

most prominent feature of the lamellae are the striations (Fig. 3 and subsequent figures). It appears that in nondeformed lamellae the striations are perpendicular to the broad faces of the lamellae. In the case of polytetrafluoroethylene, drawing¹⁷ or rolling⁷ causes the striations to tilt within the lamellae. Deformation is probably also related to the presence of a few lamellae in these samples in which the striations are uniformly tilted and most certainly is the cause of the kinks to be described later.

The striations in samples E and F have a spacing of about 200 to 300 Å and are continuous across an entire lamella. The contrast between the striations is due in part to individual ribbons of material, one or more striations wide, adhering to the replica and in part due to the surface roughness of the fractured lamella. Each striation appears to correspond to a distinct structural entity. In a few regions it was possible to observe type III lamellae which had a smooth fracture surface (Fig. 4). Where the fracture plane changes levels, near the center of the micrograph, the appearance suggests that the striations correspond to the fracture edges of sheet-like structures. The structure of the lamellae would thus resemble that suggested by Speerschneider and Li¹⁷ for polytetrafluoroethylene, except that the high crystallinity of these samples precludes an "amorphous" layer between the sheets.

It appears that the sheets can readily be broken up into nearly cylindrical structures, several hundred Angstroms in diameter and with a length corresponding to the lamella thickness (Fig. 5) or even larger (Fig. 6). In

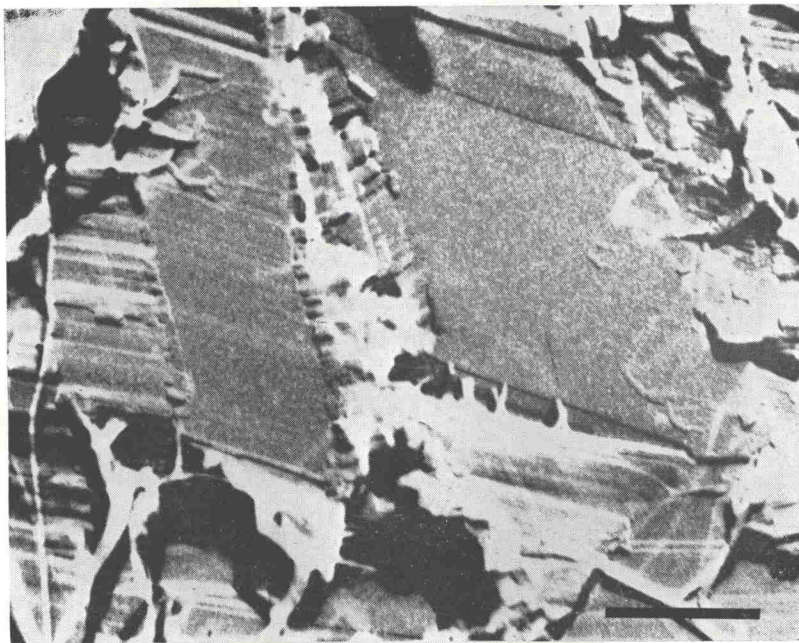


Fig. 4. Fracture surface of sample E, showing smooth fracture surface.

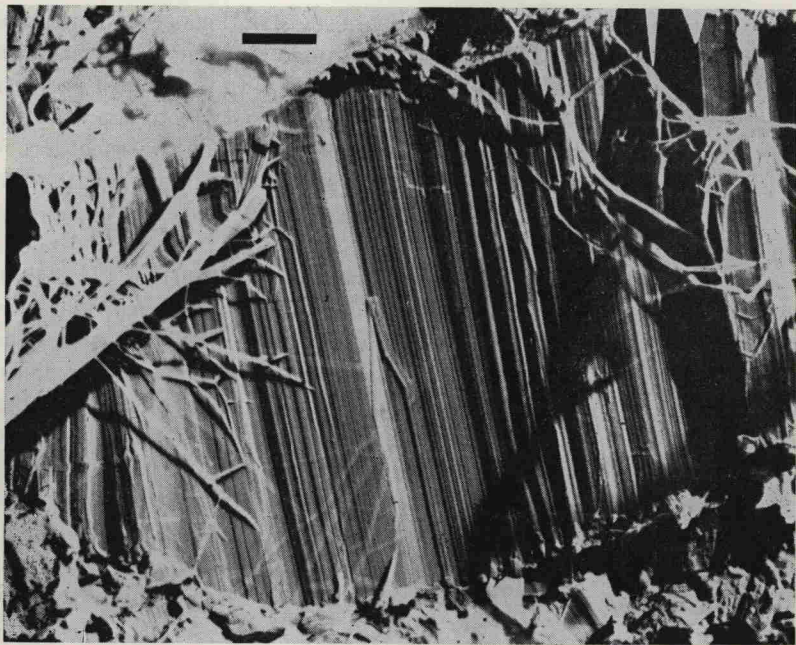


Fig. 5. Portion of the fracture surface of a large lamella in sample E. Several small kinks are present near the top center of the micrograph. This micrograph is printed as a negative.

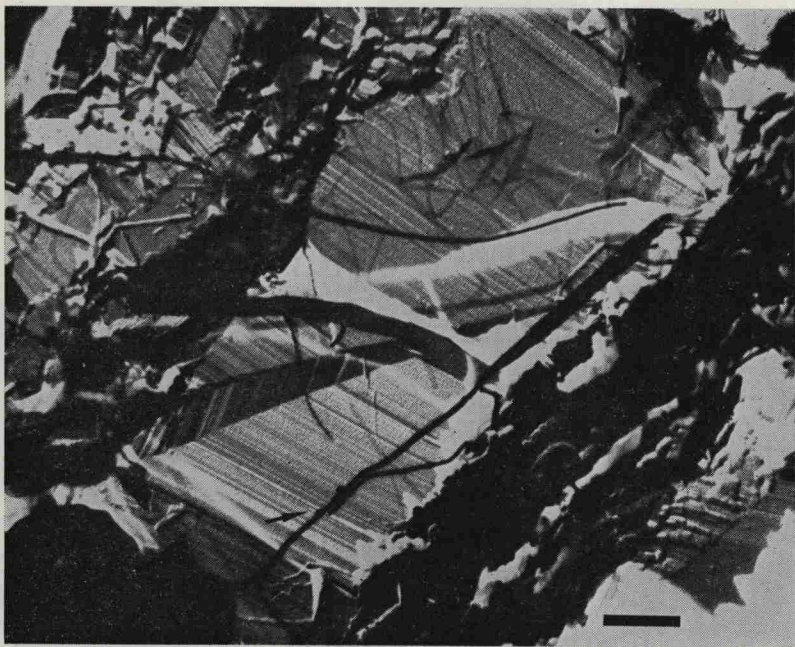


Fig. 6. Long "fiber" (arrow) and large kink on the fracture surface of a lamella in sample E. The surface structure of the lamella is also visible to an extent.