A New Paramagnetically Shifted Imaging Probe for MRI, Senanayake et al.

Data published in Magn Reson Med 2016

This folder contains raw data, summary data and Matlab scripts used for the processing of the data in this work.

Matlab Scripts

The folder "matlab_scripts" contains a set of routines used when analysing and preparing the data.

"*load_fid*" contains Matlab code to read the "Varian scanner format fid files" into memory in Matlab.

The zip file "*NIFTI_20121012*" contains Matlab code which can read and write the "nifti" file format.

"*varian_image_processing_4D_C*" contains a routine which can be called to read the Varian format data (3DSI as used in figure 7 and process this).

"*varian_image_processing_*3D' contains the routine to read the Varian imaging data, perform the 3D Fourier transformation and save the magnitude image to the research imaging "nifti" format.

"*batch_process_s_2014093002_4D_to3Dmrui.m*" which reads 4D files from 3DSI experiments (3 spatial, 1 FID dimensions) and performs a FFT in the 3rd (slice) direction only, creating a series of "slices" each of which is an equivalent 2DSI file which can then be handled by jMRUI4.

Data

Figure 2b
Data in folder s_2014093002 in Varian scanner format.
spuls_parashift_01.fid – 1D NMR spectrum of the PARASHIFT resonances of the complex in vitro.

Figure 2c
Data for the T1 measurements at 1T used in figure 2c are in the folder 1T_T1_datafiles.
These are in the raw Magritek Spinsolve data format, and MestReNova files for the 1T relaxation measurements of the DyL complex

Figure 2d
Data in folder s_2015111901 is the dual imaging scans.

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Data are in two formats.
   i) Varian scanner format. Each scan has a folder name "<filename>.fid" containing parameters (text file "procpar") and data ("binary file "fid").
   ii) nifti format. Datasets were processed using the Matlab script *varian_image_processing_*3D

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<u>Figure 3</u>
Summary data for the ROI analysis used for this figure is in the Excel spreadsheet
"*Summary_Data_Spreadsheets.xlsx*"

<u>Figure 4</u>
Data in folder s_2014070303 providing the in vivo 3DGE PARASHIFT scans in this animal.
Data are in two formats.
   i) Varian scanner format. Each scan has a folder name "<filename>.fid" containing parameters (text
   file "procpar") and data ("binary file "fid").
   ii) nifti format. Datasets were processed using the Matlab script
   *batch_process_s_2014070303_*3Dscans' which calls the Matlab script
   "*varian_image_processing_*3D' to perform the 3D Fourier transformation and the magnitude
   image is saved to the research imaging "nifti" format.

Structural MRI scan is: *sems_03.fid*
PARASHIFT 3DGE scans are: *ge3d_Dy_complex_-_post_inj_nn.fid* (where *nn* is the chronological
number of each scan in the series).

<u>Figure 5</u>
Summary data for the ROI analysis used for this figure is in the Excel spreadsheet
"Summary_Data_Spreadsheets.xlsx"

<u>Figure 6</u>
Data in folder s_2014070402 from 2DSI temperature mapping study of complex in phantom.
Data are in two formats.
   i) Varian scanner format. Each scan has a folder name "<filename>.fid" containing parameters (text
   file, "procpar") and data (binary file, "fid"). "fid" file can be read and processed using the
   shareware NMR processing package jmrui4 (www.jmrui.eu). This is the raw scanner data.
   ii) nifti format. Selected spectral datasets were processed using 3D Fourier transformation (2D
   spatial, 1D spectral) and the magnitude image created as a 3D matrix and saved to the research
   imaging "nifty" format.
Summary data for the ROI analysis used for this figure is in the Excel spreadsheet
"Summary_Data_Spreadsheets.xlsx"

<u>Figure 7</u>
Data in folder s_2014093002 from 3DSI temperature mapping study in vivo
Data are in two formats
   i) Varian scanner format (source data) contained in "<filename>.fid"
   ii) jmrui format (to be read by jMRUI spectral processing software) "<filename_slicen>.jmrui"

The data in jmrui format were created using the Matlab script
"*batch_process_s_2014093002_4D_to3Dmrui.m*" which reads the 4D file (3 spatial, 1 FID
dimensions) and performs a FFT in the 3rd (slice) direction only, creating a series of "slices" each of
which is an equivalent 2DSI file which can then be handled by jMRUI4.

Also in this file is the anatomical T2w reference scan "*sems_01_stack_A.nii*" in "nifti" format.