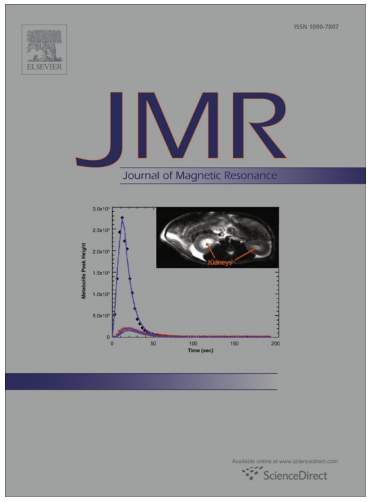

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An Alternative Solution for Computer Controlled Tuning and Matching of Existing NMR Probes

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1. Abstract

Concerning many fields of NMR application including temperature dependent NMR, thermoporometry and cryoporometry, or application of sample changers, retuning and matching of NMR probes is necessary. Mismatch of the probe is especially critical in the case of high magnetic fields, polar or ionic solvents or extreme thermal conditions. Careful tuning is required for quantitative NMR measurements as well. Manual fulfillment of above written matching requests is excluded in the case of automated or remotely controlled measurements. Spectrometer manufacturers offer modern probes equipped with automatic tuning/matching mechanics like Bruker ATM™, suitable for these experiments. Disadvantages of probes with built-in ATM™ are the significantly higher price, the non-detachable and non-portable construction. Concerning solid state NMR, computer controlled tuning and matching is a high desire since no industrial solution was developed yet for MAS NMR probes. We present an alternative solution for computer controlled tuning and matching of existing Bruker probes. Building costs are significantly lower, since only commercially available materials and ICs are used.

2. Keywords

Automatic tuning and matching, Impedance matching, Bruker ATM, Remote tuning and matching, Computer controlled tuning and matching

3. Introduction