Fuel Research; Studies from Yangtze University Have Provided New Information about Fuel Research (An Analytical Model To Couple Gas Storage and Transport Capacity In Organic Matter With Noncircular Pores)

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2020 MAY 22 (VerticalNews) -- By a News Reporter-Staff News Editor at Energy Weekly News -- A new study on Fuel Research is now available. According to news originating from Wuhan, People's Republic of China, by VerticalNews correspondents, research stated, "Scanning Electro Microscope (SEM) images illustrate the variety of possible pore shape in organic matter of shale reservoirs. The size of the pores with different geometries is at nanoscale (10-100 s nm), hence the ratio of wetted surface area to the volume of pores (specific surface area, SSA) is high."

Funders for this research include National Natural Science Foundation of China, NanoGeosciences Laboratory at the **Bureau of Economic Geology**, The University of Texas at Austin, China Scholarship Council, MSRL consortium at the **Bureau of Economic Geology**, The University of Texas at Austin.

Our news journalists obtained a quote from the research from Yangtze University, "For the systems with high SSA the collisions between gas molecules and pore walls become significant, therefore, fluid flow is not dominantly controlled by the bulk flow, i.e., fluid-wall surface interaction becomes important. Most shale permeability models assume circular nanopores that results in poor prediction of permeability. We present a novel analytical apparent porosity and permeability model to model gas storage and permeability in shale gas reservoirs with noncircular nanopores. The SSA and the aspect ratio of height to the width of noncircular nanopores, were both used in our model to couple gas storage and transport capacity. We validated our model with permeability values calculated from pore network simulations of five shale samples from Jianghan Basin of China. The results showed that sharp edges in nanopores could dramatically affect permeability. For examples, the noncircularity deviation of gas flow in a rectangular nanopore is more than an equivalent nanopore with elliptical cross-section."

According to the news editors, the research concluded: "The assumption of circular cross-section nanopores in estimating apparent porosity and permeability could impose up to 55% error depending on the pore geometry."

For more information on this research see: An Analytical Model To Couple Gas Storage and Transport Capacity In Organic Matter With Noncircular Pores. Fuel, 2020;268():. Fuel can be contacted at: Elsevier Sci Ltd, The Boulevard, Langford Lane, Kidlington, Oxford OX5 1GB, Oxon, England. (Elsevier - www.elsevier.com; Fuel - www.journals.elsevier.com/fuel/)

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