The Resonator

George Entzminger and Paul Ellis tested new rf coils on the Doty 900 MHz Pisema Probe
NHMFL. Tallahassee Florida

The probe tested was a "static HCN probe" for 4 mm samples that had unique z-axis gradient coils. We illustrate **below** two experiments carried out at the lab on a powder sample of enriched ^{13}C-1/^{15}N Valine. **Figure 1.** is a two-dimensional version of a "Double Cross" experiment. During the C → N transfer the ^{1}H channel was at ~320 W while the nitrogen and carbon channels were at their maximum of ~920 W and ~200 W, respectively. The probe had no difficulties handling these power levels which were the maximum available. The spectra on the inside of the figure are the 1-D versions of the experiment.

Figure 2. The Z gradients were used for coherence selection in an echo based "Double Cross" experiment. The gradients were on during the tau value of the spin echoes. **A.** was obtained by a standard spin echo experiment (no gradient). **B.** A gradient was added on the first echo but not on the second echo, hence, no signal. **C.** Both gradients present. The second gradient is stronger than the first by the ratio of γ_C/γ_N. **D.** has the phase of the first gradient reversed allowing the acquisition of the anti-echo. Combining the third and fourth spectrum yields the top spectrum.

Thank you NHMFL.

Several people at the High Field Magnet lab made our visits efficient and productive and enabled the experiments we wanted to perform. We want to specifically acknowldge Peter Gorkov and Jason Kitchen for their technical help and the generous donation of their time in helping George and Paul navigate unfamiliar spectrometer hardware. Ivan Hung was the magician that operated the 900 MHz spectrometer. Ivan simply made things work and for those rare moments when we confused him, he would enlist help from Zhehong Gan and Srinivasan Shekar. DSI wants to thank all these individuals.

George Entzminger at NHFML by the 900 Magnet

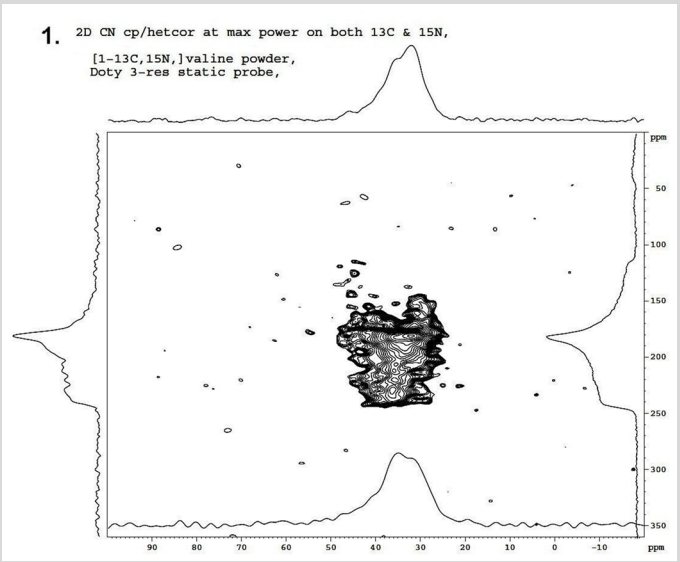
We are proud to have **Laura Holte, PhD**, as our Sales Manager. She joined Doty Scientific, Inc. in 1998 and has been capably serving as the Sales Manager since that time. In 1992, she received her PhD in Analytical Chemistry from Montana State University, Bozeman, MT. Prior to becoming a part of the Doty team, Laura held a post-doctoral research fellowship at the NIH, studying membrane biophysics using solid state NMR.

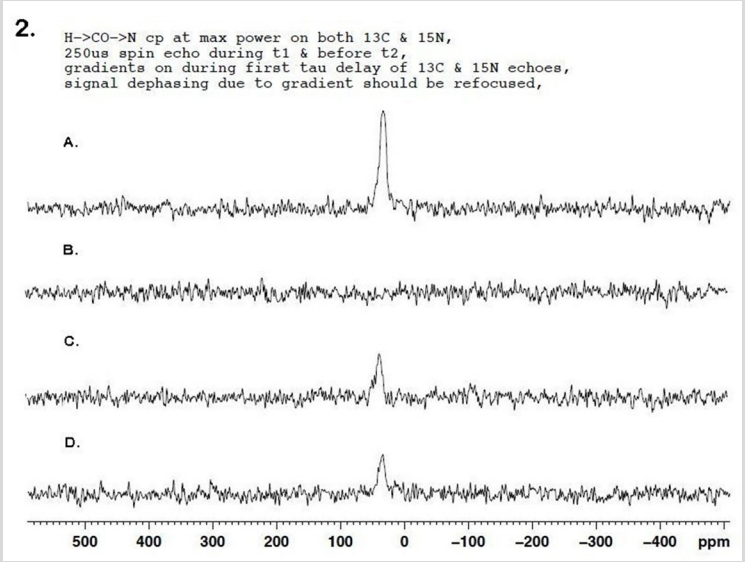
John Staab, MSEE, is our engineering manager. Mr. Staab joined the Doty team in 1994 where he quickly earned the position of engineering manager. He received his MS in Electrical Engineering from the University of Arizona in 1993 with summa cum laude honors. *He is also exceptional at mechanical engineering.* His contributions to product development have been invaluable.

