NOTES

Use of DTA or DSC in Determining Crystallization Temperatures

Qyunn,[1] in a recent publication, emphasizes the importance of the crystallization temperature in determining the sticking behavior of partially oriented PET yarns. It is the purpose of this note to emphasize that the crystallization temperature as measured by DTA or DSC is not a true equilibrium thermodynamic quantity but rather reflects differences in crystallization rates. As can be seen from Table I, the position of the DTA (du Pont 900) crystallization exotherm is not only dependent on the orientation of the yarn but also on the scanning rate of the instrument. It should be emphasized that these yarns showed no x-ray crystalline structure and are only ordered "amorphous" yarns. It is possible with a suitable difference in scanning rates to have the crystallization exotherm peak of a less ordered sample to occur at a lower temperature than the more ordered sample.

TABLE I
Effect of Scanning Rate on DTA Crystallization Exotherm for PET

Sample	Birefringence	Scanning rate, °C/min	Crystallization peak temp., °C
A	0.0027	20	144
		10	137
		3	126
		1	117
B	0.0585	20	118
		10	114
		3	107
C	0.0730	20	113
		10	109
		3	102

I would like to thank T. L. Craig for DTA measurements and D. C. Felty for birefringence measurements.

References

1. R. G. Quynn, *J. Appl. Polym. Sci.*, **16**, 3393 (1972).

DONALD L. MACLEAN

Monsanto Textile Company
Chemstrand Research Center
Durham, North Carolina 27702

Received April 9, 1973

© 1974 by John Wiley & Sons, Inc.