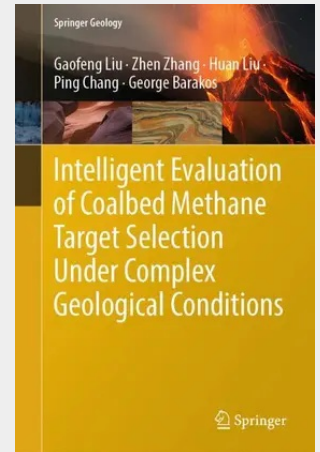


Intelligent Evaluation of Coalbed Methane Target Selection Under Complex Geological Conditions

This book starts from the perspective of "geological engineering integration" in coalbed methane development and conducts a detailed analysis and evaluation of the geological conditions (including regional geology and resource geology) and mining conditions (including reservoir recoverability and modifiability) that affect coalbed methane development. It establishes the optimal evaluation parameters for coalbed methane target areas and constructs a parameter system for optimal evaluation of coalbed methane target areas. On this basis, a fuzzy pattern recognition model for optimizing coalbed methane target areas was established, and the application of fuzzy recognition for optimizing coalbed methane target areas was carried out. The current research on coalbed methane selection evaluation is based on Analytic Hierarchy Process (AHP) and fuzzy mathematics theory. Although the above methods have achieved good application results, it is difficult to avoid the influence of subjective factors when using methods such as expert scoring or the Analytic Hierarchy Process (AHP) pairwise comparison to determine the weights of different evaluation parameters. Due to differences in subjective consciousness and knowledge reserves, different researchers have different understandings of the importance of the same evaluation index, resulting in differences in the assigned weights. Different evaluation results may be obtained in the same coalbed methane block. Therefore, scientifically reasonable empowerment is a huge challenge for both researchers and ordinary users. The fuzzy pattern recognition model for optimizing coalbed methane target areas proposed in this study does not involve parameter weighting, which corrects the uncertainty of evaluation results caused by parameter weighting in the Analytic Hierarchy Process and Multi-level Fuzzy Comprehensive Evaluation methods; At the same time, there is no need to construct pairwise comparison judgment matrices, making the calculation process simpler and improving the accuracy of the evaluation results.

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