

Fractal Aggregation Under Rotation

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Abstract: By means of the Monte Carlo simulation, a fractal growth model is introduced to describe diffusion-limited aggregation (DLA) under rotation. Patterns which are different from the classical DLA model are observed and the fractal dimension of such clusters is calculated. It is found that the pattern of the clusters and their fractal dimension depend strongly on the rotation velocity of the diffusing particle. Our results indicate the transition from fractal to non-fractal behavior of growing cluster with increasing rotation velocity, i.e. for small enough angular velocity ω the fractal dimension decreases with increasing ω , but then, with increasing rotation velocity, the fractal dimension increases and the cluster becomes compact and tends to non-fractal.

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