

Supporting Information

**Mixing effect of amine and carboxyl groups on
electrorheological properties and its analysis by in situ FT-IR
under electric field**

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SUPPORTING INFORMATION

Fig. S1-S6

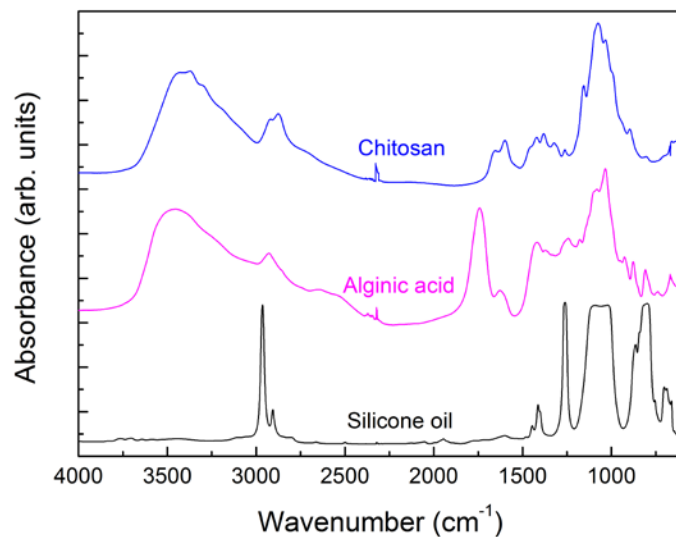


Fig. S1 FT-IR spectra for chitosan, alginate acid, and silicone oil.

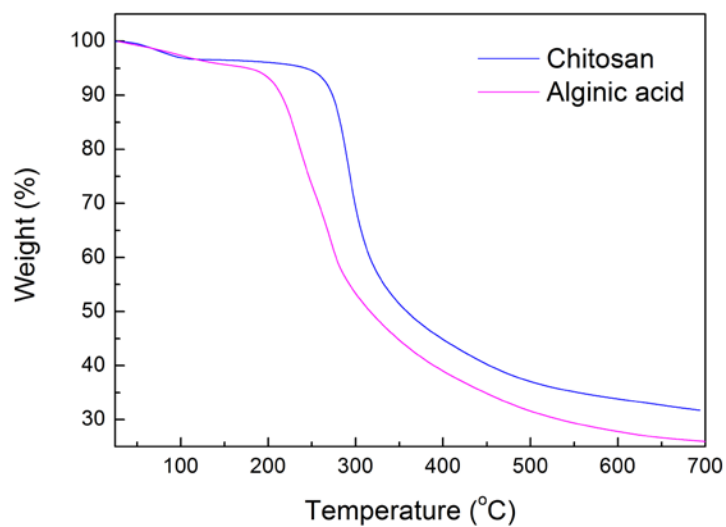


Fig. S2 TGA curves for chitosan and alginate acid.

