

free extended-chain ribbons could be produced in a commercial process analogous to the Instron procedure, significant improvement in mechanical properties would be realized.

The authors wish to thank F. J. Walton and R. Fernquist of the Xerox Corporation for their invaluable technical assistance throughout this project. The authors are also indebted to P. Goldstein of the Xerox Corporation and R. S. Porter, R. S. Stein, F. P. Price, and R. D. Ulrich of the University of Massachusetts for helpful discussions.

References

1. B. Wunderlich and T. Arakawa, *J. Polym. Sci. A*, **2**, 3697 (1964).
2. E. Hellmuth and B. Wunderlich, *J. Appl. Phys.*, **36**, 3039 (1965).
3. B. Wunderlich and C. Cormier, *J. Polym. Sci. A-2*, **5**, 987 (1967).
4. D. Rees and D. Bassett, *J. Polym. Sci. B*, **7**, 273 (1969).
5. L. Mandelkern, M. Gopalan, and J. Jackson, *J. Polym. Sci. B*, **5**, 1 (1967).
6. B. Wunderlich, *J. Polym. Sci. B*, **5**, 7 (1967).
7. A. Pennings and A. Kiel, *Kolloid-Z. Z. Polym.*, **205**, 160 (1965).
8. T. Kawai, T. Matsumoto, M. Kato, and H. Maeda, *Kolloid-Z. Z. Polym.*, **222**, 1 (1969).
9. R. Williamson and R. Novak, *J. Polym. Sci. B*, **5**, 147 (1967).
10. M. Hill and A. Keller, *J. Macromol. Sci.-Phys.*, **B3**, 153 (1969).
11. A. Keller, *Repts. Progr. Phys.*, **31**, 623 (1968).
12. J. H. Southern and R. S. Porter, *J. Macromol. Sci.-Phys.*, **B4**, 541 (1970).
13. J. H. Southern and R. S. Porter, *J. Appl. Polym. Sci.*, **14**, 2305 (1970).
14. C. R. Desper, J. H. Southern, R. D. Ulrich, and R. S. Porter, *J. Appl. Phys.*, **41**, 4284 (1970).
15. A. Peterlin, *Polym. Eng. Sci.*, **9**, 172 (1969).
16. J. R. Burns, *J. Polym. Sci. A-2*, **7**, 593 (1969).
17. K. O'Leary and P. H. Geil, *J. Appl. Phys.*, **38**, 4169 (1967).
18. R. G. Crystal, paper presented to the Division of High Polymer Physics, American Physical Society Meeting, Dallas, Texas, March 1970; *Macromolecules*, in press.
19. H. E. Bair and R. Salovey, *J. Macromol. Sci.-Phys.*, **B3**, 3 (1969).
20. T. W. Huseby and H. E. Bair, *J. Polym. Sci. B*, **5**, 265 (1967).

Received October 27, 1970

Revised March 15, 1971