

UNIVERSALITY OF POLYMER MELTS

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ABSTRACT

The packing length p , measured as the ratio of the occupied volume over the cross-sectional area R_0^2 of a polymer coil, is introduced as a renormalized length scale that defines the invariant degree of polymerization \bar{N} and so provides a universal blob-based description of the *single-chain* size ($R_0^2 = \bar{N}p^2$). Different polymer melts with chains represented by the same number of blobs \bar{N} will have identical conformational statistics and *many-chain* packing structures in the renormalized space, which is the origin of the universal dynamics in entangled and unentangled polymer melts.