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The NMR 'split peak effect' in cell suspensions: historical perspective, explanation and applications

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ABSTRACT

The physicochemical environment inside cells is distinctly different from that immediately outside. The selective exchange of water, ions, and molecules across the cell membrane, mediated by integral, membrane-embedded proteins is a hallmark of living systems. There are various methodologies available to measure the selectivity and rates (kinetics) of such exchange processes, including several that take advantage of the non-invasive nature of NMR spectroscopy. A number of solutes, including particular inorganic ions, show distinctive NMR behaviour, in which separate resonances arise from the intra- and extracellular solute populations, without the addition of shift reagents, differences in pH, or selective binding

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