

## 分形多孔介质孔道网络模型的构建 Construction of Pore Network Model of Fractal Porous Media

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**关键词:** 干燥 多孔介质 孔道网络 分形 Voronoi 压汞法

**摘要:** 采用压汞试验获得实际多孔介质的微观结构参数。以冻干马铃薯为例计算了孔隙分形维数,结果表明冻干马铃薯结构具有显著的分形特性。运用位似变换理论、分形理论、Voronoi图以及马铃薯的特征参数等,构建出与马铃薯结构参数相对应的二维分形孔道网络模型。构建的网络模型考虑了影响多孔介质干燥的孔道微细结构特征,模型参数能够很好地反映多孔物料的微观结构,且获得了合理的分形维数。The micro-structure parameters of the actual porous media through mercury intrusion experiment were obtained, and the fractal dimension of pore distribution was calculated, taking frozen-dried potato for example. The result showed that the pores in the freeze-dried potato presented the remarkably fractal properties. A two-dimensional fractal pore network model of porous media was constructed based on the theories of homothetic reduction, fractal geometry, Voronoi diagram, along with the structural parameter of potato. Since pore microstructure characteristic was considered into the model, the parameter of network model can well reflect the microstructure of porous materials, and the reasonable fractal dimension was obtained.

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