

A proton birdcage coil integrated with interchangeable single loops for multi-nuclear MRI/MRS

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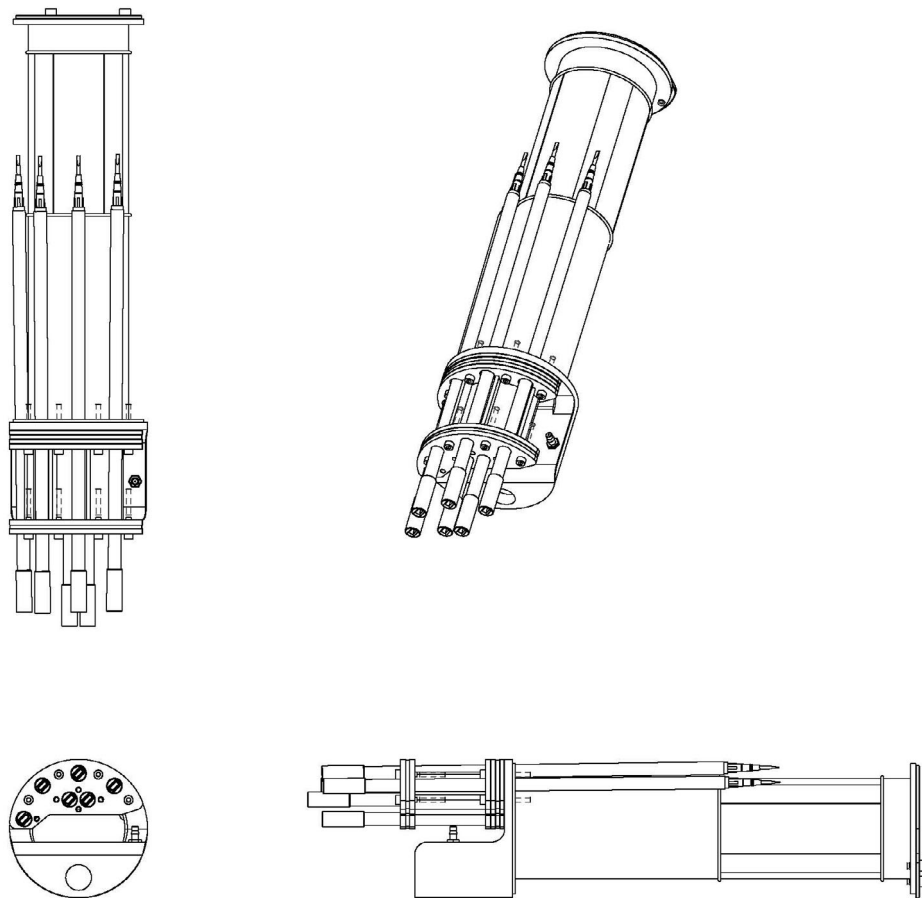


Fig. S1 Details of coil structure.

