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# Laboratory Measurements of Fluid Transport Properties on Tight Gas Sandstones and Applications

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Deep gas reservoirs are of great interest for the E&P industry. Large areas of such reservoirs have permeabilities below 1 mD. The reservoir rocks in these areas show a strong stress sensitivity of the fluid transport properties and a considerable productivity decline due to changing stress conditions during the production process. For correct modeling and simulation of Tight Gas reservoirs it is important to know the behavior of the fluid transport properties under the changing stress condition the reservoir experiences. In several measurement series the effects of changing overburden and pore pressure on Rotliegend sandstone samples from north German Tight Gas reservoirs have been quantified and used to set up correlation functions. With the correlation functions from the own measurements and additional data and correlations from literature a Rock Data Catalog has been developed as tool to help reservoir engineers with modeling and simulation of such reservoirs. The Rock Data Catalog consists of the Rock Database and the Correlation Module. The Rock Database contains general and petrophysical rock data. The Correlation Module uses this data to generate secondary data of e.g. in-situ capillary and hydraulic rock properties with appropriate correlation functions.
Viability of the economic gas production from Tight Gas Reservoirs strongly depends on reservoir quality. Therefore identification of high quality reservoir parts or so called Sweet Spots for placing production wells and planning hydraulic fracturing stimulation, is one of key issues of the tight gas reservoir characterization and evaluation. The data and correlation functions collected in the Rock Data Catalog could also be used to identify Sweet Spots in Tight Gas reservoirs. Several rock parameters and properties, which affect the fluid flow in a reservoir (like lithology, clay content, water saturation, permeability, pore size distribution) can be identified and used to set up a Sweet Spot Index as a measure for the reservoir quality.