electron microscopic observation reveals this to lesser degree, probably due to inadequate dispersion of particles in the specimen) and halved the sedimentation volume, while the surface area or the mean particle diameter remained almost the same. This clearly shows that the pressing could almost completely disintegrate the secondary and tertiary particles to the primary particles but produce no fresh surface by deforming or crushing the primary particles themselves.

The metallurgical importance seems, therefore, to lie rather in the size distribution of the primary particles as revealed by the powder subjected to pressing than in the distribution of the original powder.

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20. On the Precipitates of Tungstic Acid

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The precipitates of tungstic acid produced by adding sodium tungstate solution to hydrochloric acid were observed with an electron microscope and dehydration curves of these precipitates were obtained by the use of a quartz-fibre spring balance.

(1) A turbid solution obtained by adding 0.5 ml of 0.1 molar sodium tungstate solution to 10 ml of 0.05 molar hydrochloric acid at room temperature, contained on centrifugifying the precipitate (a) consist of thin crystals of various forms, round, semi-elliptical, square, boat-like and needle-like (0.2–2μ). These crystals, if left in solution, slowly form aggregates which hardly disperse on addition of water. The supernatant solution contained fine needles (0.1μ) and small granules (0.2μ) which on standing assumed respectively the form of network and threads.

(2) The precipitate (b) produced by pouring sodium tungstate solution into hot hydrochloric acid consists of very fine angular plates (0.05μ).

(3) The dehydration curves are continuous with precipitate (a) and dicontinuous with precipitate (b) whose composition is $WO_3 \cdot H_2O$ at 85–185°C.

(4) Strong electron beam or heating decomposes thin crystals of tungstic acid to small granules randomly scattered within their orignal forms.

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21. Influence of Slag, especially of Al_2O_3 and TiO_2 in Slag upon the Structure and Mechanical Properties of Cast Iron. (V)

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The gray cast iron was melted under the slag of SiO_2–CaO–Al_2O_3–TiO_2 system