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The Polymorphism of Poly(vinylidene fluoride) V. The Effect of Hydrostatic Pressure on the Melting Behavior of Copolymers of Vinylidene Fluoride*

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Summary

The high-pressure melting behavior of samples of vinylidene fluoride copolymerized with vinyl fluoride, trifluoroethylene, or tetrafluoroethylene indicate that the copolymers have a lower entropy of melting than the poly(vinylidene fluoride) homopolymers in the same phase. As the comonomer size increases, the entropy of melting decreases. High-pressure crystallization of copolymers of 91-9 mole% vinylidene fluoride-trifluoroethylene and 93-7 mole% vinylidene fluoride-tetrafluoroethylene results in a high-melting form of phase I (planar zig-zag).

INTRODUCTION

The effect of elevated hydrostatic pressure on the crystal structure, morphology, possible polymorphism, and physical properties of macromolecules has become the subject of intensive study within the past 15 years.

Wunderlich and Arakawa [1] and Geil et al. [2] demonstrated that upon pressure-crystallizing polyethylene (PE), they were able to obtain extended-chain crystals in the bulk rather than the normal folded-

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