

## Quasi-fractals: New method of description of a structure of disordered media

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### Abstract

The description of a self-similar structure with the help of fractal dimension represents an effective tool for understanding of the scaling properties of disordered media. In this paper we suggest a new type of fractals (they were defined as quasi-fractals with logarithmic asymptotics) that can be suitable for description of a wide class of clusters formed by random fractals. As independent parameter we chose a number of coordination sphere  $j$  ( $j = 1, 2 \dots$ ). With respect to this parameter the radius of coordination sphere can be expressed as  $R(j) = R_0 j^\alpha$  and number of particles located inside of the sphere  $R(j)$  is expressed by another power-law function  $N(j) = N_0 j^\beta$ . Different algorithms considered in this paper confirm the effectiveness of the quasifractals in description of DLA clusters. We suppose that these new geometrical approach will increase the applicability of the mathematics of the fractional calculus. Copyright © 2006 IFAC.

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### Keywords

Fractional calculus, Heterogeneous medium, Quasi-fractals