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Magneto-optical contrast in liquid-state optically-detected NMR spectroscopy DANIELA PAGLIERO, CARLOS MERILES, Physics Department. City College of New York. CUNY — We use optical Faraday rotation (OFR) to probe nuclear spins in real time at high-magnetic field in a range of diamagnetic sample fluids [1]. This technique is shown to speciate functional groups with the same chemical shifts as is seen in conventional NMR, however, the intensities of the OFR-NMR peaks are influenced by optical detuning and hyperfine couplings. We investigate protons at chemically-distinct sites and other lower-gyromagnetic-ratio nuclei including carbon, fluorine and phosphorous [2]. Binary mixtures for protonated systems were also tested and the results suggest that the present approach is sensitive to the solvent-solute dynamics in ways complementary to those known in inductive NMR.

[1] D. Pagliero, W. Dong, D. Sakellariou and C. A. Meriles. *J. Chem. Phys.* 133, 154505 (2010).
[2] D. Pagliero and C. A. Meriles. *Proc. Natl. Aca. Sci.* USA (2011) in press.

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