

even frequently, in a particular sample. To understand the reason for the variety of growth patterns, it seems to be necessary to study the effect of impurities, lattice defect concentration *etc.* For synthetic chrysotile it was found that most of the fibrils had the form of hollow cylinders, and the distribution of the tilt angle of the 4.5 Å fringes was similar to that of natural chrysotile. The concentration of lattice defects for the direction perpendicular to the fibre axis was not found to be particularly different from that of natural chrysotile. Therefore, the role of impurities does not seem to be important in controlling the polytype during the growth process.

It was found that most of fibrils thicker than about 350 Å in diameter were discontinuously grown in two or three steps (Figs. 10 and 11) perhaps because of changes in the growth conditions. The diameter of the core part of these thick fibrils was of nearly the same order as the peak value of the sample whose outer diameter was sharply distributed and is in good agreement with the theoretically expected value, 260 Å (Whittaker, 1957). The Tasmania sample, consisting of very short fibres, is typical of this step-growth and also shows a low frequency of appearance of the concentric lattice layer, while the Transvaal sample consisting of long and uniform fibres, has a considerably high frequency of appearance of concentricity. It may be said on the basis of the theory of Jagodzinski & Kunze (1954) that the former sample was mainly grown by the radial or coupled dislocation mechanism under conditions of high supersaturation, while for the latter sample the axial dislocation mechanism prevailed under relatively low supersaturation conditions.

The outer surfaces of fibrils were generally found to be very smooth and clean. This fact suggests that the inter-fibril sites of the aggregated fibrils are generally vacant and free from any amorphous material. On the other hand, the central voids are frequently filled with amorphous material. This phenomenon may be correlated with the mechanism of the transfer of amorphous

material through the central voids by capillary action.

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