

Extremely High Sensitivity Cryogenic Probe, UltraCOOL Probe

We successfully developed UltraCOOL probe that enables reduction of thermal noise and achieves extremely high sensitivity by keeping the detection coil and pre-amplifier of probe at a very low temperature. This probe makes it possible to reduce the measurement time of ¹³C NMR to **1/25**, compared to conventional room temperature probes.

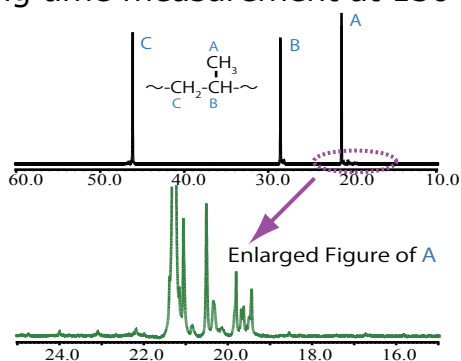
【UltraCOOL Probe features】

- High sensitivity has been achieved!
¹H sensitivity is 4 times and, ¹³C sensitivity is 5 times higher than conventional room temperature probes.
- Auto-tuning and a built-in FG Coil are available, which makes it possible to perform the same measurements as a normal probe!
- Capable of long time high temperature measurements, and is extremely effective in analysis of polymer's stereoregularity and so on!

【UltraCOOL Probe appearance】



【Long time measurement at 150°C】



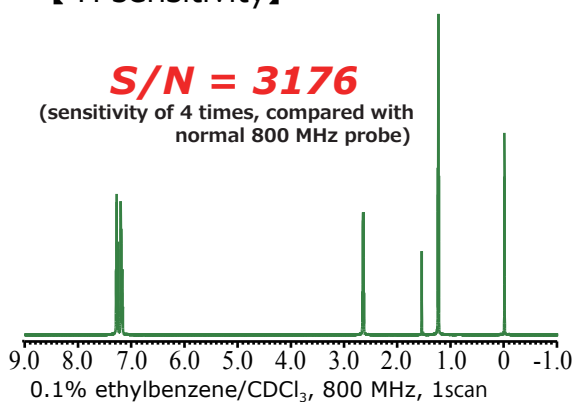
sample: polypropylene isotactic/ODCB-*d*₄,
600 MHz, 20,000scans

Temp: **150°C** Time : **19 hours**

【¹H sensitivity】

S/N = 3176

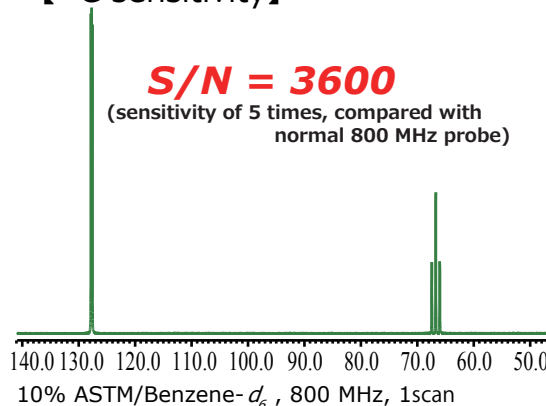
(sensitivity of 4 times, compared with normal 800 MHz probe)



【¹³C sensitivity】

S/N = 3600

(sensitivity of 5 times, compared with normal 800 MHz probe)



A part of this development has been supported by the Strategic Innovation Creation Promotion program of Japan Science and Technology Agency (JST).