Supporting information

Core-shell structured graphene oxide-adsorbed anisotropic poly(methyl methacrylate) microparticles and their electrorheology

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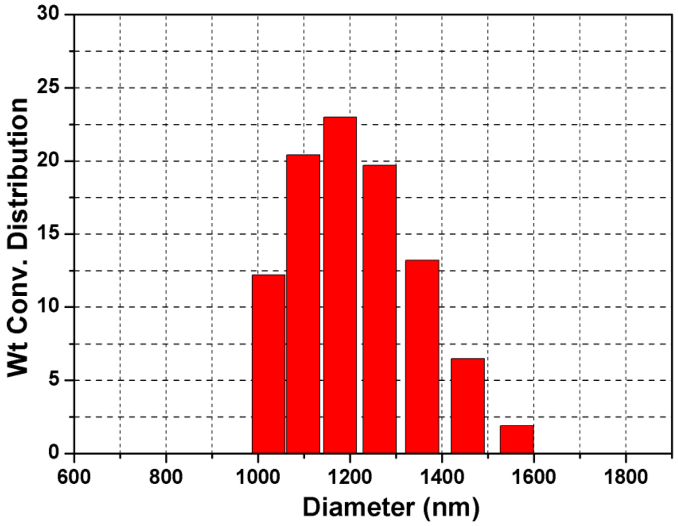

Fig. S1 Size distribution of GO aqueous solution by light scattering method.

To understand the relationship between the rheological data and the electric field effect, another model named modified Casson model[1] was utilized to fit the original flow curve data as shown in Fig. S2.

$$\tau^{1/2} = \tau_0^{1/2} + \eta_\infty^{1/2}\dot{\gamma}^{1/2} \qquad (1)$$

In the Casson Equation shown in Equation 1, τ_0 is the dynamic yield stress and η_∞ is the viscosity at a high shear stress, both of τ_0 and η_∞ are measurable and shown in Table S1.

To fit the flow curves well, the Casson model shown in Equation 1 was expressed as following:

$$\tau = \tau_0 + 2(\tau_0 \eta_\infty \dot{\gamma})^{1/2} + \eta_\infty \dot{\gamma} \qquad (2)$$

As shown in Fig. S2, the flow curves 20 wt% GO/SPMMA particles-based ER fluid are fitted by a modified Casson model in dashed lines and the suggested CCJ model in the solid lines.

Table S1 The measurable τ_0 and η_∞ values in Equation 2

External electric field	τ_0	η_∞
1 kV/mm	18.9	0.16
2 kV/mm	29.2	0.17
3 kV/mm	50.7	0.18

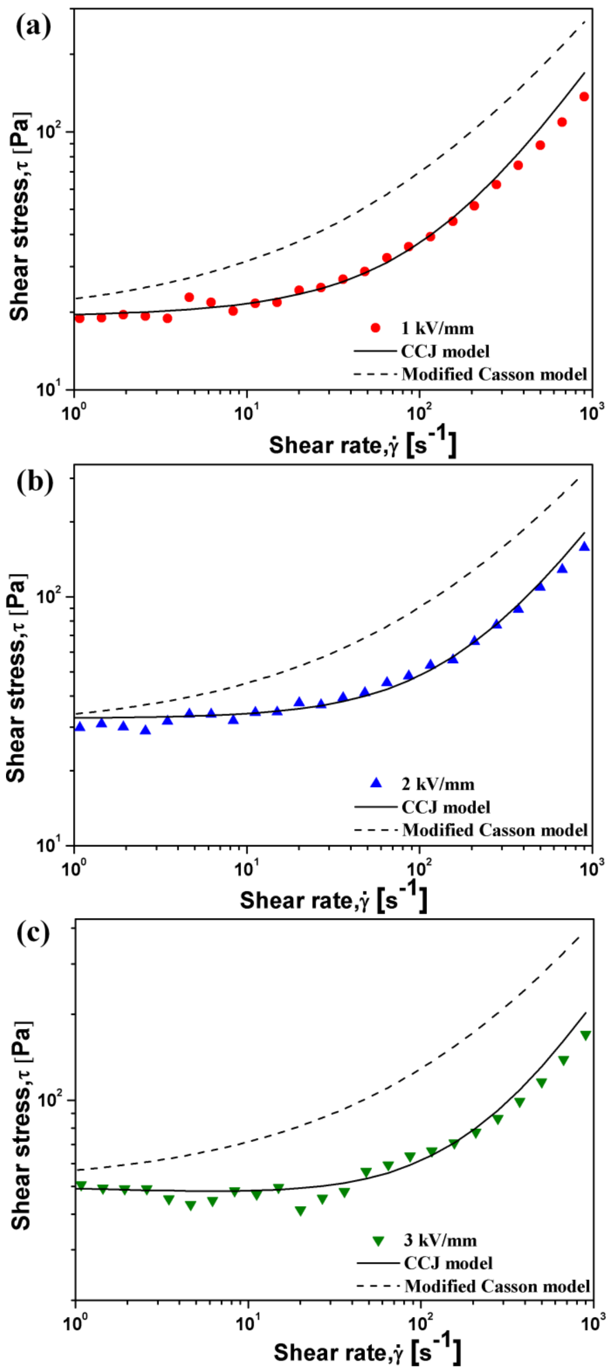

Fig. S2 (a) Flow curves of 20 wt% GO/SPMMA particles-based ER fluid under different electric field strengths. The dashed lines were fitted using a modified Casson model, the solid lines were fitted using the suggested CCJ model.

1. (a) D. J. Klingenberg, F.Vanswol and C. F. Zukoski, *J. Chem. Phys.*, 1991,**94**, 6160 and (b) D. J. Klingenberg, F.Vanswol and C. F. Zukoski, *J. Chem. Phys.*, 1991,**94**, 6170.