

20. X-Ray Studies on partially Acetylated Polyvinyl Alcohol

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As previously reported (this Bulletin 24, 92), partially acetylated polyvinyl alcohol was obtained by two different methods of preparation, i.e. acetylation of polyvinyl alcohol (PVA) and saponification of polyvinyl acetate (PVAc). Films were prepared from the two series of samples and X-ray investigations were carried out on these films.

So long as the degree of acetylation is the same, there was no difference between the two series of samples. At the beginning of the acetylation a slight increase of the spacing of A_1 (an inner weaker interference of PVA, $d=7.73 \text{ \AA}$) was observed. A_1 of PVA faded out at the degree of acetylation of about 10 mol%, while an interference which corresponded nearly to R_1 interference of PVAc appeared at the degree of acetylation of about 45 Mol%. The spacing of this interference gradually increased from $6.2 \text{ \AA}$ and finally attained the characteristic value of PVAc ($d=6.70\text{--}7.00 \text{ \AA}$).

The spacing of A_1 of PVA (the outer stronger interference of PVA) however, after passing through a maximum at about 10 mol% ($d=4.65 \text{ \AA}$), gradually decreased and finally attained the characteristic value of R_2 of PVAc ($d=3.94\text{--}4.00 \text{ \AA}$).

Films from partially acetylated PVA were drawn at an elevated temperature and subjected to X-ray investigations. The results were essentially the same as by non drawn films.

21. Electron Microscopic Investigation of Wood Tissue

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This paper is intended to enrich with further information the present stock of knowledge of electron microscopic structure of the plant cell wall by using the collodium one-step replica method, which proved to be suitable for examinations of soft tissues such as coniferous tracheids. The metal shadowed replicas could reveal the fine details as fine as $10 \text{ m}\mu$.

Results: Observations of the replicas taken from the cross sections of wood clearly distinguished the lignin layer from the cellulose layers. The trace of knife-marks brought about at sectioning was hardly found in the lignin layer,