

ABSTRACTS

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

ABSTRACTS

in the [100] direction, the same step structure as observed in single crystals of 99.995% pure tin at 13°C/cm is also generated.

**Investigation on Cast Iron Having Refined Graphite Produced
by Melting Cast Iron Covered with Slag Containing TiO₂. (VIII)**

**Influences of Addition of Metallic Titanium, Ferro-titanium, and Cu-Ti
Alloy upon the Structure of Gray Cast Iron**

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Journal of the Iron and Steel Institute of Japan
(*Tetsu to Hagane*), 43, 1234 (1957)

The cast iron melts containing about 3.5% C and about 1.8% Si were cast in small moulds used in the previous experiments after the addition of Ti in the form of metallic Ti, Ferro-Ti, and Cu-Ti alloy. In the present scope of experiments, gray cast irons having the same eutectic graphite structure may be prepared in the present case as in the previous experiments where cast iron melts have been treated with the slag containing TiO₂, as far as more than 0.05% Ti was contained in the cast metal in the form of TiC and the melts were cast at the temperature lower than 1400°C. It is doubtful, however, whether or not the above mentioned result can always be obtained when the larger mould is used for casting.

**Investigation on Cast Iron Having Refined Graphite Produced
by Melting Cast Iron Coverd with Slag Containing TiO₂. (IX)**

**Investigation on the Net Structure and the Estimation of
Micro-Hardness of S-H Cast Iron**

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Journal of the Iron and Steel Institute of Japan
(*Tetsu to Hagane*), 43, 1286 (1957)

The fracture surface as well as the polished surface of S-H cast iron shows a net structure having a boundary line of light gray color. Observation of the microstructure revealed that the boundary-line portion was a group of austenite dendrites and that the mesh of net (meshy portion) consisted of eutectic graphite structure.

The micro-hardnesses of boundary-line and meshy portions were estimated.