

TAKING PROBE DESIGN TO NEW HEIGHTS.

PhoenixNMR provides a highly innovative line of Solid State NMR probes packed with benefits designed to keep your focus on your science, not on your instrumentation. We implement features that provide modularity and performance, and eliminate condensation and frost build-up when operating at sample temperatures below room temperature. Our customer-facing modular probe design allows greater experimental flexibility with less expense. We are confident that you will find PhoenixNMR's products truly elevate your science.

While the table on the next page will highlight the broad range of features available in this new probe design, let us take a moment to describe its most innovative attribute: **modularity**.

A HIGHLY-FLEXIBLE MODULAR DESIGN.

What does customer-facing modularity mean? It means that when you purchase a new PhoenixNMR probe today, you are actually purchasing two components: a Probe Body and a Probe Head.

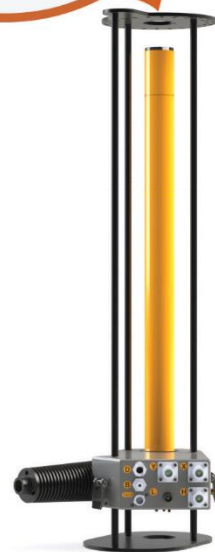
THE PROBE BODY houses all elements common to every PhoenixNMR probe, including:

- Frost and condensation free Variable Temperature system
- H to F or H and F high band tuning assembly
- Sample spin speed tachometer
- RF connectors
- High efficiency broadband high power tuning tubes
- Low Gamma Accessory to extend tuning to ^4K or lower

THE PROBE HEAD, on the other hand, houses all:

- Sample size-specific and channel configuration-specific items
- Band select elements (Trap and Series Capacitor)
- Magic Angle adjust mechanism and Spin speed fiber optics
- The spinning module
- Variable temperature isolation shells

When a PhoenixNMR Probe Body and Head are combined, they complete a probe capable of 1 to 4 channel operation, the details of which are governed only by the initial selection of the Probe Body and Probe Head module and your imagination. This gives you unmatched flexibility in the world of NMR probes because, at any time in the future, instead of purchasing a completely new probe, you only need to purchase a new probe head to expand your capability. This modularity provides you with the opportunity to expand your future research at about half the cost.



ONE PROBE / MULTIPLE RF CONFIGURATIONS

Let us give you an example scenario to make things clear. Imagine that your first probe purchase included a Probe Body with simultaneous H and F high band tuning. This Probe Body is then coupled with a 4 mm Probe Head. When used together, this first probe purchase is, effectively, an HFX probe. But it's not just a quadruple resonance probe. In fact, it can also be a true HX, FX, HXY or FXY probe. All modes provide full sensitivity of that operating mode because there are no compromises - the other channels (e.g., FY) are fully disconnected from the circuit when in simpler RF configurations.

ONE PROBE / MULTIPLE SPINNING MODULES

While this is a very full-featured and powerful probe, there is no way to exactly anticipate your needs a year or two later. With a PhoenixNMR probe design though, that's not a problem. Instead of purchasing another complete probe (i.e. both the Body and the Head), you can simply purchase a new Probe Head to address future needs.

Exchange probe heads in your lab using one small screwdriver, and be ready for an entirely new suite of experiments, with no sacrifice in spinning, RF, or VT performance, in less than 30 minutes

For example, how about a 1.6 mm HXY Probe Head? Or maybe you need a single channel static 2.5 mm probe? With PhoenixNMR's probe design, your science needs dictate when and what you add in the future. By only having to purchase a new Probe Head, you can perform more experimentation without busting your budget. Now, that's exciting!

AVAILABLE PROBE FEATURES:

Option	400 MHz	500 MHz	600 MHz	700 MHz	800 MHz	900 MHz
HXY, FXY	✓	✓	✓	✓	✓	✓
HFX	✓	✓	✓	✓	✓	✓
LOW GAMMA	✓	✓	✓	✓	✓	✓
1.2 mm	✓	✓	✓	✓	✓	✓
1.6 mm	✓	✓	✓	✓	✓	✓
2.5 mm	✓	✓	✓	✓	✓	✓
3.2 mm	✓	✓	✓	✓	✓	ASK
4, 5, 6 mm	✓	✓	✓	ASK	ASK	ASK
OTHER ROTOR SIZE/STYLE	ASK	ASK	ASK	ASK	ASK	ASK
STATIC	✓	✓	✓	✓	✓	✓
STANDARD VT RANGE	Standard VT range is -125°C to +125°C on most modules; -30°C to +50°C for the 1.2 mm MAS module; and -150°C to +175°C for the static module.					

SOLIDS TEST SAMPLE KITS

PhoenixNMR offers sample kits and individual sample rotors in all rotor sizes. Calibrate pulse widths, set magic angle, measure sensitivity, and check lineshape. These test samples are a great way to validate your system and can be used in troubleshooting whether there is a system issue, a problem with a sample, or the probe. Of note: we supply the D₂O rotor utilizing our BioSolids sample spacers. The silicone powder sample allows rapid, initial shimming on its ¹H signal to speed setting final lineshape on ¹³C.

TEST SAMPLES

- Potassium Bromide - Magic Angle
- Adamantane -¹H, ¹³C pw90 and ¹³C lineshape
- ¹⁵N labeled Glycine - ¹⁵N pw90, ¹³C sensitivity for 1.2 and 1.6 mm
- Hexamethylbenzene - ¹³C sensitivity for 3.2 mm and larger
- Sodiumhexafluorophosphate - ³¹P, ¹⁹F pw90
- Silicone Powder - ¹H shimming (much faster)
- D₂O - ²H pw90

BIOSOLIDS and AIR-SENSITIVE SAMPLE PACKING

PhoenixNMR now offers BioSolids sample spacers and centrifuge sample packing tools to accommodate all your difficult samples: gels, liquids, biosolids, DNP samples, crystalline samples with solvent, moisture and air-sensitive samples. The spacers and tools are available in all standard rotor sizes, 1.2 mm to 6 mm. These tools along with the molded silicone spacers make it easy to efficiently transfer your sample from 200 µL ultracentrifuge tubes into a ready to use rotor that will keep your biosolids sample hydrated and other samples contained and air-free.

SOLIDS AND BIOSOLIDS ACCESSORIES:

- Low-gamma Probe Accessory – Tune as low as 8 MHz, depending on specific probe configuration
- Tuning and RF-handling solutions for closely spaced nuclei such as ¹⁹F/¹H and ¹⁷O/²H
- Sample Accessories: Available for all rotor configurations, 1.2 mm to 6 mm
 - BioSolids Sample Spacer Kit: includes 10 Silicone Discs, 10 Sample Spacers, 5 Top Caps, Set Tool
 - BioSolids Packing Tools without standard Solids Tools: includes BioSolids Sample Spacer Kit (above) plus Centrifuge Tool and Balance
 - BioSolids Complete Packing Tools: includes tools and spacers above, plus Standard Solids Packing Tools
 - Solids Test Sample Kits and Individual Test Samples (see list above)