# Nuclear Magnetic Resonance System for Determining Oil and Water Compositions in Drilling Mud

Tech ID: 25909 / UC Case 2014-457-0

## ABSTRACT

Researchers at the University of California, Davis have developed a nuclear magnetic resonance (NMR) system and method for determining oil and water compositions in drilling mud.

## FULL DESCRIPTION

In the exploration of oil or gas by drilling, a drilling mud is circulated in the bore hole to cool and lubricate the drill bit. This mud is most often an emulsion of either water-in-oil or oil-in water and it moves drill cuttings to the surface and maintains the integrity of the wellbore. Precise estimation of this mud and the oil-water ratios within are useful in determining the value and efficacy of drilling and oil/gas exploration in a specific location. Distillation apparatuses such as retorts are typically used to measure the oil and water compositions in drilling muds, but these devices are time consuming to clean and operate.

Researchers at the University of California, Davis have developed a unique nuclear magnetic resonance (NMR) system and method for determining the oil and water compositions in drilling mud. This is accomplished by separating out the signals from oil and water in a two dimensional relaxation space wherein the oil and water ratios are a function of the separated signals. This system is fast, easy to use, clean and maintain, and provides better accuracy than existing systems, allowing for better estimations of precise water to oil ratios in drilling muds.

## APPLICATIONS

- Determination of oil and water compositions in drilling fluids

## FEATURES/BENEFITS

- Cost effective
- Easy to use and clean
- More precise estimations of water to oil ratios

## PATENT STATUS

| Country | Type | Number | Dated | Case |
|---|---|---|---|---|
| United States Of America | Issued Patent | 10,527,566 | 01/07/2020 | 2014-457 |

## ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- Transformable Smart Peptides as Cancer Therapeutics
- Scanning for Spoilage of Food Contents in Metallic and Non-Metallic Containers
- Nanoplatform for Cancer Therapy

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### OTHER INFORMATION

**KEYWORDS**

drilling mud, drilling fluid, relaxometry, nuclear magnetic resonance, composition, oil, gas

**CATEGORIZED AS**

- **Energy**
  - Hydrocarbon
- **Imaging**
  - Other
- **Sensors & Instrumentation**
  - Environmental Sensors
  - Physical Measurement

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2014-457-0

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