



**Machine Learning; University of Texas Austin Researcher Yields New Findings on Machine Learning (Photoelectric Factor Characterization of a Mixed Carbonate and Siliciclastic System Using Machine-Learning Methods: Pennsylvanian Canyon and Strawn Reef Systems, ...)**

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2025 JAN 17 (VerticalNews) -- By a News Reporter-Staff News Editor at Chemicals & Chemistry -- Investigators publish new report on artificial intelligence. According to news reporting originating from Austin, Texas, by VerticalNews correspondents, research stated, "The photoelectric Factor (PEF) log is a powerful tool for distinguishing between siliciclastic and carbonate lithofacies in well-log analysis and 2D correlations."

Funders for this research include The State of Texas Advanced Oil And Gas Resource Recovery (Starr) Program.

The news journalists obtained a quote from the research from University of Texas Austin: "However, its application in complex reservoirs has some challenges due to well spacing. We present a workflow to extend its capabilities into a 3D environment to characterize the Pennsylvanian Strawn and Canyon reef complex in the Salt Creek field, Kent County, West Texas. The productive zones within this reservoir are composed of porous oolitic grainstones and skeletal packstones. However, there are some porous shale beds within the reef complex that are indistinguishable from the porous limestone zones on the neutron porosity log that have posed major challenges to hydrocarbon production. To address these problems, we used a machine-learning procedure involving multiattribute analysis and probabilistic neural network (PNN) to predict photoelectric factor (PEF) volume to characterize the reservoir and identify the shale beds."

According to the news reporters, the research concluded: "By combining neutron porosity, gamma ray, and the predicted PEF logs, we found that (1) these shale beds, hereby referred to as shale-influenced carbonates, are characterized by photoelectric factor values ranging from 4 to 4.26 B/E. (2) Based on the PEF values, the least porous interval is the Canyon System, having <1% porosity and characterized by PEF values of >4.78 B/E; while the most porous interval is the Strawn System, composed mostly of zones with porosity ranging from 3% to 28%, characterized by PEF values varying from 4.26 to 4.78 B/E."

For more information on this research see: Photoelectric Factor Characterization of a Mixed Carbonate and Siliciclastic System Using Machine-Learning Methods: Pennsylvanian Canyon and Strawn Reef Systems, Midland Basin, West Texas. Geosciences, 2024,15(1). (Geosciences - <http://www.mdpi.com/journal/geosciences>). The publisher for Geosciences is MDPI AG.

A free version of this journal article is available at <https://doi.org/10.3390/geosciences15010003>.

Our news editors report that additional information may be obtained by contacting Osareni C. Ogiesoba, **Bureau of Economic Geology**, University of Texas Austin, Austin, TX 78713, United States. Additional authors for this research include Fritz C. Palacios.

ORCID is an identifier for authors and includes bibliographic information. The following is ORCID information for the author of this research: Fritz C. Palacios (orcid.org/0000-0002-4457-2057).

Keywords for this news article include: University of Texas Austin, Austin, Texas, United States, North and Central America, Anions, Cyborgs, Alkalies, Carbonates, Carbonic Acid, Machine Learning, Emerging Technologies.

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