

# MICROPEN DRIFT TUBES FOR MASS SPECTROMETRY & ION MOBILITY SPECTROMETRY

*Simplify your ion transmission technology with a monolithic ceramic 'Drift Tube'*

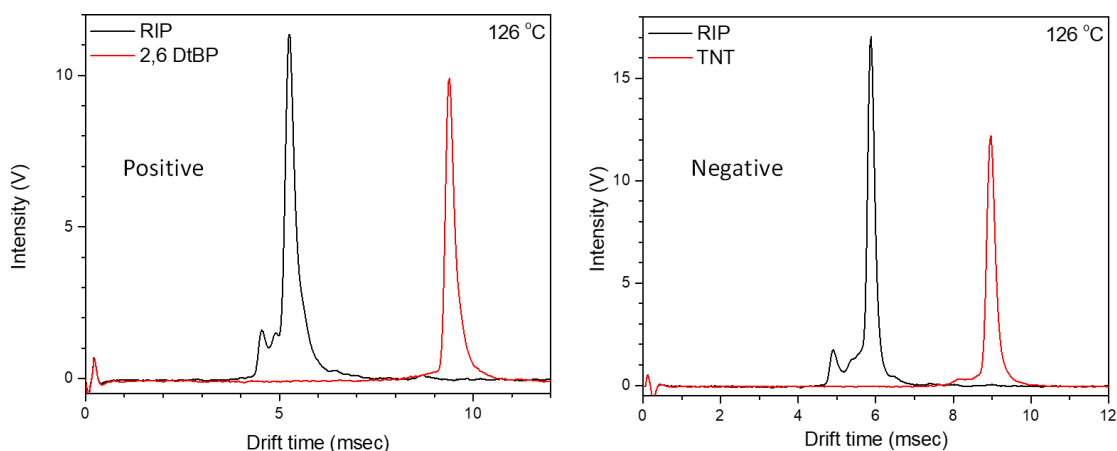
## In Ion Mobility Spectrometry

The drift tube shown below can easily replace a conventional ion mobility drift region, simplifying the construction and operation of the analyzer with elimination of the resistive voltage divider that would be used with a stack of drift rings. Direct use of this Drift Tube in IMS has been demonstrated, and its use as an ion guide or for ion transfer in mass spectrometry is envisioned.



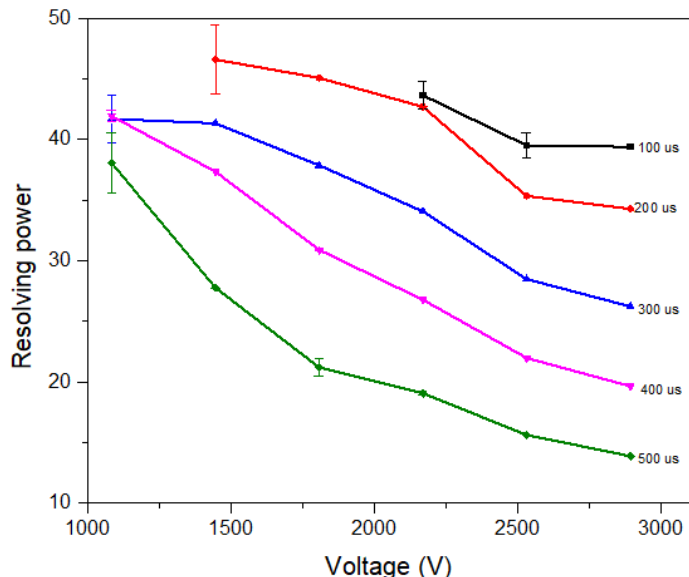
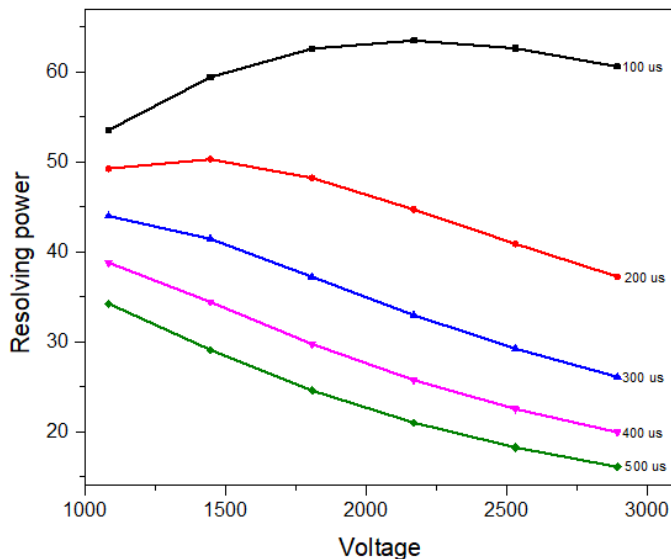
## Analytical Performance

