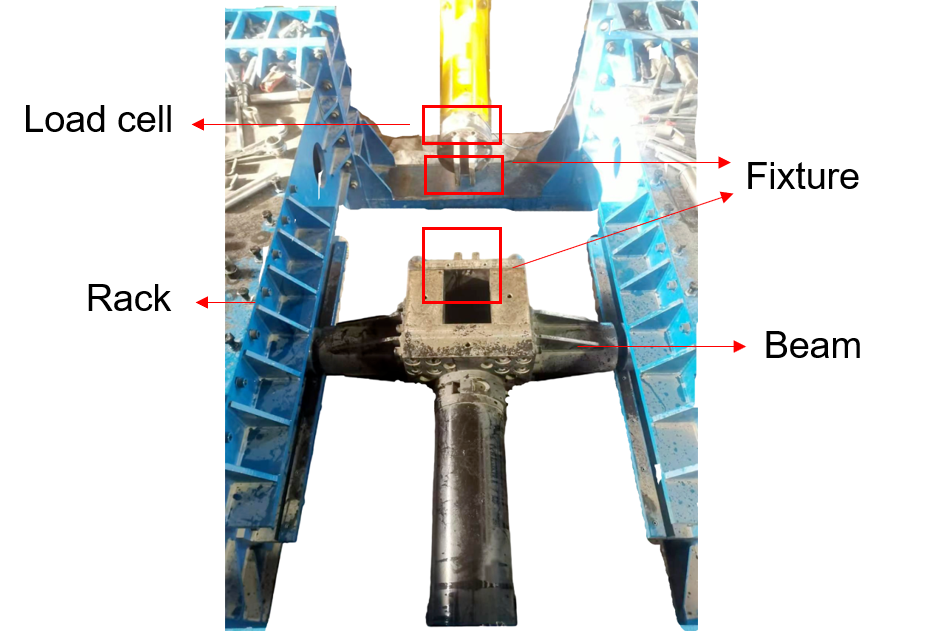
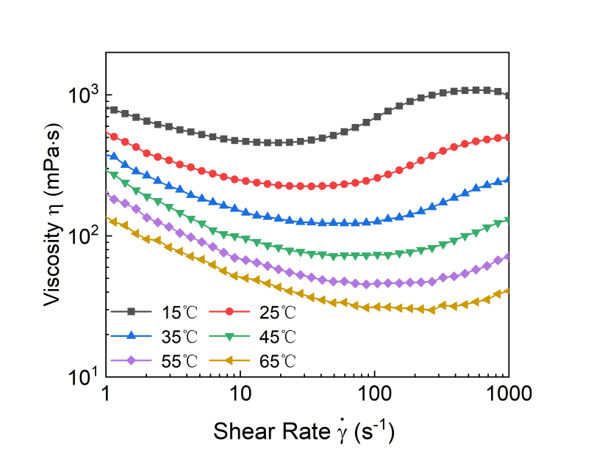


