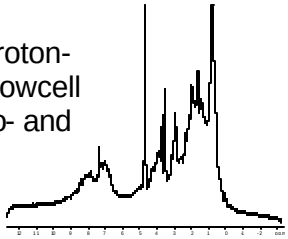
CNMR CapNMR™ Triple Inverse Gradient (TXI) NMR Probes

Protasis MRM extends its family of MicroFlow NMR to the exciting world of proteomics with the new Triple Inverse z-Gradient probe. Like the popular proton-only and indirect carbon gradient probes before it, the TXI probe's capillary flowcell significantly enhances NMR mass sensitivity to enable 1D, 2D and 3D homo- and heteronuclear NMR spectra from as little as 50 micrograms of target protein. Flowcells only 5uL in volume allow spectral acquisition up to 100x faster than conventional probes enabling rapid 2D and 3D experiments.



Courtesy Wolfgang Peti, The Scripps Research Inst. and Mark O'Neil-Johnson, Sequoia Sciences, Inc.

Protein sample utilization is drastically reduced over conventional scale systems. The TXI probe is proving itself to be particularly effective in providing structural information on low expressing proteins and therefore, opens a new route for structural proteomic studies. This permits significant savings in work-up time, expensive reagents (labeled media for the production of labeled protein) and makes high throughput automated micro-expression and purification systems practical.

All wetted surfaces of the TXI probe are rugged, yet smooth, fused silica that is compatible with established electrophoresis wall coatings to minimize protein sticking problems. Protasis/MRM probes are easy to use, reliable to operate and adaptable to all major spectrometer systems. Load manually or with Protasis *Life Science Automation* solutions.

CNMR-__XXX-00 Protasis MRM Triple Inverse Gradient (TXI) NMR Probe

B = Bruker
V = Varian
J = JEOL

XXX = 300, 400, 500, 600 MHz field strengths

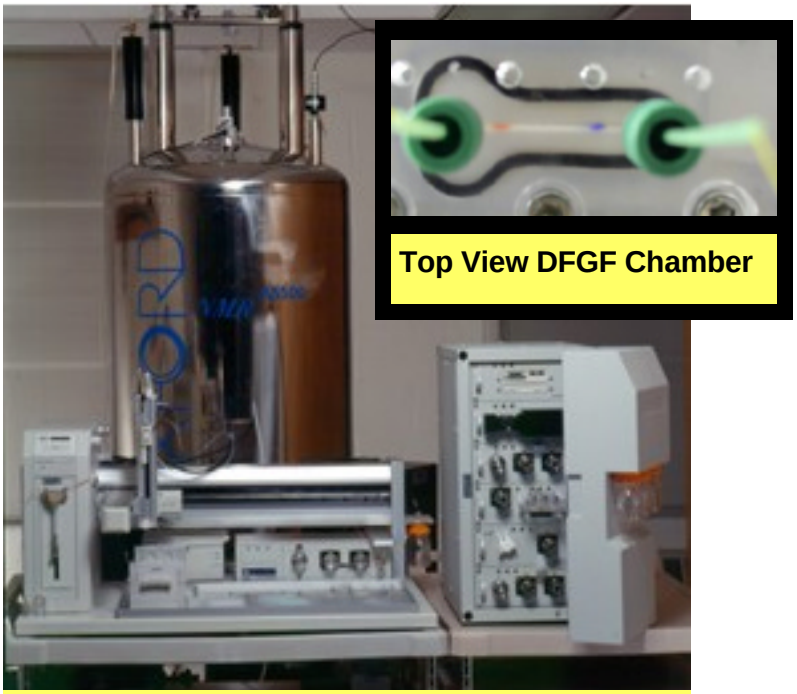
- 21 = TXI probe, 75 micron I.D. plumbing

NMR Compatibility:

Protasis MRM probes are compatible with Bruker, Varian and JEOL NMR spectrometers, and are available for magnet systems with proton frequencies ranging from 300 MHz — 600 MHz. Ask about specialty probes for field strengths of 700 Mhz and higher.

