A Probe Comparison Study

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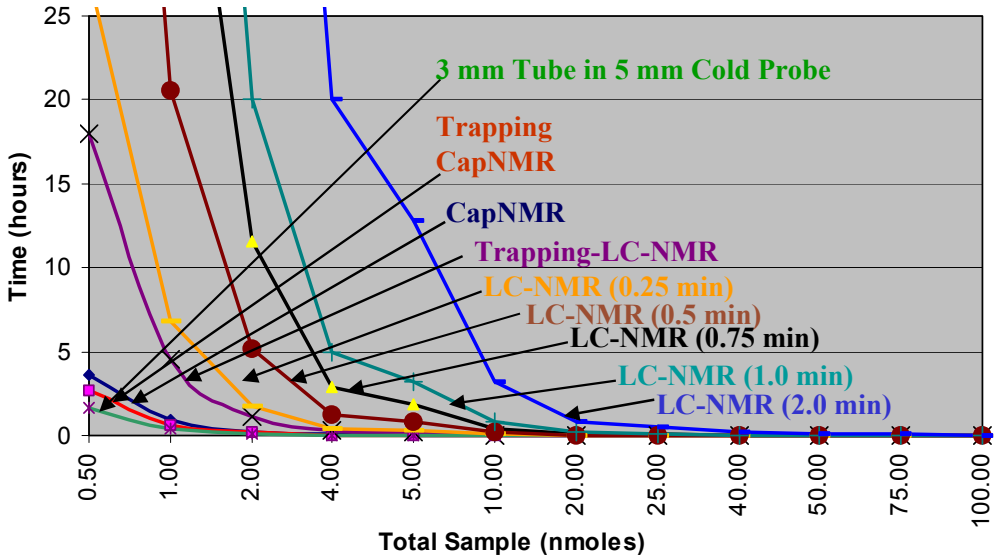
Abstract: A wide variety of NMR probes are commercially available, differing in various ways that affect their performance. The standard S/N on ethylbenzene is a widely used measure of probe performance; however, many other factors (RF homogeneity, gradient recovery times, etc) also play a role when the full array of commonly used experiments are considered. We have at our facilities an array of probes from different vendors: triple resonance probes, cryo/coldprobes, a Nanoprobe, flowprobe, and two different configurations of microcoil flow probes. We present comparisons on a set of standard samples using a series of common 1D and 2D experiments to evaluate the performance of these probes for homonuclear, heteronuclear indirect detection, and water suppression. We also discuss how these comparisons affect the utility of these probes for varying applications. The relationship between sample amount, NMR sensitivity and throughput for the various probes is also discussed. An example of time *vs* sample amount for a given probe and sample delivery configuration is shown below. The figure is based on measured proton spectra and values extrapolated using well understood NMR principles.

^{1}H 1D Spectrum Only