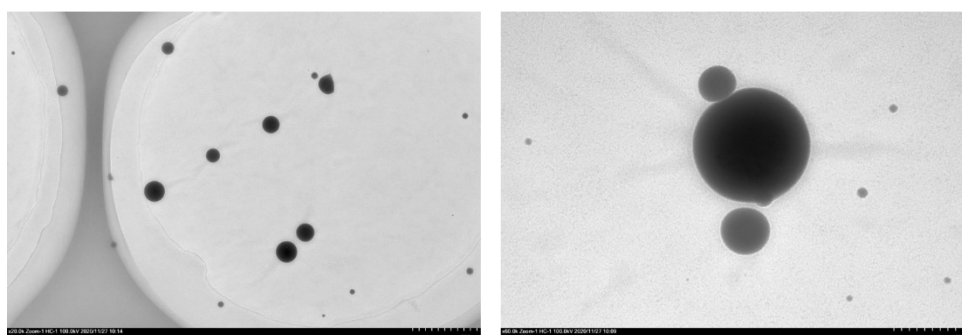


Figure S2. TEM images of DAX/LM nano inks, DAX concentration was set as 0.1 wt%.

3. Zeta potential study

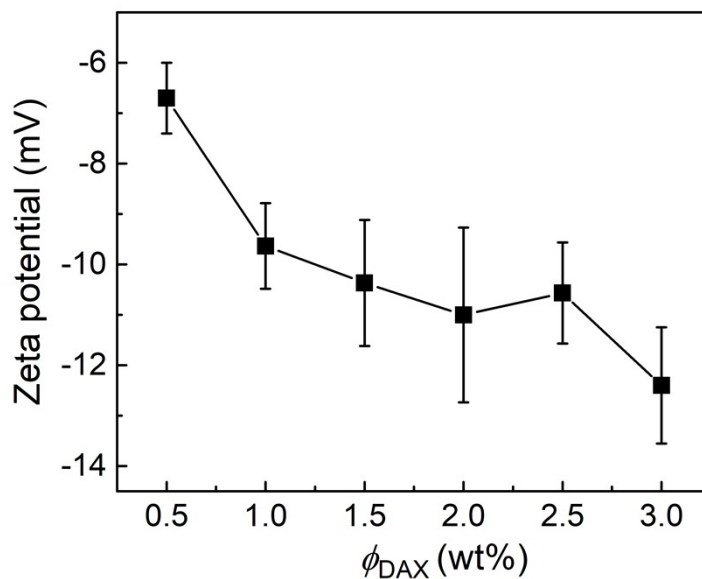


Figure S3. Zeta potential of the DAX/LM nano inks as a function of DAX concentration.

4. SEM images of LM inks

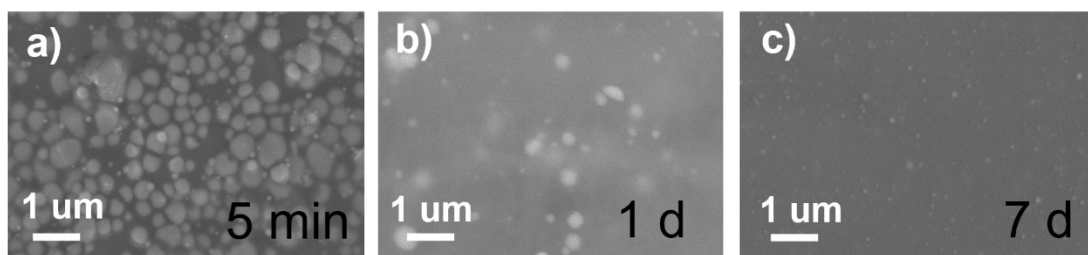


Figure S4. SEM images of the LM nano inks without DAX as a function of time.

5. Stability study

Table S1 Colloidal stability of other stabilizers for LM nano-inks evaluated with storing time.

Stabilizer	Xylan (branched)	CNF	TA	PDA	PVA	PAM
Storing time	6 h	~1 d	~1 d	~2 d	~2 d	~1 d

6. CV study

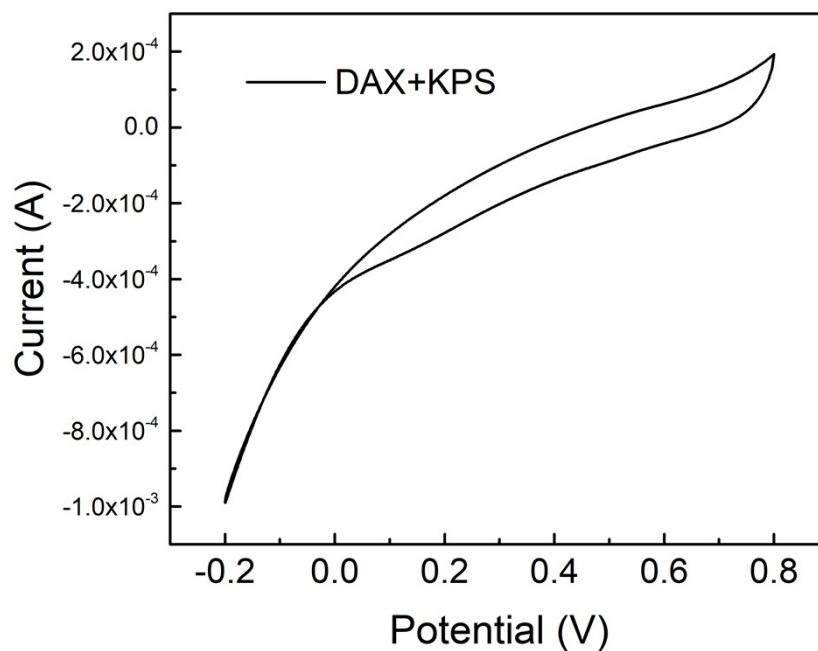


Figure S5. CV data for control experiment. DAX was coated on foil and used as the working electrode, Ag/AgCl (saturated Cl) as the reference electrode, Pt as the counter electrode, and the KPS solution (6 mg mL^{-1}) were used as the electrolyte.

7. Radical quench experiments



Figure S6. Free radical quenching experiments. NO gelation can be observed after KI added (0.1 g).

8. SEM data

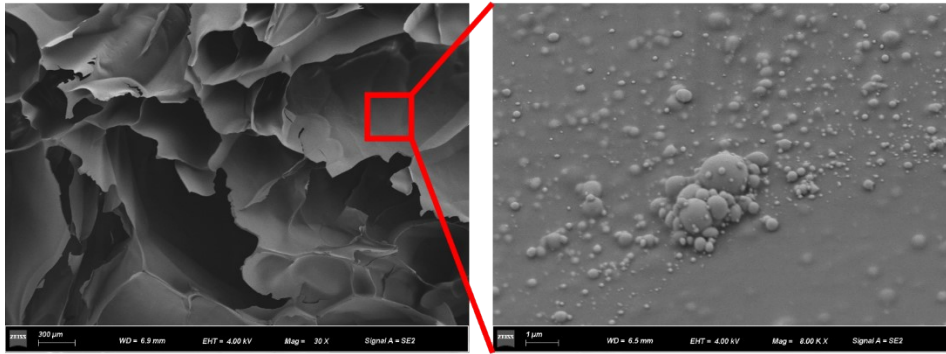


Figure S7. SEM data for DAX/CS gel.