

Communications to the Editor

Comment on Once-Broken Wormlike Macromolecules

In a recent publication, Pfannemüller et al.¹ report on the behavior of A-B-A polymers in which two semirigid amylose tricarbanilate chains (A) are linked through a flexible joint (B). This polymer is used as a model for a once-broken wormlike chain and its behavior in solution is compared to that of A polymers of comparable molecular weight using light scattering, viscosity, and dielectric measurements.

We would like to mention that similar polymer models have been prepared previously for the same purpose. For example, a three-block copolymer A-B-A where A is a helical polypeptide and B a flexible polymer chain has been studied by the above-mentioned techniques.² On the basis mainly of dielectric measurements, these latter authors have likewise shown the head-to-head coupled nature of the two A blocks.

References and Notes

- (1) Pfannemüller, B.; Schmidt, M.; Ziegast, G.; Matsuo, K. *Macromolecules* **1984**, *17*, 710-716.
- (2) Reibel, L.; Spach, G.; Dufour, C. *Biopolymers* **1973**, *12*, 2391-2408.

Eve Marchal* and Léonard Reibel

CNRS, Centre de Recherches sur
les Macromolécules, 67083 Strasbourg-Cedex, France

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Response to "Comment on Once-Broken Wormlike Macromolecules"

We regret that we¹ have failed to quote the literature concerning the closely related topic of "once-broken rods".²⁻⁵ Particularly, the illuminating work of Reibel, Spach, and Dufour² had previously not come to our attention. This fact deserves our honest apologies.

Contrary to earlier investigations on ABA-type copolymers with A the stiff part and B the flexible joint, we did not approximate the interpretation of the dielectric dispersion measurements by the "once-broken rod" model but rather treated the data according to a "once-broken wormlike chain". This was necessary because of the much higher flexibility of amylose tricarbanilate as compared to helical polypeptides. The previous results^{2,3,5} and our work agree insofar as it appears hardly possible to distinguish between the pure A and the ABA structure by means of the hydrodynamic and the geometric dimensions. Only the dielectric dispersion measurements were successfully applied to prove the existence of the "head-to-head" coupled ABA-type polymer.

References and Notes

- (1) Pfannemüller, B.; Schmidt, M.; Ziegast, G.; Matsuo, K. *Macromolecules* **1984**, *17*, 710.
- (2) Reibel, L.; Spach, G.; Dufour, C. *Biopolymers* **1973**, *12*, 2391.
- (3) Teramoto, A.; Yamashita, T.; Fujita, H. *J. Chem. Phys.* **1967**, *46*, 1919.
- (4) Nakagawa, K.; Nishioka, N.; Teramoto, A.; Fujita, H. *Polym. J.* **1973**, *4*, 332.
- (5) Kihara, H.; Tanno, K.; Wada, A. *Polym. J.* **1973**, *5*, 324.

Beate Pfannemüller,* Manfred Schmidt, Gerd Ziegast,
and Keizo Matsuo

Institut für Makromolekulare Chemie
University of Freiburg
D-7800 Freiburg, Federal Republic of Germany

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