

[Advanced Powder Technol., 1, 77 (1990)]

Computer simulation of fluidized bed granulation.

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The effect of sprayed binder droplets on fluidized bed granulation was investigated. It was observed that powders were granulated with a considerably small number of binder droplets and that the granulation rate strongly depended on the size of the binder droplets.

These phenomena were simulated by a computer so as to cause the imaginary particle unit to coalesce. It was assumed that the coalescence probability of particles was inversely proportional to the square of the particle size and that some unit particles aggregated with a single binder droplet to form a nucleus in the initial stage of the granulation. The results of the simulation were found to coincide with the experimental data, and the size of the nucleus was proportional to the volume of binder droplets.

[Yakugaku Zasshi, 110, 591 (1990)]

Effects of Amount of Bridging Liquid on the Growth Process and the Compaction Process of Agglomerate in Wet Spherical Agglomeration.

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Effects of the amount of bridging liquid on the growth and compaction processes of wet spherical agglomeration were studied by using glass beads as model powder. Compaction of agglomerate was enhanced by increasing the amount of bridging liquid used, producing the mechanically strong agglomerate with low porosity, *i.e.* large coordination number.

When the degree of saturation of voids in agglomerate with bridging liquid (R_f) 0.6, the growth process of agglomerate was described by use of a non-random coalescence mechanism and a coalescence mechanism at the later stage with $R_f=1.0$.

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Gas-Liquid Chromatographic Analysis of Carboxymethylcellulose and Carboxymethylstarch.

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The degree of substitution and the distribution of the carboxymethyl groups in both carboxymethylcellulose and carboxymethylstarch were determined by a gas-liquid chromatographic (GLC) method. Complete reduction of carboxymethyl groups to hydroxyethyl groups was carried out by the reduction of carboxymethylglucan with carbodiimide and sodium borohydride. The hydrolysates of the resulting hydroxyethylglucans were analyzed by a GLC method using a packed column and a capillary column, as the acetates of alditol and 1,2-*o*-ethyleneglucose (derived from 2-*o*-hydroxyethylglucose derivatives).