InterPore2021
Online

13th Annual Meeting
31 May - 4 June 2021

Don't miss a moment!

Plan to view presentations before the conference

Contribution ID: **616**   Type: **Poster (+) Presentation**

Reconstruction of 3D shale digital rock based on generative adversarial network

Friday, 4 June 2021 09:40 (1 hour)

The pore structure of shale oil reservoir is complex, and the shale cores are hard to acquire. Accurately characterizing the pore structure of shale reservoir is the key to study the fluid seepage law in shale reservoir. Based on the three-dimensional focused ion beam scanning (3D-FIB-SEM) images of real shale cores, the structure of the original generative adversarial network model is redesigned. At the same time, to ensure that the reconstruction results can fully reflect the pore structure information of the shale core, the size of the training sample is increased, and the model is trained to generate three-dimensional shale digital rock. The porosity of the reconstructed digital rock and the original core are compared, and the pore network model is extracted from the reconstructed digital rock, then the pore structure properties are analyzed. The porosity, pore and throat sizes, connectivity, and coordination relationship of the reconstructed digital rock are highly in agreement with the original cores, which verifies that the generative model can generate high-quality three-dimensional shale digital rock. Finally, several digital rocks are generated, and the mean value and variation range of various pore structure parameters are calculated. It is proved that the generated digital rocks have stable pore space characteristics, and the trained generative model has good stability.

Time Block Preference

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

References

Acceptance of Terms and Conditions

Click here to agree

Newsletter

I do not want to receive the InterPore newsletter

Student Poster Award

Yes, I would like to enter this submission into the student poster award

Primary authors: YANG, Yongfei (China University of Petroleum (East China)); LIU, Fugui; YAO, Jun (China University of Petroleum (East China)); Prof. SONG, Huajun; Prof. WANG, Min

Presenter: LIU, Fugui

Session Classification: Poster +

Track Classification: (MS15) Machine Learning and Big Data in Porous Media