

## Measuring CO<sub>2</sub> in Coalbed Reservoirs

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CO<sub>2</sub>, whether natural occurring or introduced, can have significant effects on the production and subsequent handling of gas from coalbed reservoirs. CO<sub>2</sub> has greater affinity for absorption onto coal than methane and thus displaces methane. This displacement, with naturally occurring CO<sub>2</sub>, will result in a reduction of the capacity of the coal to hold methane, and if not considered, will result in lower than predicted SCF/ton of methane storage. In systems of introduced CO<sub>2</sub>, such as flooding or enhanced recovery, the greater affinity of CO<sub>2</sub> for the surface of the coal is used to drive off the methane and thus increase the production rate. In both cases, knowledge of the amount of CO<sub>2</sub> in the system can affect the economics and operational procedures of producing the reservoir. Raman spectroscopy, a laser based spectroscopy used for chemical analysis, has been adapted to quantify and identify the chemical forms of CO<sub>2</sub> in reservoir fluids.