Dilution Wave and Negative-Order Crystallization Kinetics of Chain Molecules

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We show that the crystal growth rate of a very long-chain *n*-alkane $C_{198}H_{398}$ from solution can decrease with increasing supersaturation and follow strongly negative order kinetics. The experimental behavior can be well represented by a theoretical model which allows the molecule to attach and detach as either extended or folded in two. The obstruction of extended-chain growth by unstable folded depositions increases disproportionately with increasing concentration. As a consequence of this abnormal kinetics, a "dilution wave" can propagate and trigger a folded-to-extended-chain transformation on its way.

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