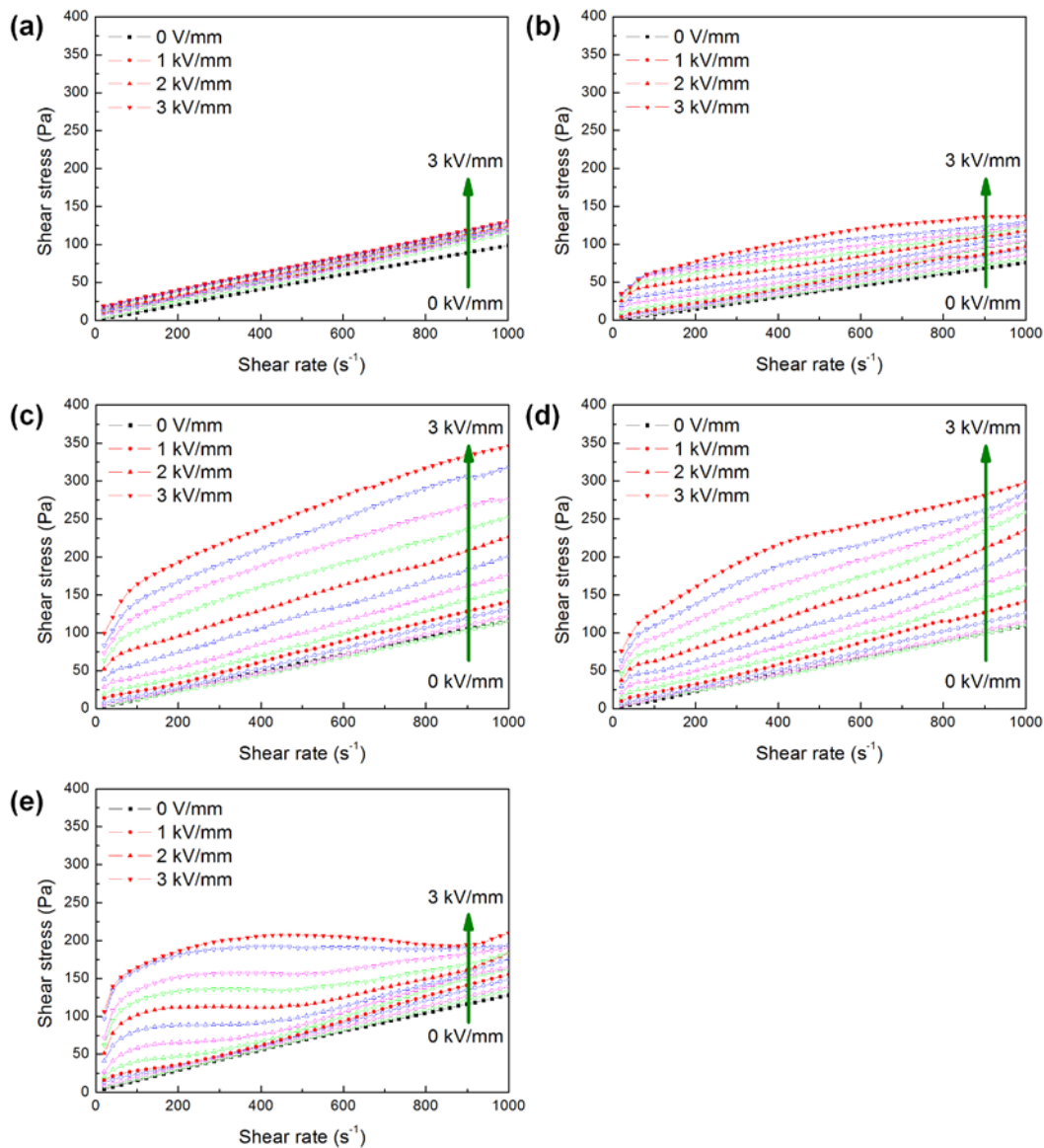


Fig. S3 Shear stress versus shear rate for various weight compositions of chitosan/alginate dispersed suspensions at room temperature ($25^{\circ}C$) with increments of 0.25 kV/mm; (a) 100/0, (b) 75/25, (c) 50/50, (d) 25/75, and (e) 0/100. The particle volume concentration of each ER fluid is 30 vol%.

