Electron Microscopic Studies on Alkaline Earth Carbonates. (II)

Electron Microscopic and Diffraction Studies on Precipitated Particles

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Journal of the Chemical Society of Japan, Pure Chemistry Section (*Nippon Kagaku Zasshi*), **78**, 1736 (1957)

Alkaline earth carbonates precipitated with carbon dioxide were studied by electron microscopy and diffraction method. The shapes of particles of calcium, strontium, and barium carbonates were cubic or spindle, spindle, and rod respectively. The size of particles of single carbonates decreased with increasing concentration of hydroxide solution. When the reagents were suspension, however, the particle size was almost independent of the concentration of hydroxide because the concentration of hydroxide in the solution was almost constant for various quantites of reagent. Calcium carbonate particles formed from sparingly soluble calcium hydroxide were nearly monodisperse, but strontium and barium carbonate particles formed from soluble hydroxides were polydisperse. The precipitates of calcium-strontium mixed carbonate, and calcium-barium mixed carbonate were the mixture of each single carbonate, because the formation of calcium carbonate was late and the crystal structure of calcium carbonate was different from that of strontium and barium carbonates. The strontium-barium mixed carbonate was the mixed crystal of strontium and barium carbonates. The precipitates of calcium-strontium-barium mixed carbonate contained both mixed and single crystals. These analyses were made by the high resolution electron diffraction and the selected area electron diffraction techniques.

Brittle Fracture and Spinnability of Viscous Materials

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Journal of the Japan Society for Testing Materials (*Zairyo Shiken*), **6**, 49 (1957)

Types of mechanical fracture or break-down of viscous materials such as rosin, asphalts and plasticized high polymers were examined at various rates of extension. It was found that the critical velocity for brittle fracture and for dropping break-down increased exponentially with increasing temperature. Creeping or spinnable extension was observed between these two limiting conditions.

For the aqueous solutions of glycerine, cane sugar *etc.*, spinnability was examined by the pulling up method. It was suggested that spinnability at a