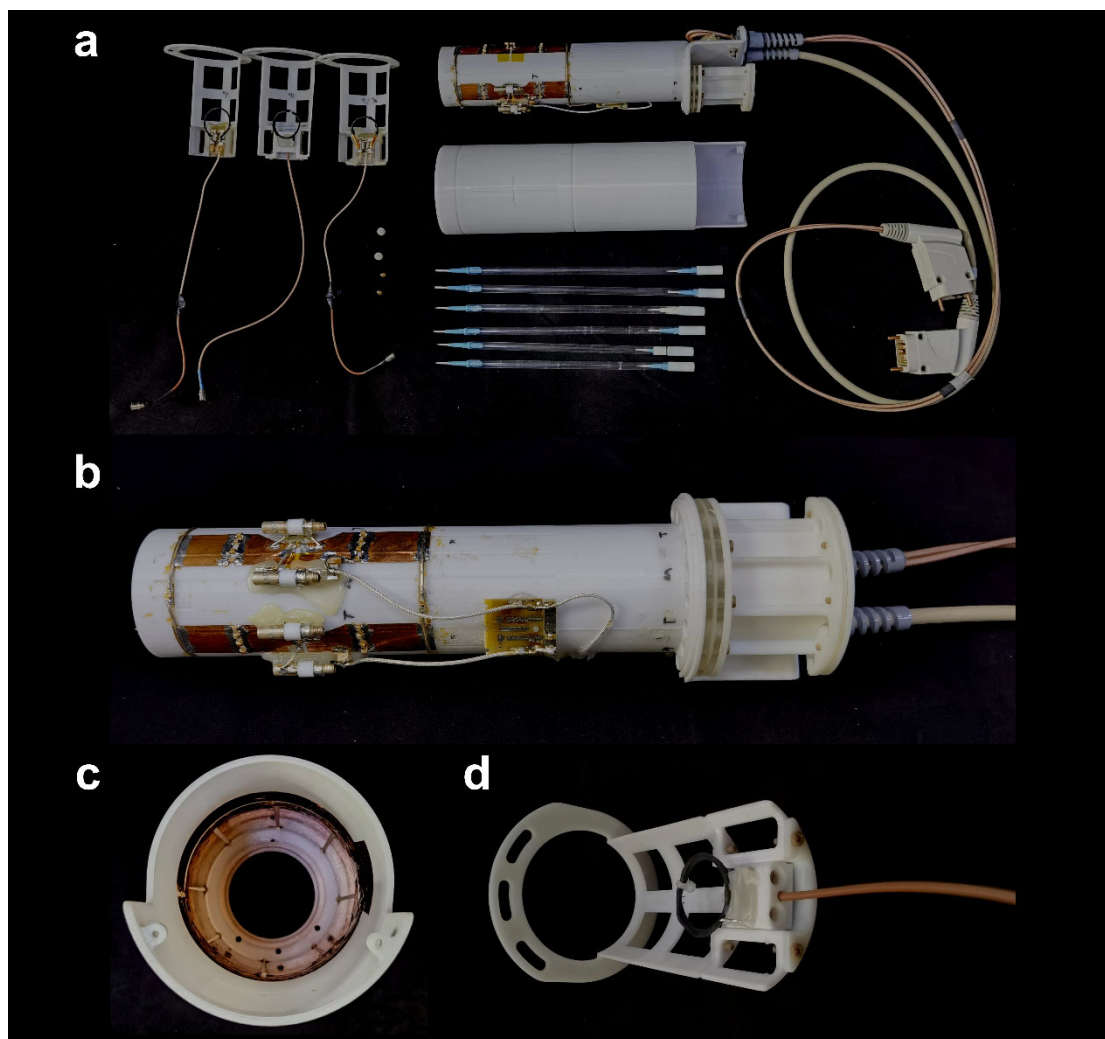


Fig. S2 Real printed structure of the coil housing. (a) Overview of separate parts of the coil. (b) Inner cylinder of the coil. (c) Outer cylinder of the coil. (d) Arc bracket of surface coil.

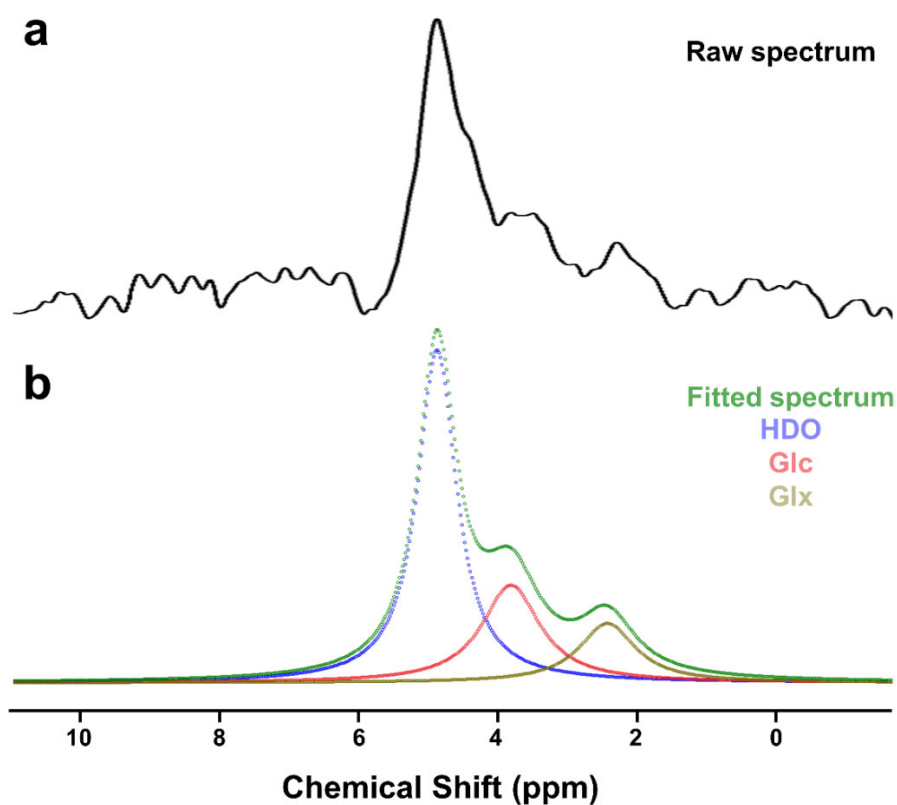


Fig. S3 Example raw data (a) and example fitted outcome (b) of deuterium magnetic resonance spectroscopy (MRS).

