## **Supporting Information**

## Normal stresses in shear thickening granular suspensions

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**Fig. S1** Storage modulus *G*' and loss modulus *G*'' as a function of strain amplitude  $\gamma_0$  in oscillatory strain sweep measurement. The suspension volume fraction is  $\varphi = 56\%$  with particle diameter  $d = 40 \ \mu m$ , and the gap size is fixed at  $h = 1 \ mm$ . For this measurement, the angular frequency is fixed at  $\omega = 6.28 \ Hz$  while the strain amplitude  $\gamma_0$  is varied from 0.0001 to 100.



**Fig. S2** Normal force  $F_N$  as a function of shear rate  $\dot{\gamma}$  upon increasing the shear rate (filled symbols) and decreasing the shear rate (open symbols). The suspension volume fraction is  $\varphi = 56\%$  with particle diameter  $d = 40 \ \mu m$ . The gap is fixed at  $h = 0.5 \ mm$ .

d (µm)	<i>h</i> (mm)	A	В
	1.5	-0.042	0.004
10	1	-0.499	0.008
	0.5	-0.413	0.024
	1.5	-0.413 -0.499 -0.413 -0.499 -1.647 1.267	0.061
40	1		0.085
	0.5	1.267	0.087

 Table S1. The parameters A and B corresponding to Eqn. (2) and Eqn. (3), respectively.

Table S2. The parameters  ${\rm A}_2$  and  $\tilde{A}~$  obtained from fitting Eqn. (1) to the normal stress data in Fig. 3.

d (µm)	<i>h</i> (mm)	A <sub>2</sub>	Ã
10	1.5	-14	671
	1	-6	27
	0.5	-2	17
40	1.5	-1.6	8
	1	-1	1
	0.5	2	0.2

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