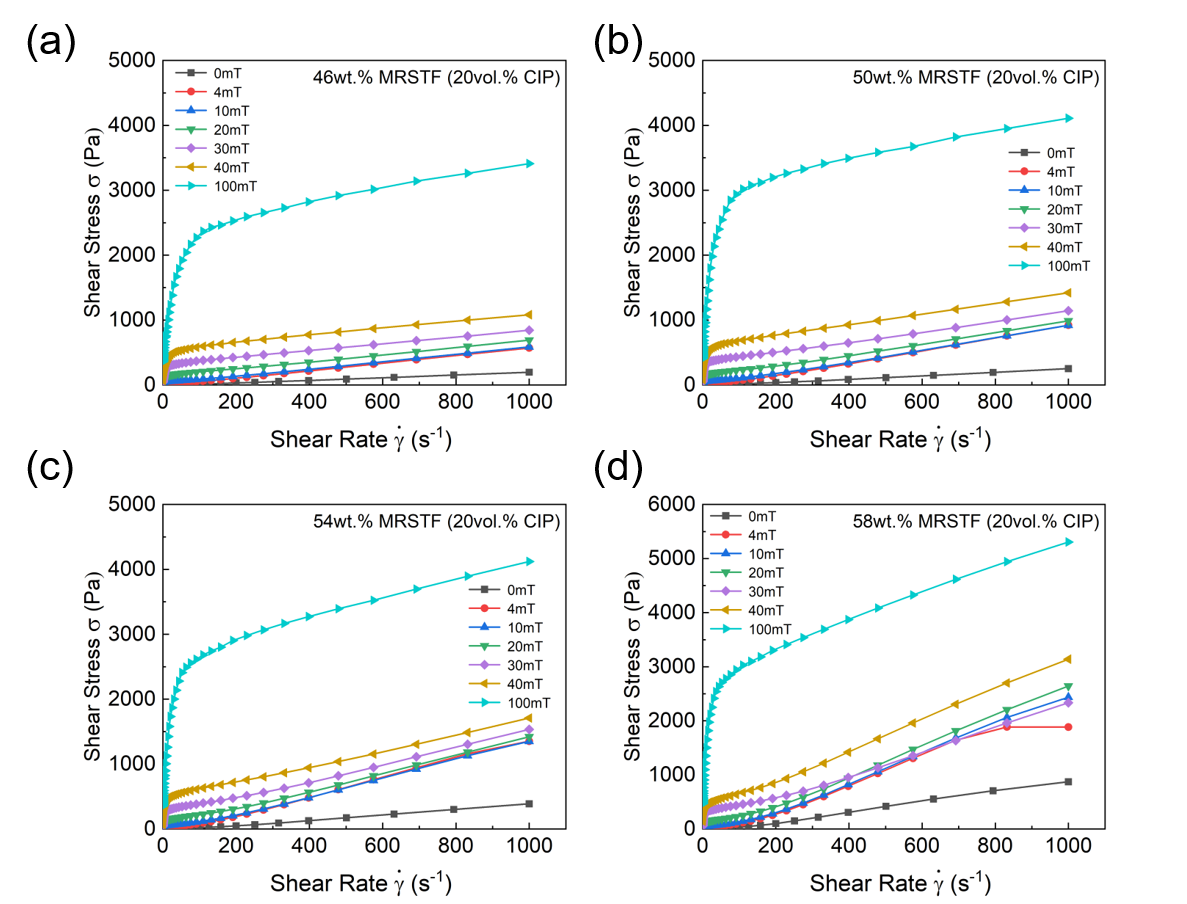
**Figure S1.** The on-site photos of the MCR 302 rheometer, the temperature control device and magnetic field device.



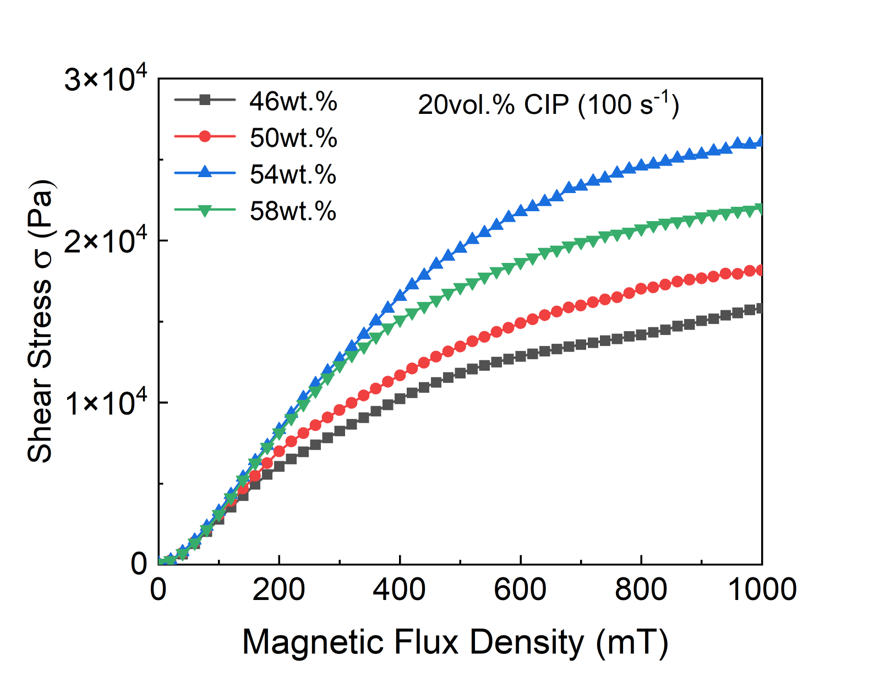
**Figure S2.** The on-site photo of the test device of the mechanical properties.



