



Quantitative Characterization of Carbonate Pore Systems by the N-S Fractal Model

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Quantitative Characterization of Carbonate Pore Systems by the N-S Fractal Model Shuyun XIE^{1,2**}, Bing LI², Zhengyu BAO^{1,2}, Qicong LING² (1. State Key Laboratory of Geological Processes and Mineral Resources(GPMR), China University of Geosciences (CUG), Wuhan, China, 430074; 2.Earth Science Faculty, China University of Geosciences(CUG), Wuhan, China,430074) E-mail: shuyunxie@yahoo.com.cn 1.Abstract Environmental scanning electron microscope (ESEM) images have been used to get the information on two-dimensional micro-porosity of carbonate pore systems and the N-S fractal model is applied to characterize the property of pore-size distribution patterns of carbonate samples from two possible gas reservoirs located in the western Hubei and eastern Sichuan, P.R.China. All the samples are taken from Maokou group and Feixianguan group of upper Permian period. It is shown that those micropores in Maokou group are mainly of one-straightline-segment monofractal distribution patterns on the log-log N-S plots, and some of non-fractal distribution patterns, whereas those micropores in dolomites in Feixianguan group are following two straightline-segment fractal distribution patterns and those from limestones or dolomitic limestones do not follow such kind of power-law relationships. The results imply well that dolomites in Feixianguan group may be the optimum gas reservoir in the field of study, which are in agreement with the conclusion based on some physical parameters, including porosity and permeability, obtained from ESEM analysis and chemical experiments.