

S29-4 Turn-On Sensing of Metabolic Events with Signal Switching Probe

○Shinsuke SANDO¹

¹Inamori Frontier Res. Cent., Kyushu Univ.

Among a variety of chemical/biochemical events, metabolic profiling is one of the most intriguing targets. Metabolites are chemical products resulting from essential biological activities, so that these metabolites could be good biomarkers to reveal physiological or chemical status of cells, tissues, and organs. NMR-based technology is one of the most promising techniques for analysis of such biochemical reactions, since biological organic molecules containing H (¹H, approx. 100% natural abundance), C (¹³C, approx. 1% natural abundance), and N (¹⁵N, approx. 0.4% natural abundance) are all NMR-active.

Attempts to trace metabolic pathways by the administration of isotope-labeled compounds as probes has been reported. Actually, NMR analyses of isotopically labeled probes have allowed direct investigation of specific biochemical reactions in cells and even in animals. However, these probes are constitutively NMR-active. Ideal chemical probes are those that are otherwise NMR-in active and are rendered NMR-active only when subjected to specific biochemical events, like FRET- or PET-based fluorescent probes. In this presentation, we will report on our recent challenge for such NMR/MRI probes.