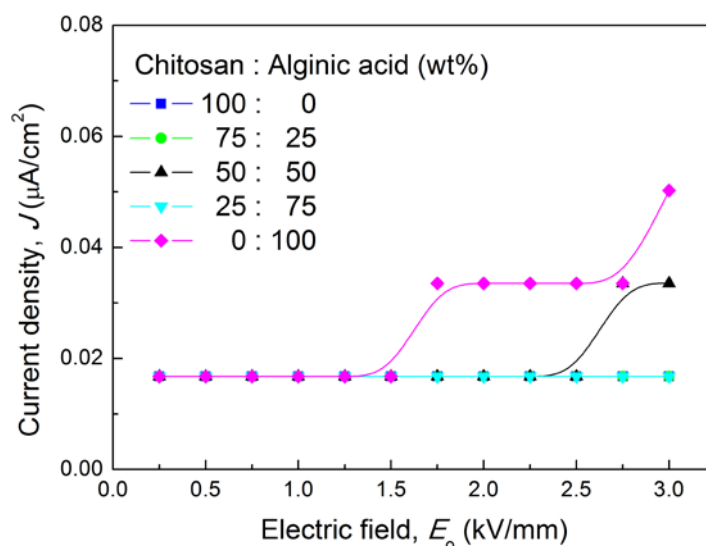


Fig. S4 Effect of the electric fields on current density for various weight compositions of chitosan/alginate dispersed suspensions; 100/0, 75/25, 50/50, 25/75, and 0/100. The particle volume concentration of each ER fluid is 30 vol%.

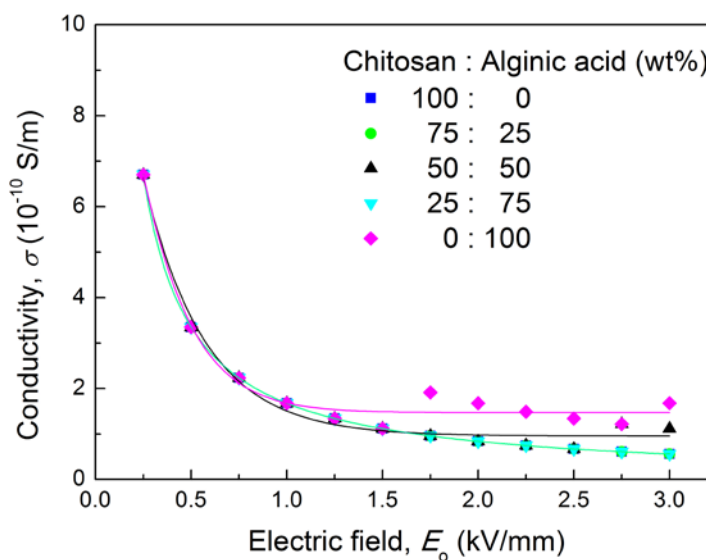


Fig. S5 Effect of the electric fields on conductivity for various weight compositions of chitosan/alginate dispersed suspensions; 100/0, 75/25, 50/50, 25/75, and 0/100. The particle volume concentration of each ER fluid is 30 vol%.

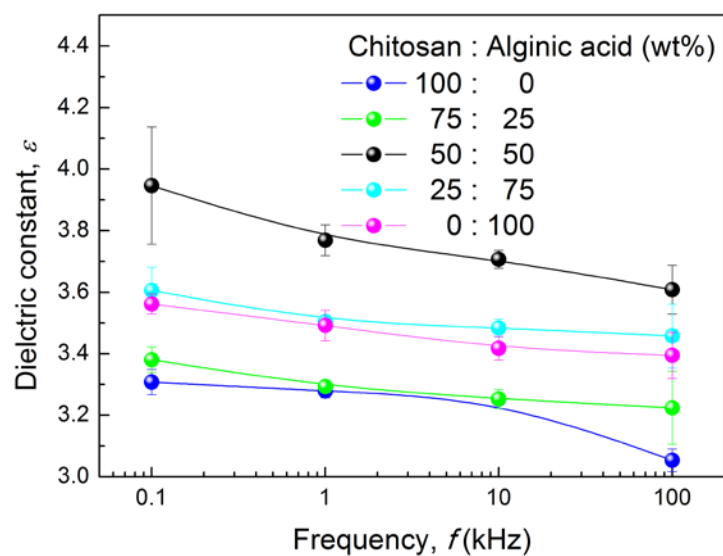


Fig. S6 Dielectric constants for various weight compositions of chitosan/alginate acid dispersed suspensions; 100/0, 75/25, 50/50, 25/75, and 0/100. The particle volume concentration of each ER fluid is 30 vol%. Data are presented as mean \pm standard deviation, $n = 10$.