CORRIGENDUM

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Corrigendum: Effect of polydispersity in concentrated magnetorheological fluids (2023 *Smart Mater. Struct.* 32 045014)

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In sections 6.1 and 6.2 of Manuel *et al* [1], the following results were published:

Table 1. A comparison between the values calculated by the rod distribution algorithm (1D, Farr and Groot [2]) and the random close packing algorithm (3D, Desmond and Weeks [3]).

MRF	ϕ_{RCP} (1D)	ϕ_{RCP} (3D)
A	69.6%	$67.3 \pm 0.2\%$
B	74.0%	$71.4 \pm 5.7\%$
C	81.2%	$79.6 \pm 5.0\%$

These simulations were based on the experimentally measured particle size distributions (PSD) pictured in figure 7. However, we realized after publication that the size distributions provided by our low-angle light scattering instrument are volume weighted. For example, for sample A, particles of size 2 μm and size 20 μm are shown as roughly equal percentages: which is their fraction of the total volume. Thus, particles of size 2 μm are roughly 1000 times as numerous as those of size 20 μm, such that the two particle species comprise similar volumes. The simulation results above were obtained assuming that the measured experimental distributions were number weighted, thus vastly overestimating the contribution of the largest particles.

Accordingly, we redid our simulations using the correct PSD as input. The original 1D simulations were also calculated assuming we had log-normal distributions with a given standard deviation. For our revised 1D simulations, we were able to use the Farr and Groot algorithm directly applied to the experimentally measured PSD (noting, as above, that they are volume weighted distributions). The corrected results from the 1D and 3D algorithms are:

Table 2. A comparison between the values calculated by the rod distribution algorithm (1D, Farr and Groot [2]) and the random close packing algorithm (3D, Desmond and Weeks [3]).

MRF	ϕ_{RCP} (1D)	ϕ_{RCP} (3D)
A	69.5%	$68.3 \pm 0.2\%$
B	74.7%	$72.3 \pm 0.3\%$
C	79.0%	$75.5 \pm 0.5\%$

The new values are slightly different, but our conclusions are unchanged: sample C packs the most densely, and sample A packs the least densely. There is still a discrepancy between the 1D algorithm and the 3D algorithm. We place slightly more trust in the 3D results, which are direct simulations of packings. In contrast, the 1D algorithm was developed for slightly less polydisperse samples than our samples with particle sizes spanning two decades in size.

This corrigendum does not change the main conclusions of the article. It only corrects the results and the confusion between volume-weighted and number-weighted PSD. We apologize to the readers for these errors.

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