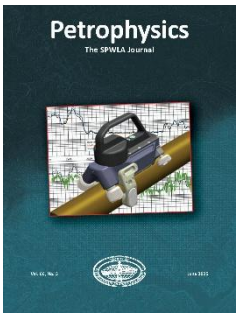

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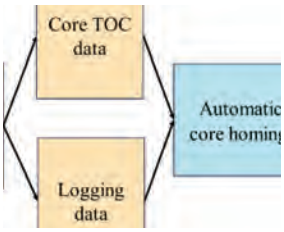
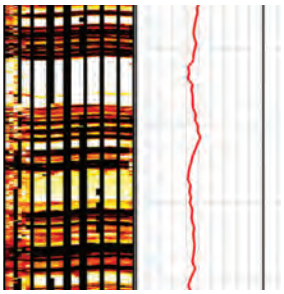


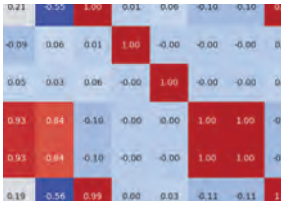
Dong et al. **PAGES 435–458**

Modern ensemble-learning techniques offer innovative strategies for predicting total organic carbon (TOC) from well-log data, addressing the limitations of traditional petrophysical methods. In this study, data preprocessing methods such as automatic core homing and Cook's distance are applied, and an improved stacking framework is introduced. A three-level hierarchical analysis quantitatively evaluates model performance and shows that the enhanced stacking model performs better than both traditional petrophysical and standard machine-learning methods.



Eghbali and Torres-Verdín **PAGES 392–423**

This paper presents a practical interpretation workflow for evaluating shaly sandstones using modified Thomas-Stieber (T-S) diagrams constructed directly in the well-log domain, addressing some of the important limitations of the standard T-S approach. By deriving forward models for nuclear-log responses based on reservoir-specific properties and volumetric concentrations of laminated shale and dispersed clay, the authors enable readers to customize the T-S diagrams for their target reservoirs to achieve accurate classification and quantification of shaly-sandstone types under realistic conditions. Moreover, the authors propose a new approach to the interpretation of natural gamma ray and thermal-neutron porosity logs.

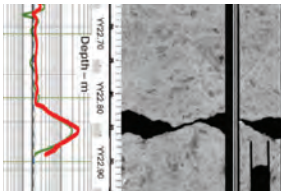


Jiang et al. **PAGES 478–498**

This study proposes a stacking-ensemble-learning-based method to calibrate microparameters in a shale particle flow model using PFC2D and laboratory test data. The results show high accuracy in predicting macroscopic mechanical properties, with strong agreement between simulation and experimental stress-strain curves and failure modes, confirming the method's effectiveness and reliability.

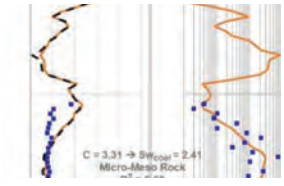
Li et al. **PAGES 499–530**

This study demonstrates that guanidine gum fracturing fluid causes severe reservoir damage, especially in clastic sandstones, reducing productivity. Quartz sandstones benefit from low-solid fluids, while clastic sandstones require cleaner fluids with clay stabilization. These findings guide optimized fracturing designs for tight gas reservoirs.



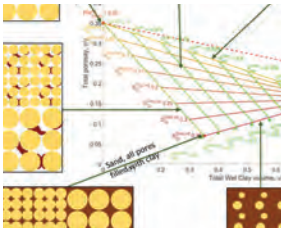
Mirza et al. **PAGES 352–363**

The core scanner instrument uses advanced pulse electromagnetic technology to let subsurface teams recognize where they are on the structure and whether they have reached their coring objective. In addition, as the new scanner measures the resistivity and dielectric permittivity of the cross section of the core, integrating these data with the other petrophysical parameters from the core analysis helps refine the formation evaluation results.



Sifontes et al. **PAGES 459–476**

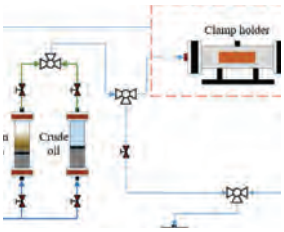
A methodology based on the Coates equation has been developed, facilitating its application to any type of unimodal rock worldwide. It uses correlations that enable the estimation of permeabilities that closely reflect the rock's true properties, even in the absence of core data, based solely on porosity and water saturation curves.



Tyurin and Davenport **PAGES 365–391**

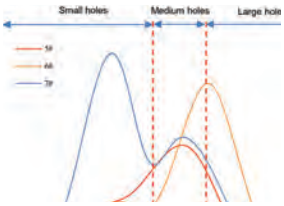
The paper introduces the Thomas-Stieber-Tyurin (T-S-T) model, an important enhancement of the traditional Thomas-Stieber (TS) model that incorporates clay volume (Vclay) to more accurately evaluate reservoir quality in thin beds. This modification addresses the limitations of the TS model by explicitly differentiating between Vclay and Vshale, providing a robust framework for defining volumetric ranges. The inclusion of Vclay in petrophysical correlations leads to improved core-log calibration, enhancing the overall accuracy of reservoir assessments.

JUNE 2025 PAPER SUMMARIES



Xiao et al. **PAGES 531–545**

This study proposes an optimization method for injection fluids in tight oil reservoirs, combining high-pressure/high-temperature (HPHT) imbibition experiments with nuclear magnetic resonance (NMR) technology. The method enhances pore space connectivity and permeability through tailored fracturing fluids, achieving a 72% success rate in field trials with an average oil production of 4.33 tons/day, quadruple that of conventional methods. Results demonstrate the critical role of fluid selection in improving energy storage and recovery efficiency in low-permeability reservoirs.



Zhang et al. **PAGES 425–434**

This study analyzes fluid migration and imbibition characteristics in shale oil reservoirs under different boundary conditions, finding that open-face imbibition yields the highest oil recovery (47.34%) and is influenced by pore structure rather than just porosity/permeability. The results provide insights for optimizing shale oil development by adjusting water injection contact areas and understanding pore-level fluid behavior.