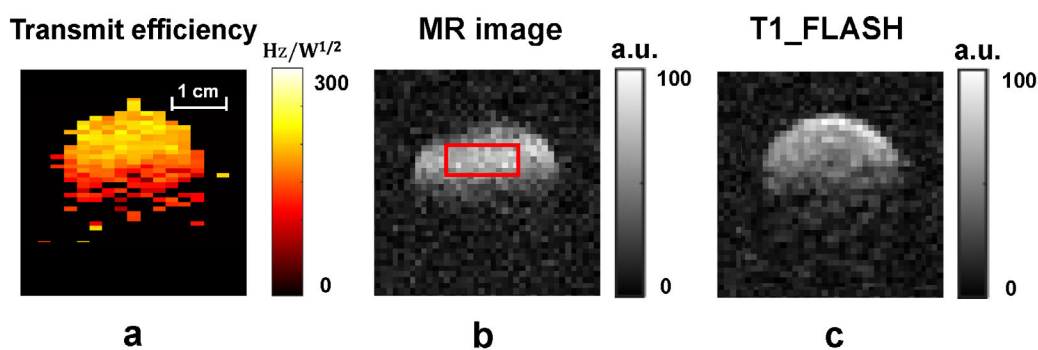


Fig. S4 (a) Transmission performance of the ^{23}Na coil in 450 mmol/L NaCl solutions ($\sim 163.50 \text{ Hz}/\text{W}^{1/2}$). (b) Signal-to-noise ratio (SNR) of ^{23}Na coil in 450 mmol/L NaCl solutions (~ 21). Red box: the region for SNR calculation. (c) The T1-weighted image of 150 mmol/L NaCl solutions.

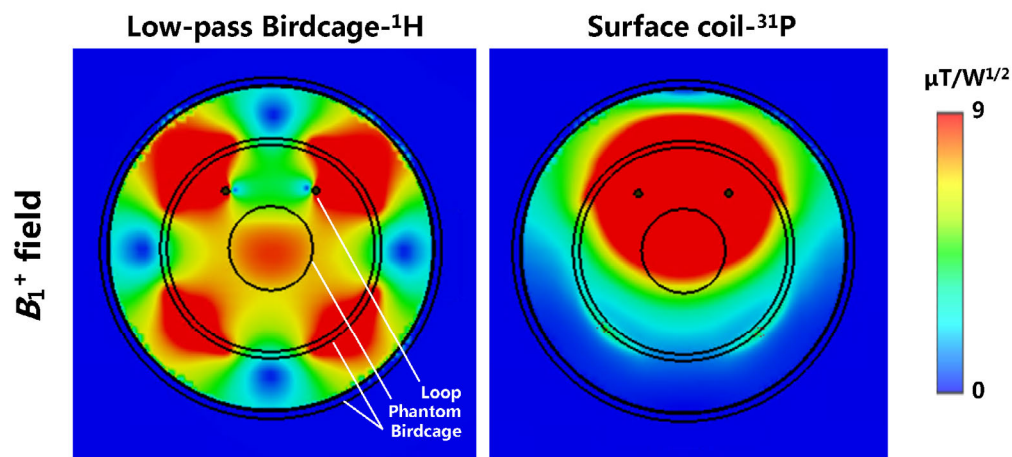


Fig. S5 Electromagnetic simulation of the ^1H low-pass birdcage and ^{31}P surface coil.

Table S1 S -parameter matrix of quadrature ^1H birdcage and ^{31}P surface coil

f_0 (MHz)	S_{ij} (dB)								
	S_{11}	S_{21}	S_{31}	S_{12}	S_{22}	S_{32}	S_{13}	S_{23}	S_{33}
400.3	-33.2	-20.4	-34.9	-20.4	-32.9	-34.9	-34.9	-34.9	
162.0		-48.3	-25.2	-48.3		-25.2	-25.2	-25.2	-29.7

f_0 : larmor frequency; S : scattering parameter; 1 and 2: birdcage; 3: surface coil.