Title:	Unzipping of a double- stranded block copolymer DNA by a periodic force.
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Keywords:	Nonequilibrium statistical mechanics Unfolding Polymer conformation changes
Issue Date:	2021
Publisher:	American Physical Society
Citation:	Physical Review E, 103(1).
Abstract:	Using Monte Carlo simulations, we study the hysteresis in unzipping of a double-stranded block copolymer DNA with − A n B n − repeat units. Here A and B represent two different types of base pairs having two and three bonds, respectively, and 2 n represents the number of such base pairs in a unit. The end of the DNA are subjected to a time-dependent periodic force with frequency (ω) and amplitude (g 0) keeping the other end fixed. We find that the equilibrium force-temperature phase diagram for the static force is independent of the DNA sequence. For a periodic force case, the results are found to be dependent on the block copolymer DNA sequence and on the base pair type on which the periodic force is acting. We observe hysteresis loops of various shapes and sizes and obtain the scaling of loop area both at low- and high-frequency regimes.
Description:	Only IISER Mohali authors are available in the record.
URI:	https://doi.org/10.1103/PhysRevE.103.012413 (https://doi.org/10.1103/PhysRevE.103.012413) http://hdl.handle.net/123456789/5180 (http://hdl.handle.net/123456789/5180)

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