

THE FRACTAL CHARACTER OF POROSITY IN POROUS MEDIA

HU ZUNGUO

Comprehensive Institute of Geotechnical Investigation & Surveying, Ministry of Construction, P.R.China

It is important to realize that porous media are a fractal material. The dimension of porosity distribution in porous media may be noninteger, i.e., fractal. To illustrate this point, we employed "Time Series Analysis" which was developed by P.Grasberger and I.Pcaccia in 1984 to study fractal nature of porosity in porous media and reached the conclusion that the fractal dimension values of porosity by ideal packing of sheralcal grain are 2.55 to 2.67.

For the case of grains of nonuniform spherical shape we developed a nanlytical method and obtained that the fractal dimation values are 2.33 to 2.90. This solution is important to petroleum exploitation, hydrogeology, engineering geology and porous materials. This work was supported by China National Science Foundation.