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分离工程

逾渗多孔介质对固体颗粒吸附过程的影响

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摘要

研究了悬浮液中的颗粒在通过逾渗多孔介质时的被吸附特性。采用数值计算的方法;通过求解描述低速流体流动的Stokes方程以及简化的颗粒运动方程;初步得到颗粒在逾渗多孔介质中的运动轨迹;并在此基础上;求得颗粒与多孔介质内表面的碰撞概率;进而研究颗粒的被吸附特性。数值结果表明均匀多孔介质和分形多孔介质对颗粒的吸附存在本质差异。颗粒流出概率（实际中常表示为出口悬浮液中的颗粒浓度）与多孔床深度间的指数关系仅对均匀多孔介质成立;而对分形多孔介质并不成立。

关键词

多孔介质 逾渗 颗粒 吸附

分类号

Influence of percolation porous media on deposition process

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Abstract

The particle deposition in suspension flow through the lattice percolation porous media was studied based on numerical simulation of the Stokes equations and the simplified particle trajectory equation.Numerical results indicated essential differences in the deposition process between homogeneous and fractal porous media.In the homogeneous porous media;the deposition process could be seen as homogeneous.The exponential relation between the particle-flow-out probability and the system size was only applicable to homogeneous porous media.While in fractal porous media;the deposition process was quite heterogeneous.The exponential relation could not be used in fractal porous media.

Key words

porous media percolation particle adsorption

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