

Coagulation with limited aggregations

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Abstract

Smoluchowski coagulation equations describe the evolution of the concentrations of particles which merge pairwise as time passes. In the original equation, particles are only characterized by their masses; here we suppose they have also arms (or stubs) which are used to perform aggregations. In other words, each particle receives initially a certain number of potential links which are consumed when the particle takes part to a coagulation event. Therefore the total number of aggregations involving a given particle is limited by its initial number of arms.

The purpose of the talk is to survey some recent contributions to this topic, including explicit resolution, phenomenon of gelation and of self-organized criticality, and limiting concentrations. This hints at connexions with certain branching processes which then are enlighten by the study of the microscopic model. The latter is a close relative to the so-called configuration model, a random graph model in which the degree sequence is pre-described.

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