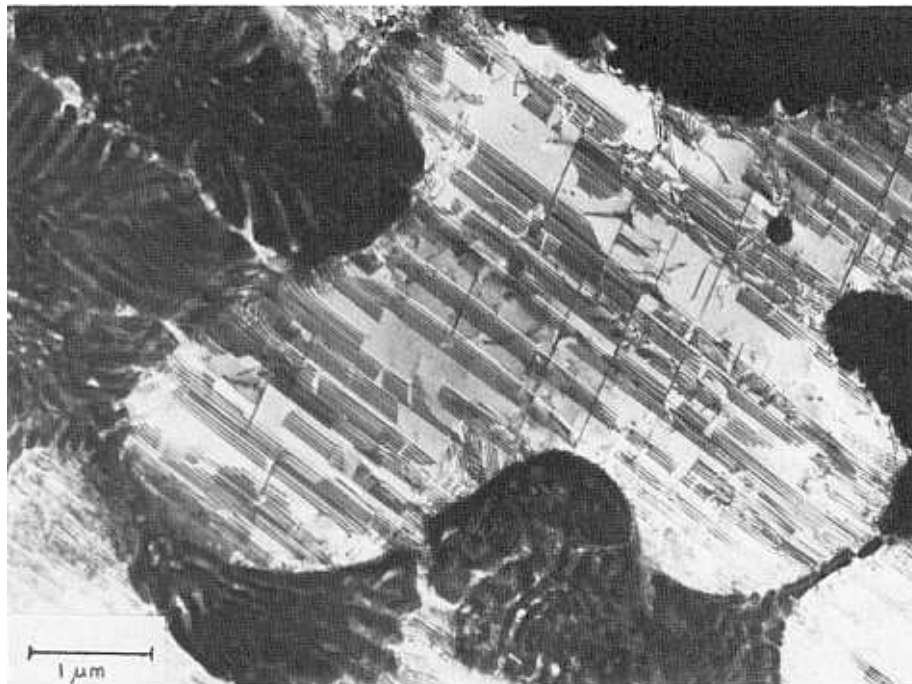


(a) Scanning electron micrograph of a niobium carbide (Cubic F) dendrite in a Fe - 34Cr-5Nb-4.5C wt.% alloy, solidified at 30K/s.

The specimen has been deep etched to remove the matrix.

(Photograph by courtesy of B. Gretoft)



(b) Dark field transmission electron micrograph of a Co-rich dendrite (Cubic F). The alloy was prepared by laser melting of powder, the cooling rate during solidification being 2000 K/s.

(Photograph by courtesy of S. Atamert).

- 1) Comment on the different morphologies and sizes of the dendrites in the two samples.
- 2) Index the crystallographic facets on the NbC dendrite and identify the direction along which the solidification rate is maximum.
- 3) Discuss with your supervisor the nature of the ribbon-like features within the Co-rich dendrite, given that Co solid solutions tend to undergo a phase transformation from CCP→HCP.