Laura Holte

John Staab

PISEMA probe with new DSI RF coils used for "Double-Cross" experiment at 900 MHz





Important Factors When Considering a New MRI RF Volume Coil:

What coil ID is needed to comfortably accommodate the animal model (or sample), and any associated devices?

What length in the Z direction is needed for high RF homogeneity? To keep S/N optimal, choose a length that is long enough to cover the region of interest, but not longer.

How large is the gradient bore inside the imaging magnet? Doty small animal imaging platforms are usually designed for 10 cm or larger gradient bores. For smaller gradient bores, the mechanical design we call "module" can be adjusted to fit into a wide range of gradient bores.

Which nucleus is of interest? ^{1}H only; or, dual frequency H/C, H/P, H/Na, and H/X, to name just a few of the choices for multinuclear imaging or spectroscopy.

Remember, while Doty imaging platforms and modules may differ in mechanical design, the use of patented Litz or Litzcage RF coil technology gives the same high quality images either way.

Other Doty Imaging Options

The patented Doty coils can be provided in several packages for single or double resonance.

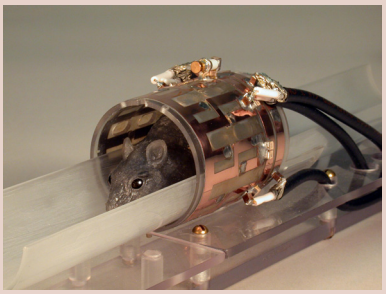
*Doty **Imaging Modules** have the rf coil and the shield integrated into one package. Note the H/X module on the left is double resonance and multinuclear.*
http://www.dotynmr.com/mri/mri_sarfmodpg.htmppg.htm

***Hundreds** of standard **Surface Coils** are now available.*
http://www.dotynmr.com/mri/mri_surfcoilpg.htm

We hope to see you at upcoming Conferences:

ENC, April 14 - 19, 2013
Asilomar, CA USA

ISMRM, April 20 - 26, 2013
Salt Lake City, Utah USA



Close up of the coil on the *Small Animal Imaging Platform (SAIP)*

Did You Know?

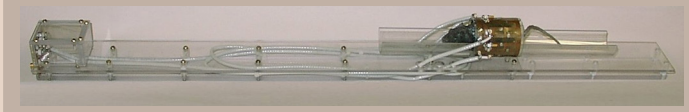
Doty *B*$_{MAX}$ MAS Probes allow high power operation on all channels for double-resonance multinuclear H/X, or triple-resonance multinuclear H/X/Y.

These MAS probes can do both HR MAS of Liquids or Solids MAS.

Option of a 3 mm, 4 mm, 5 mm, or 7 mm sample spinner.

Featured Product

Small Animal Imaging Platform



To see what's new: http://www.dotynmr.com/mri/mri_saippg.htm

Many standard ^{1}H options as well as standard double-resonance coils are available with 25, 38, 50, or 63 mm IDs. *Custom Coils are also available.*

Versatile, Open, Robust, Economical

The CP Litzcage is semi-open and mounted on an almost transparent, short coil form. The shield is a removable cylinder that slides over the platform.

The CP Litzcage rf coil has SNR typically 15% higher than that of conventional CP birdcages of similar dimensions. B_1 homogeneity is typically 10-30% better, and the coil has superior B_0 homogeneity.

Easy tuning

A unique symmetrizing circuit ensures the coil is easily tuned and matched to the full range of samples with negligible loss in efficiency, channel separation, or symmetry. Tuning range is much better than with conventional birdcages and tuning methods.

Doty Scientific, Inc. 700 Clemson Rd. Columbia, SC 29229 USA Website: www.dotynmr.com
Phone: (803) 788-6497 Fax: (803) 736-5495 Email: sales@dotynmr.com