Erratum: Flexible ring polymers in an obstacle environment: Molecular theory of linear viscoelasticity [Phys. Rev. E 74, 021805 (2006)]

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We would like to point out a typographical error in the second term of Eq. (27) in this paper. The actual equation should read as:

$$\frac{\partial\langle X_{p\alpha}X_{p\beta}\rangle}{\partial t} = -2\frac{k_p}{\zeta_p}\langle X_{p\alpha}X_{p\beta}\rangle + 4\frac{k_BT}{\zeta_p}\delta_{\alpha\beta} + \kappa_{\alpha\mu}\langle X_{p\mu}X_{p\beta}\rangle + \kappa_{\beta\mu}\langle X_{p\alpha}X_{p\mu}\rangle. \tag{27}$$

This does not modify the results of the paper.

In the second and the third paragraph of Sec. V on melt of rings we have presented two scenarios of modified number of segments between entanglements (N_e^r) and modified entanglement spacing (a_r), respectively. In presenting these scenarios it was assumed that the structure between entanglements is a fractal structure with $a_r=(N_e^r)^\nu b$. The primitive chain formulation for length of trunk in PPR framework of Sec. II intrinsically assumes and requires a Gaussian structure between entanglements. In order to have a consistent framework the incorrect fractal picture between entanglements and the arguments presented based on it like the expressions for entanglement spacing (a_r), number of segments between entanglements (N_e^r), and the plateau modulus ratio in Eq. (44) and Eq. (45) are invalid.

We change the two scenarios presented earlier to those consistent with the Doi-Edwards primitive chain formulation. We change the first scenario to have entanglement spacing (a_r) for rings to be the same as that for linear chains (a_l) and the resulting corrected fractal picture giving the number of segments between entanglements to be $N_e^r=N_e^lN^{1-2\nu}$. We change the second scenario to have the entanglement spacing $a_r\approx 0.6a_l$ and the number of segments between entanglements to be $N_e^r \approx 0.36N_e^lN^{1-2\nu}$. The calculations presented in the paper are not affected by this change as entanglement spacing (a_r) is a fit parameter in the model.

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