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Investigation of ring and star-shaped polymers in confined geometries

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We investigate the dimensionless layer monomer density profiles of a dilute solution of ideal ring and star polymers confined in a slit geometry of two parallel walls. We analyzed cases with both attractive and repulsive walls as well as one attractive and one repulsive wall. We also performed molecular dynamics simulations of a dilute solution of ring and star-shaped polymers. Analytical and numerical results are compared with the results for linear polymers. The obtained results indicate that ring and star polymers can be used for the production of new functional materials, because properties of these solutions depend on the topology of polymers and the nature of surfaces that confine them.

References:

J. Hałun, P. Karbowniczek, P. Kuterba, and Z. Danel, Investigation of Ring and Star Polymers in Confined Geometries: Theory and Simulations, *Entropy* 23, 242 (2021)

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