

## Session Program

May 13 - 16, 2024



# InterPore2024



中國石油大學(華東)  
China University of Petroleum

**16<sup>th</sup> Annual Meeting  
& Conference Courses**

13 - 16 May 2024

Shangri-La Hotel

Qingdao, China

Conference Courses 12 & 17 May



## InterPore2024

### MS15

# Mon, May 13

11:25 AM

## MS15: 1.1

Session

11:25 - 11:40 AM

**Machine learning accelerated molecular simulation: Implications for oil and gas problems**

**Speaker**

Dr Jie Liu

11:40 - 11:55 AM

**CO2 Leakage Detection using Optimized Deep Learning**

**Speaker**

Dr Xupeng He

11:55 AM - 12:10 PM

**Prediction of Upscaled Permeability of Digital Rock Cores Using Machine Learning Techniques**

**Speaker**

Yaotian Guo

12:10 - 12:25 PM

**Large Scale Efficient 3D Domain Transfer for Digital Images of Porous Materials using Pseudo-3D Architectures**

**Speaker**

Kunning Tang

12:25 PM

1:25 PM

## MS15: 1.2

Session

1:25 - 1:40 PM

**Deep learning-assisted technology transition in natural hydrogen development**

**Speaker**

tao zhang

1:40 - 1:55 PM

**Multiparameter Inversion of Reservoirs Based on Deep Learning**

**Speaker**

Qian Wang

1:55 - 2:10 PM

**A Vision Transformer for Size-Agnostic Modelling of Two-Phase Drainage in Complex Porous Media Considering Wettability, Interfacial Tension, and Resolution**

**Speaker**

Ping Wu

2:10 - 2:25 PM

**A neural network model with physics constraints for simulating CO2 storage in deep saline aquifers during and after injection**

	<p><b>Speaker</b> Mengjie Zhao</p>
	<p>2:25 - 2:40 PM  <b>2D to 3D deep learning reconstruction of CO2 electroconversion Gas Diffusion Electrode : a validation study</b>  <b>Speaker</b> Georgy Borisochev</p>
<p>2:55 PM</p>	<p>2:40 - 2:55 PM  <b>Deep Learning enhanced multiscale rock typing for digital core modeling</b>  <b>Speaker</b> Denis Orlov</p>
<p>5:00 PM</p>	<p><b>MS15: 1.3</b> Session</p>
	<p>5:00 - 5:15 PM  <b>Application of Diffusion Models to Generate Multiphase Fluid Pore-Scale Images</b>  <b>Speaker</b> Linqi Zhu</p>
	<p>5:15 - 5:30 PM  <b>Predicting ultimate hydrogen production and residual volume during cyclic underground hydrogen storage in porous media using machine learning</b>  <b>Speaker</b> Raymond Mushabe</p>
	<p>5:30 - 5:45 PM  <b>Efficient 3D Digital Rock Detail Reconstruction and Quality Enhancement with Super-Resolution Transformer</b>  <b>Speaker</b> Mr Zhihao Xing</p>
<p>6:00 PM</p>	<p>5:45 - 6:00 PM  <b>Integrating deterministic geological model with multimodal machine learning to predict shale productivity</b>  <b>Speaker</b> Gang Hui</p>

## Tue, May 14

10:55 AM

### MS15: 2.1

Session

10:55 - 11:10 AM

#### **Stable Diffusion in Digital Rock Analysis: Applications, Challenges, and Future Prospects**

**Speaker**

Yutian Ma

11:10 - 11:25 AM

#### **Optimizing Underground Hydrogen Storage through Surrogate Modeling: A CNN-LSTM-Attention Network Approach**

**Speaker**

Mr Zhilei Han

11:25 - 11:40 AM

#### **Feasibility study of the inversion method for non-uniform hydrate saturation distribution based on ensemble Kalman filter algorithm**

**Speaker**

Yongge Liu

11:40 - 11:55 AM

#### **A Comprehensive Approach to In-Situ Stress Estimation in Subsurface Energy Structures using Numerical Simulation and Machine Learning**

**Speaker**

Dr Erfan Mohammadian

11:55 AM

12:00 PM

### MS15: 2.2

Session

12:00 - 12:15 PM

#### **A deep learning enabled massive parallel simulator for porous media flow**

**Speaker**

Prof. Chensong Zhang

12:15 - 12:30 PM

#### **Application of Machine Learning and Deep Learning Methods in Reservoir Development**

**Speaker**

Prof. Kai Zhang

12:30 - 12:45 PM

#### **3D Pore Segmentation and Pore-Scale Simulation by Deep Learning**

**Speaker**

Haotian Li

12:45 - 1:00 PM

**A multi-well deep learning model considering geological and engineering parameters for the long-term forecasting of shale gas production**

**Speaker**  
Yilun Dong

1:00 PM

# Wed, May 15

10:55 AM

## MS15: 3.1

Session

10:55 - 11:10 AM

**Unsupervised resolution boosting of  $\mu$ CT scans integrated into a supervised convolutional network to predict 3D rock properties**

**Speaker**

Prof. Saeid Sadeghnejad

11:10 - 11:25 AM

**Deep learning for microstructure analysis of porous media from image augmentation, and multiscale fusion to image auto-segmentation**

**Speaker**

Dr Fugui Liu

11:25 - 11:40 AM

**Machine Learning Assisted Numerical simulation of Propylene Glycol-mixed Steam Enhanced Extraction in Unsaturated soils**

**Speaker**

Zhixin Chen

11:40 - 11:55 AM

**Data Quality Assurance Metrics for Federated Machine Learning**

**Speaker**

Bernard Chang

11:55 AM

## Thu, May 16

9:05 AM

### MS15: 4.1

Session

9:20 - 9:35 AM

**Solving seepage equation using physics-informed residual network without labeled data**

**Speaker**

Shuaijun Lv

9:35 - 9:50 AM

**Efficient Surrogate Modeling of Subsurface Flow in Porous Media Using Transfer Learning with Multifidelity Data**

**Speaker**

Mr Wenyue Sun

9:50 - 10:05 AM

**Super-resolution imaging of multiphase fluid distributions in porous media using deep learning**

**Speaker**

Zhuangzhuang Ma

10:20 AM

11:50 AM

### MS15: 4.2

Session

11:50 AM - 12:05 PM

**Anchored Physics-Informed Neural Network for Fluid Flow Simulation in Heterogeneous Porous Media**

**Speaker**

Jingqi Lin

12:05 - 12:20 PM

**A Transformer-based framework for brine-gas interfacial tension prediction: Implications for H<sub>2</sub>, CH<sub>4</sub> and CO<sub>2</sub> geo-storage**

**Speaker**

Tianru Song

12:20 - 12:35 PM

**Machine learning algorithms for predicting breakthrough curves for pore scale reactive flow in porous media and application to parameter identification**

**Speaker**

Prof. Oleg Iliev

12:35 - 12:50 PM

**Effect discussion and workflow establishment of machine learning algorithm in logging classification: A case study from the classification of sepiolite bearing strata in the first member of Maokou Formation**

**Speaker**

杉任

12:50 PM