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Friction of ring-polymer brushes AYKUT ERBAS, JAROSLAW PATUREJ, The University of North Carolina at Chapel Hill, 1 COLLABORATION — Polymeric brushes are unique soft structures that can exhibit extremely low friction forces when they slide past on each other. For neutral brushes composed of linear chains, the low friction is due to reduction in the thickness of interpenetration layer between two sliding brushes. Here, by means of computer simulations and scaling arguments, we show that the interpenetration layer is even narrower for ring-polymer brushes. This effect, in turn, leads to lower friction forces compared to those observed for linear-polymer brushes. We expect more dramatic changes for brushes made of polymers that are much longer than corresponding entanglement sizes.

Aykut Erbas
The University of North Carolina at Chapel Hill

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