TXI MicroFlow NMR Probes Offer Many Benefits In Protein Studies

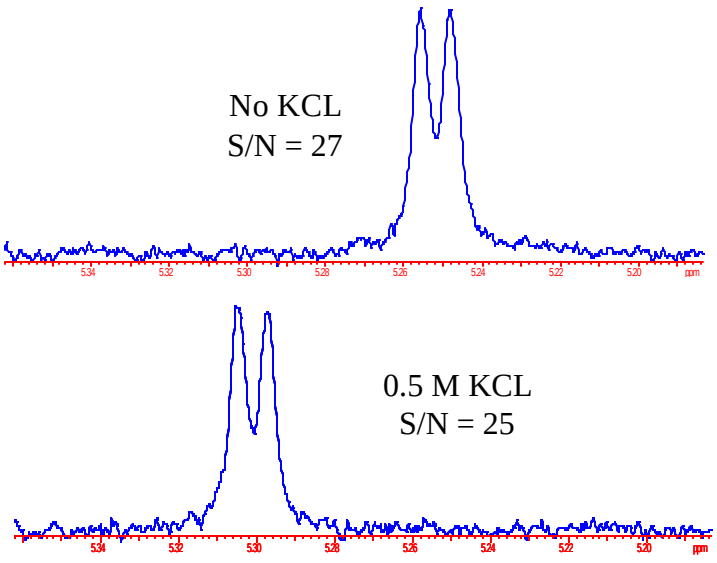
- Perform proteome-wide screening, drug design, interaction mapping (SAR by NMR).
- Backbone assignment possible with only 250µg† ^{13}C,^{15}N labeled protein!
- Triple resonance heteronuclear spectra like 3D HNCA, HNCOCA, CBCACONH and HNCO can be recorded in short times, from as little as 150µg† of protein!
- Economical. Saves sample prep costs by enabling NMR with only 100-200µg† of expressed protein.
- Easy to use. Achieves high resolution using only first and second order shims and typically does not require shim adjustment sample-to-sample, important for high throughput screening and binding measurements.
- Clean spectral features. Minimal solvent background due to small flowcell volume. Flat baselines!
- High salt tolerance for protein folding studies. Go from 0 to 500mM KCL without reshimming and with minimal signal intensity change.



Couple the capillary TXI probe to our new High Throughput Protein Expression (HTPE) Platform! Use Dynamic Focusing to isolate and accumulate target proteins in just the right volume for MicroFlow NMR!

Salt Tolerance:

- Excellent salt tolerance makes the TXI probe ideal for protein folding studies.
- S/N is set primarily by probe characteristics, not by the sample.
- Less than 10% loss in S/N when using salt concentrations as high as 500 mM KCL.

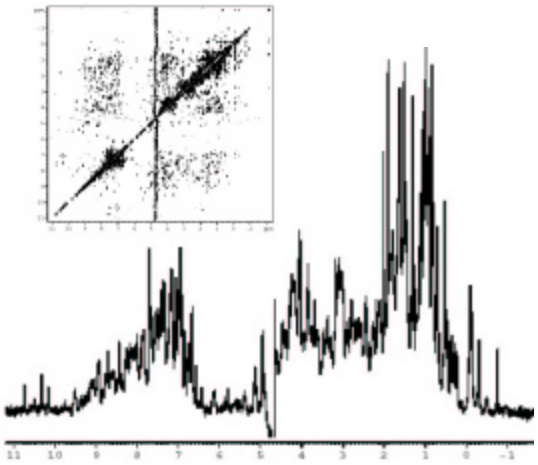


Conditions:

- 30mM sucrose in 90/10 D_2O/CAN-d_3
- Single scan ^1H NMR spectrum, anomeric proton
- 500 MHz
- Optimized 90° PW and optimized tuning
- Shimmed for no KCL

Accrue Even More Operational Benefits with Protasis/MRM TXI MicroFlow NMR Probes

- A mechanical package that facilitates easy removal. Does not require a dedicated magnet.
- Installs, shims and loads in minutes.
- Flow-through probe design virtually eliminates sample carryover. Flushes quickly!
- Low maintenance costs. Replaceable flowpath.
- Fused silica flow path is compatible with conventional CE wall coating techniques to prevent protein sticking problems.
- Solvent and reagent savings typically pays for probe in one to two years in normal use.



1D Protein Spectra of 1mM Lysozyme in only 3.3 minutes. 2D-NOESY in only 10 hours.

Sensitivity. Simplicity. Economy. MicroFlow NMR is a good citizen in a multi-use facility. And a good addition to your structural proteomics toolkit!

Product Specifications

CapNMR™ Triple Inverse Gradient (TXI) MicroFlow NMR Probe

Nuclei		$^{1}H\{^{13}C, ^{15}N\}/^{2}H$ lock
^{1}H Frequency		600 MHz
Gradient		z-Directed
Spectrometer/Magnet Compatibility		
Fluidic Lines/Connectors		75 µm i.d./360 µm o.d. fused silica/Upchurch Fingertight connectors
Resolution/Lineshape (^{1}H)		(5% $CHCl_3$ in acetone-d_6, stopped flow, flowcell filled, LB=0)
	50%	< 1 Hz
	0.55%	< 10 Hz
	0.11%	< 20 Hz
Proton 90° Pulse Width		≤ 5 µs
Indirect Detect Carbon 90° Pulse Width		≤ 15 µs
Indirect Detect Nitrogen 90° Pulse Width		≤ 30 µs
VT Control* (gas source supplied by customer)		0 - 50 °C
Proton Signal to Noise		
Static S/N: 10 mM sucrose in 100% D_2O with 0.1 mM NaN_3 quantity sufficient to overfill flowcell. Anomeric proton. LB=0.7 Hz.		> 29:1 single scan
RF connectors		BNC
RF Homogeneity (450°/810°)		75%/50%
Gradient Specifications		
Strength: (typical)		35 G/cm/A
Maximum recommended duty cycle		< 10 %
Maximum recommended drive current		< 10 A

* For Bruker and JEOL systems, probe interfaces to spectrometer manufacturer's heater, supplied by customer.
† Absolute detection limits depend on the molecular mass of the protein.

Protasis Magnetic Resonance Microsensors

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