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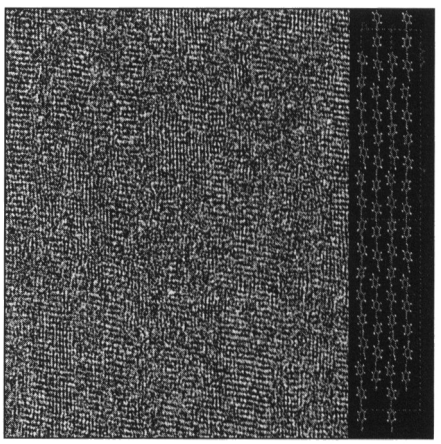
DEFECTS IN POLYMERS

JMR ABSTRACTS

DEPARTMENTS



ON THE COVER: High-resolution electron micrograph of a poly(p-phenylene terephthalamide) (PPTA) extended-chain polymer fiber. The vertical lines correspond to the 0.43-nm (110) equatorial spacings between the PPTA polymer molecules, and the horizontal lines to the 0.64-nm (002) meridional spacing along the chain axis. The high-resolution electron microscopy (HREM) imaging of extended-chain polymers began with work on PPTA by M.G. Dobb, A.M. Hindeleh, D.J. Johnson, and B. Saville, *Nature* **253** (1975), p. 189. This particular HREM lattice image was obtained from a microtomed thin section of a Kevlar 49 fiber by M-C.G. Jones using a 400 kV JEOL 4000 EX in the Electron Microbeam Analysis Laboratory at the University of Michigan. The inset is a molecular simulation of PPTA with staggered chain-end defects. The tensile properties of oriented extended-chain polymer fibers are controlled by the transfer of stress from one chain to another through lateral interactions between molecules. For more information, see the article by Martin, Wilson, Liao, and Jones on page 47 of this issue.

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