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Corrigendum

The Ericksen number and Deborah number cascades in sheared polymeric nematics

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On page 154, in the second paragraph of the experimental section, values of γ_1/K_1, the ratio of the twist viscosity to the elastic splay constant, for solutions of poly(γ-benzyl-glutamate), or PBG, in the solvent metacresol, were taken from data of Lee and Meyer, ref. 37. Lee and Meyer's data were for PBG solutions of similar concentration and molecular weight to ours. However, for the PBG solutions of Lee and Meyer, the solvent was not metacresol, but a mixture of 18% dioxane and 82% dichloromethane, and we neglected to take into account the effect of the solvent viscosity on γ_1/K_1. Lee and Meyer did not measure the viscosity of their mixed solvent, but reported it to be low [1], presumably around 1 cP, or so, which is roughly the viscosity of dioxane at room temperature. The viscosity of metacresol at room temperature, on the other hand, is close to 10 cP. To a first approximation, the viscosities of PBG solutions should be proportional to the solvent viscosity, while the elastic constants should be roughly independent of it [2]. Thus, we expect the ratio γ_1/K_1 to be about 10 times higher in metacresol than in the mixed solvent used by Lee and Meyer. Hence, the values we reported for the Ericksen number, $E \equiv \gamma_1 Vd/K_1$, are roughly an order of magnitude too low, throughout our paper. This error affects table 1, and also the discussion on the first full paragraph on page 164. There it was noted that roll cells form at a critical Ericksen number of around 40, about 10 times lower than the predicted value of 500 or so. When the error in our computation of E is corrected, we find that the critical Ericksen number is actually around 400, not far from the theoretical value.

References

[1] MEYER, R. B., private communication.
[2] LEE, S.-D., and MEYER, R. B., 1990, *Liq. Cryst.*, **7**, 15.

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