

## Development of a magnetic resonance surface scanner for near surface geophysics

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Magnetic resonance (MR) technique enables us to quantify water protons in geo-materials such as concrete. The technique was applied to a portable in-situ surface scanner for the liquid water detection in near surface geophysics. The MR system comprises a Nd-Fe-B magnet with an investigation depth of 3cm, and the proton Larmor frequency is a few megahertz. The raw MR data are the time-domain CPMG waveforms from which water volume fractions and pore sizes could be estimated. The details of the principle and system being conducted will be disclosed in the presentation.

Reference: Nakashima, Y. (2015) Development of a Single-Sided Nuclear Magnetic Resonance Scanner for the In Vivo Quantification of Live Cattle Marbling. Applied Magnetic Resonance, 46, 593-606. Open access at <http://dx.doi.org/10.1007/s00723-015-0657-4>

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図1

製作中の磁気共鳴表面スキャナー。手に持っているのは希土類永久磁石、前景は磁石キャリア、背景は分光器本体。磁石は、磁石キャリアのアームに取り付ける予定。

Fig. 1

Portable MR surface scanner being constructed. The Nd magnet with hands will be connected to the magnet carrier (front), and the obtained MR signals are to be processed by the spectrometer (rear).