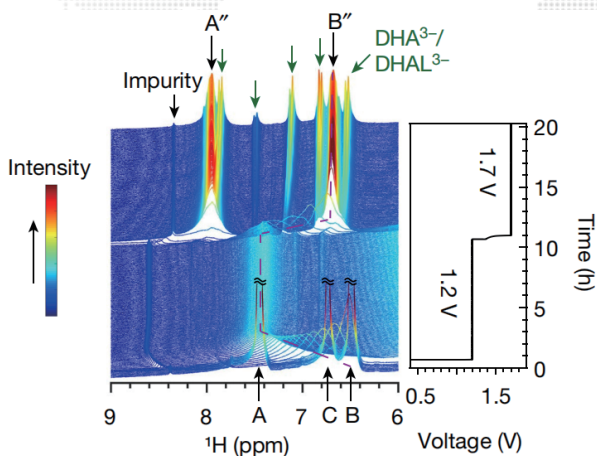# CAN400 Application Areas

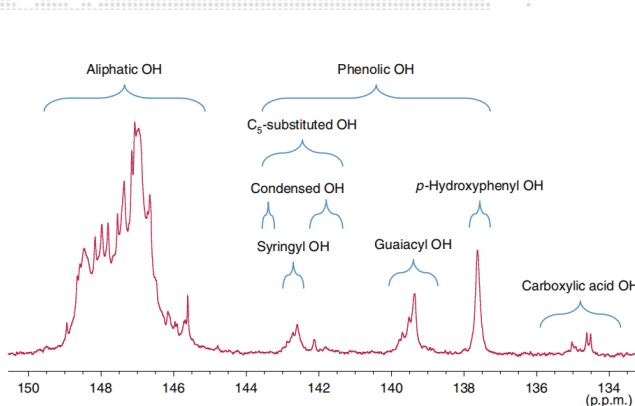## Application Examples

^{1}H NMR spectra of 100 mM DHAQ during a poten - tial hold at 1.2 V and 1.7 V, following charging at 100 mA.

The quantitative ^{31}P NMR partial spectrum of a hardwood poplar lignin derived with TMDP using NHND as an internal standard

Research on redox flow batteries requires funda - mental insight at the molecular level to improve performance. By applying in situ nuclear magnetic resonance (NMR) methods to the electrolyte, electrolyte decomposition and battery self-dis - charge canbe explored in real time.

Reference: Nature, 2020, 579(7798): 224-228.

In lignin, groups with unstable protons can react with phosphorus-containing reagents to form phos - phorus-containing derivatives. By using the technique of quantitative ^{31}P NMR spectroscopy, the quantity and structure of functional groups such as carboxyl and hydroxyl groups can be studied.

Reference: Reference: Nature Protocols, 2019, 14(9): 2627-2647.

Application Fields

Chemistry Field
· Study of chemical reaction kinetics
· Determination of catalyst structures
· Analysis of intermediate
· Screening and combinatorial synthesis of
· compound libraries
· Identification of unknown products

Environmental Science Field
· Detection of heavy metals and radionuclides(HMR)
· Analysis of phosphorus forms and environment
· Study of soil organic matter(SOM) and stability
· Analysis of atmospheric aerosols

Energy Field
· Research on electrolyte for sodium and lithium batteries
· Analysis of battery electrode
· Analysis of liquid fuel and lubricant components
· Study of photochemical catalytic in hydrogen energy
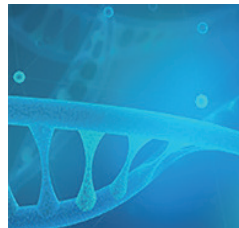
Biological Science Field
· Determination of structures of bacterial RNA
· Identification mechanisms of protein complex interaction
· Biological structure analysis of membrane proteins and fibrils
· Analysis of cellular biomolecular complexes
· Analysis of biological metabolites

Food Field
· Analysis of fatty acid components
· Detection of adulteration and quality control
· Identification of agricultural produce origins
· Detection of food additives

Pharmaceutical Field
· Analysis of disease-causing proteins
· Study and inhibition of virus life cycles
· Analysis of cancer cell development and inhibition processes
· Mechanism of drug action and antibody research
· High-throughput drug screening