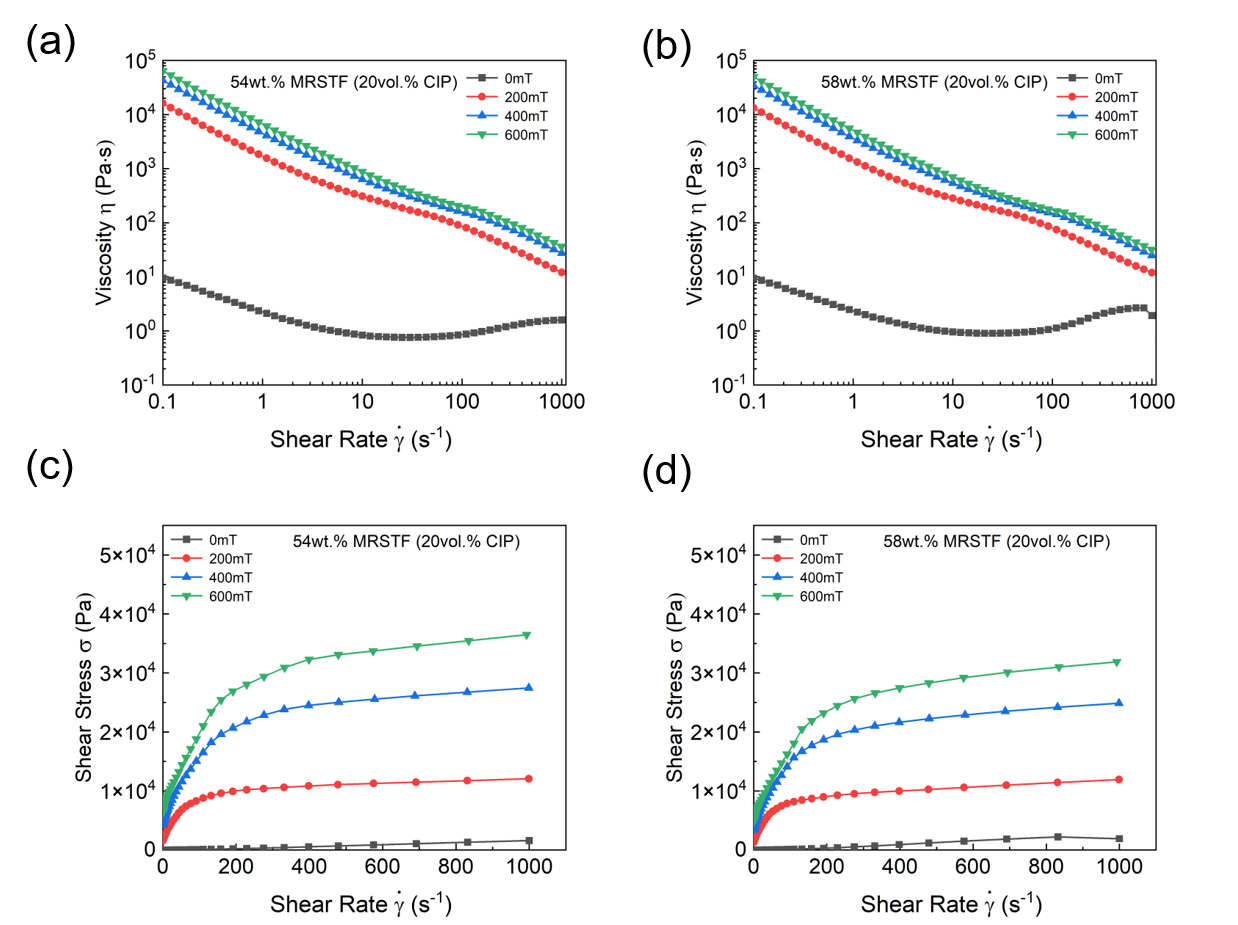
**Figure S3.** The curves of viscosity versus shear rate under different temperatures of MRSTF (SiO2: 54 wt.%, CIP: 20 vol.%). MRSTF: magnetorheological shear thickening fluid.



