

IN THIS ISSUE:

- WB Ultra-Range Probe to +500°C
- Customer Results: ^{19}F Whole Mouse Images Using a Doty H/F MRI RF Volume Coil
- New Faces at Doty Scientific

Doty 2020 ENC Suite: Hilton- Brent Suite

DEAR COLLEAGUE,

This year has somewhat rushed past us. It seems that we just went to the ENC at Asilomar and here it is, almost time to go to the ENC in Baltimore.

We did attend several conferences... but mainly were occupied with new probe milestones and delivering orders to our customers. We did take some time to enjoy Chamonix and Geneva while we were in France for the Alpine Solids NMR Conference.

David and Judy Doty



UPCOMING CONFERENCES

61st ENC, March 8-13

Baltimore, Maryland, USA

<https://www.enc-conference.org>

Join us in the **Brent Suite** Sunday-Wednesday from 7:00-11:00 PM. each evening.

28th ISMRM, April 18-23

Sydney, NSW, Australia

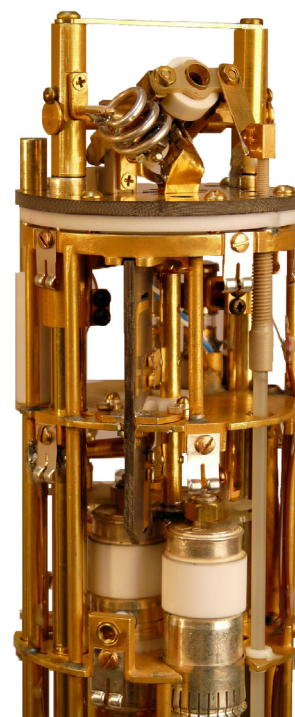
<https://www.ismrm.org/20m/>

NEW

**WB Ultra-Range MAS-DNP Probe –
Now with Temperatures up to +500°C**

We introduced the low temperature version of this probe at the ENC last spring.

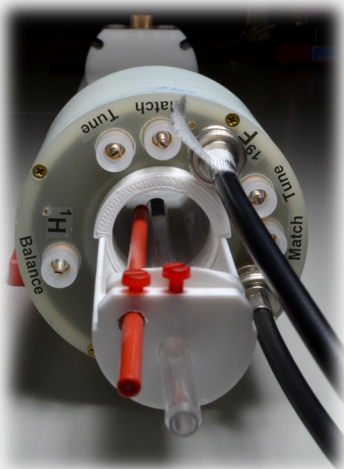
**We now have a new
high temperature
version for operation
up to +500°C**



- Broad Temperature Range
Choose HT -100 °C to **+500 °C**
or LT **-180 °C** to +250 °C
- Broad Tuning Range
with tuning inserts ^{31}P to ^{103}Rh
- Double-Tuned $^1\text{H}/\text{X}$ or Triple-Tuned $^1\text{H}/\text{X}/\text{Y}$
- The LT Version Compatible with DNP – microwaves from the top
- Broad Range of LT Spinner Options
5 mm, 4 mm, or 3 mm
- Sample Eject Option Is Available with 3 mm
- For WB Magnets Only, 300 MHz to 700 MHz

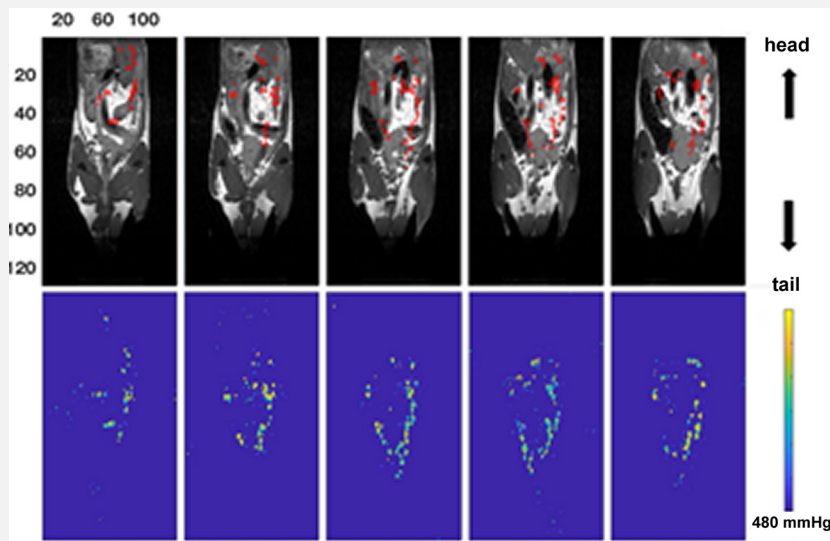
A Simple-tune Preclinical ^{19}F RF resonator for MR Imaging

- ✓ *Efficient, easy to tune and match over a broad range of sample loading.*
- ✓ *Each channel for TxRx and linearly polarized.*
- ✓ *For observe / decouple - with both channels used simultaneously.*
- ✓ *For interleaved acquisitions - with each channel used sequentially.*
- ✓ *Robust design and mechanical stability.*



A Doty $^1\text{H}/^{19}\text{F}$ Dual Frequency 32 mm Litzcage module. Shown with user incorporated animal bed.

Mouse Images Obtained with a Doty $^1\text{H}/^{19}\text{F}$ Volume Coil



Spatiotemporal in vivo pO₂ tracking and clustering of biomaterial implants in mouse.

Top: in vivo slice-by-slice fused MRI images, collected with 7 T Doty H/F module, of fluorocapsule distribution (^{19}F -MRI, red) and soft tissue anatomy (^1H -MRI, grayscale) at day 1 postimplantation for 1.5 mm fluorocapsules implanted in a healthy mouse.

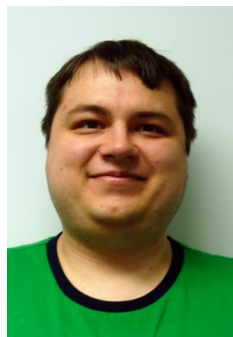
Bottom: Calculated pO₂ spatial color maps (brighter colors correspond to decreased pO₂).

Spanoudaki V, Doloff JC, Huang W, Norcross SR, Farah S, Langer R, Anderson DG. *Simultaneous spatiotemporal tracking and oxygen sensing of transient implants in vivo using hot-spot MRI and machine learning.* Proc Natl Acad Sci U S A. 2019 Mar 12; 116(11):4861-4870.

New Faces at Doty Scientific:

We have added several talented people to our staff this year. Here are the two most recent.

Yuriy Sazyuk, Ph.D. Physicist



Yuriy came to us from Iowa State University where he was a post-doctoral research assistant.

Yuriy received his Master's degree from the Univ. of Wisconsin in Madison, and received his Ph. D. at the Univ. of Minnesota in Minneapolis.

Forrest Rusyniak, MS Physicist



Forrest received his Master's degree from Rensselaer Polytechnic Institute in Troy, NY where he was also a Graduate Research Assistant.