〔Chem. Pharm. Bull. **34**, 833 (1986)〕

Computer Simulation of Agglomeration by a Two-Dimensional Random Addition Model. IV. Agglomeration Kinetics and Micromeritic Properties of Agglomerate of Binary Mixtures of Adhesive Circles.

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Agglomeration of binary mixtures of adhesive circles with different sizes was simulated on a two-dimensional plane by a computar using a random addition model. The adhesion of circles in contact was determined by the probability coefficient of adhesion, Pc, defined by Eq. 1 in the text. It was assumed that the frequency of contact of circles was a function of the number of free circles that remained in the system. The growing process of the agglomerate was represented by the first-order kinetics Eq. 5 given in the text, describing a layering agglomeration.

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Crystal Modification of Phenytoin with Polyethylene Glycol for Improving Mechanical Strength, Dissolution Rate and Bioavailability by a Spherical Crystallization Technique.

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Phenytoin crystals with improved mechanical strength, dissolution rate and bioavailability were obtained by using a novel crystallization process termed "spherical crystallization". An alkaline solution of phenytoin held at 40 °C was poured into a well dispersed mixture of isopropyl acetate and hydrochloric acid containing a water-soluble polymer, e. g. polyethylene glycol (PEG), at 20 °C. Fine crystals of phenytoin incorporating PEG in proportion to its concentration in the solvent were directly agglomerated.

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Effects of Polyethylene Glycol on the Size of Agglomerated Crystals of Phenytoin Prepared by the Spherical Crystallization Technique.

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The effects of polyethylene glycol (PEG) 4000 dissolved in the crystallization solvent on the size of agglomerated crystals of phenytoin prepaed by the spherical crystallization technique with a bridging liquid (i. e. isopropyl acetate) were investigated. The average diameter of agglomerated crystals at equilibrium, where the rates of growth and destruction of the agglomerates were balanced, decreased linearly with PEG concentration, since the PEG reduced the cohesive force tending to agglomerate the crystals of the bridging liquid by decreasing the interfacial tension and the wettability of the bridging liquid.