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friction of viscose and vinylon fibers treated with surfactants of various types. Minimum values of the coefficient of friction were observed at the velocity of about 1 m/min. with fibers treated with anionic and cationic type surfactants as well as nonionic type. This discrepancy to the result reported by Röder was discussed.

The convenient apparatus to estimate the coefficient of static and kinetic friction of yarn was constructed using the loading pendulum of K.S. Senimeter (a single fiber tensile tester). Results obtained with this apparatus were compared with results obtained with Röder type apparatus or the loading weight method and some differences were observed.

Studies on the Second-Order Transition Temperature of Polyvinyl Alcohol. (I)

Influence of Water on the Second-Order Transition Temperature of Polyvinyl Alcohol

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Chemistry of High Polymers (Kobunshi Kagaku), **14**, 574 (1957)

The relation between the second-order transition temperature T_g and the water content of polyvinyl alcohol was discussed. The water content of samples of polyvinyl alcohol filament were 0, 1.8, 2.4, 8.6, 14.0, 25.0, 35.9, 48.5, 61.6% respectively. The T_g of completely dried sample was 73°C, but the temperature fell gradually with increasing water content of samples. Another transition temperature T_g' were observed by the samples whose water content were greater than 8.6 %.

Studies on the Second-Order Transition Temperature of Polyvinyl Alcohol. (II)

Influence of Rate of Heating and Degrees of Polymerization on the Second-Order Transition Temperature of Polyvinyl Alcohol

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Chemistry of High Polymers (Kobunshi Kagaku), **14**, 577 (1957)

At first the influence of the rate of heating on the second-order transition temperature of polyvinyl alcohol (PVA) was studied. The samples used in this series were air dried PVA filament and completely dried PVA film. In no case the influence of the rate of heating were observed. In the second series of this

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study the influence of degrees of polymerization on the second-order transition temperature was investigated. The fractionated PVA films with various degrees of polymerization (DP 140-4635) were used in the experiment. The influence of polymerization were not detected.

Electrophoretic Mobility of Polyelectrolytes. (I)

Electrophoretic Mobility of Polyvinyl Alcohol

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Chemistry of High Polymers (Kobunshi Kagaku), **14**, 624 (1957)

The electrophoretic mobility of polyvinyl alcohol was measured with the Tiselius' apparatus. It was found, that polyvinyl alcohol molecules were negatively charged. The mobility depends on the concentration of the polyelectrolyte, but is almost independent from the polymerization degree of the polymer. From the theory of the polymerization and the experimental determination of Yoshizaki the highest possible carboxyl content of polyvinyl alcohol is one or two carboxyl groups per molecule, but the experimental found number of charge is much greater than this value.

Studies on Line Structures in Single Crystals of Tin. (IV)

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Journal of the Japan Institute of Metals (Nippon Kinzokugaku Kaishi), **21**, 279 (1957)

An examination was carried out microscopically and X-ray analytically with single crystals of 99.87 % pure tin, in order to clarify the relation between the temperature gradient and the substructures (corrugations and striations) which had been observed in single crystals of tin grown from the melt. The features obtained by increasing the temperature gradient from 13°C/cm to 45° C/cm, are summarized as follows :

- (1) The direction of corrugations inclines steeply from the direction of easy growth, [110], towards that of the specimen axis.
- (2) The striations are easy to generate.
- (3) On the free top surface of the single crystals of 99.87% pure tin grown