Ion mobility spectra obtained on a Drift Tube with a Bradbury Nielson ion shutter are shown below (at left) for a chemical standard 2,6-di-t-butylpyridine (or 2,6-DtBP) in positive polarity with hydrated protons as reagent ions and (at right) for TNT in negative polarity with  $O_2^-$  reagent ions. The resolving power for these spectra ranged from 32 to 37 for a 200 microsecond injection with the ion shutter. Resolving powers above 50 were obtained using large ketones in positive polarity. Conditional resolving power for high quality amplifiers with superb ion shutters are modeled at >65 and approach 50 (flip page) in preliminary studies to characterize performance.



Temperature (°C)	Positive Polarity: 2,6, DtBP	Negative Polarity: TNT
159	35.7	31.8
126	36.4	37.2
102	38.6	37.0

Resolving power from measurements using an ion mobility spectrometer at ambient pressure in purified air with a 200 microsecond pulse from the ion shutter.



The resolving power predicted with high quality amplifiers and ion shutter pulse widths from 100 to 500 microseconds for 2,6-DtBP are shown at left and experimental values are shown at right. Resolving power >50 were determined for proton bound dimer of 2-nonanone. More details are available upon request.

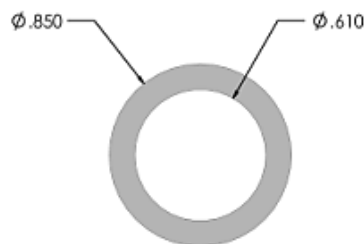
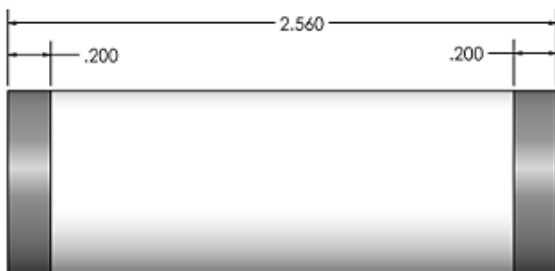
## Technical Details

### Key Drift Tube parameters

Temperature Range: ambient to 300+°C  
 Voltage range: >10 kV  
 Total Resistance 400MΩ  
 Length: 10 mm to 60 mm ordinary, others possible on request

### Detail of parameters

Parameter	Dimension (in)	Dimension (mm)
Tube Length	2.560	65.02
Actual Spiral Pitch	0.038	0.97
Resistor Trace Width	0.030	0.76
White Space (gap)	0.008	0.20
Inside Diameter	0.610	15.49
Circumference	1.91637	48.68
Total Resistor Length	128.5	3,263.9
Resistor Turns (unitless)	67	67



## Contact Information:

Alan Drumheller, Technical Sales Manager  
 Micropen, 93 Paper Mill Street Honeoye Falls, NY 14472  
 585-624-2610 x105  
[alan@micropen.com](mailto:alan@micropen.com)