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Study on the dominant factors of rock permeability

Thursday, 2 June 2022 10:10 (1h 10m)

Permeability is usually considered to be related to porosity. However, rocks with the same porosity may have different permeabilities in some cases, because of the variations in pore and throat size and pore space connectivity. It is vitally important to understand the effect of throat size on the transport property. In this work, five sets of regular pore network models and six core–based models are employed to study the effect of throat size on permeability. Four kinds of random distributions are utilized to generate reconstructed pore network models with varying pore size. Average pore coordination number is adjusted for the verification of the effect of connectivity on permeability. Random pore networks are also constructed to study the threshold point of permeability variation. Random forest and factor analysis methods are employed to study the dominant factors controlling permeability based on PNM extracted from core samples. The simulation results indicate that small throats play an extremely important role in determining permeability. The influence of pore coordination number on permeability is not obvious compared to that of small throat size.

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Time Block Preference

Time Block A (09:00-12:00 CET)

Participation

Online

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