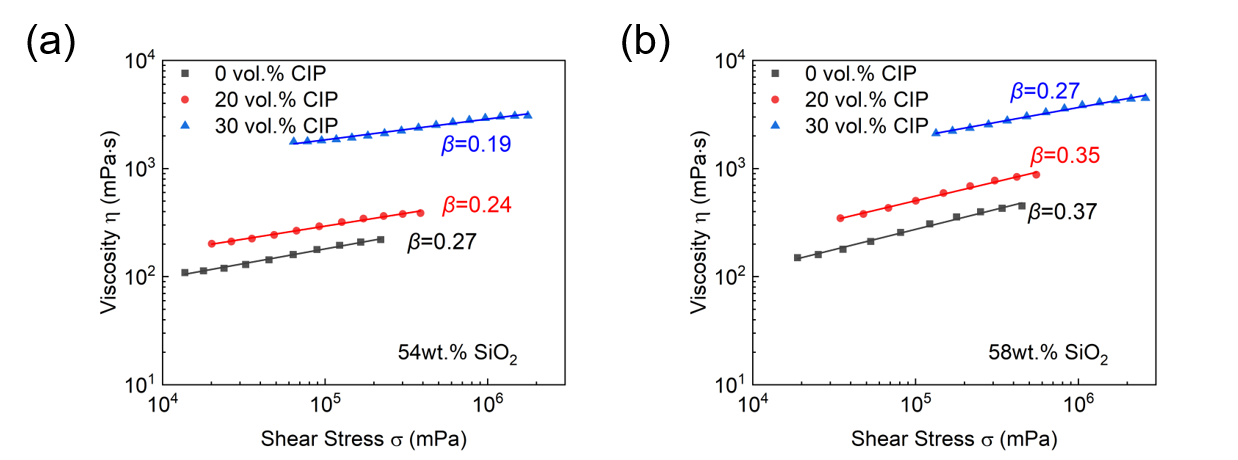
**Figure S4.** The curves of shear stress versus shear rate of different SiO2 mass fractions of MRSTF (20 vol.% CIP) under different magnetic field strengths: (a) 46 wt.%, (b) 50 wt.%, (c) 54 wt.% and (d) 58 wt.%. MRSTF: magnetorheological shear thickening fluid; CIP: carbonyl iron powder.



**Figure S5.** The curves of shear stress versus magnetic flux density of MRSTF (20 vol.% CIP) with different SiO2 mass fractions under 100 s-1. MRSTF: magnetorheological shear thickening fluid; CIP: carbonyl iron powder.



**Figure S6.** The curves of viscosity versus shear rate of different SiO2 mass fractions of MRSTF (20 vol.% CIP) under different magnetic field strengths: (a) 54 wt.% and (b) 58 wt.%. The curves of shear stress versus shear rate of different SiO2 mass fractions of MRSTF (20 vol.% CIP) under different magnetic field strengths: (c) 54 wt.% and (d) 58 wt.%. MRSTF: magnetorheological shear thickening fluid; CIP: carbonyl iron powder.



**Figure S7.** The fitted curves of log(*η*) versus log(*σ*) for (a) 54 wt.% SiO2, (b) 58 wt.% SiO2. CIP: carbonyl iron powder.