

# Readme File for NIES PTR-MS Data ver1.0

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Instrument: PTR-MS (IONICOM, S/N 05/11)

Operation: Temperature inlet 105 °C  
drift tube 105 °C

E/N ratio 100 Td

SEM voltage 3100 V

Mode scan mode (m/z 17-300, 0.1 s/amu)

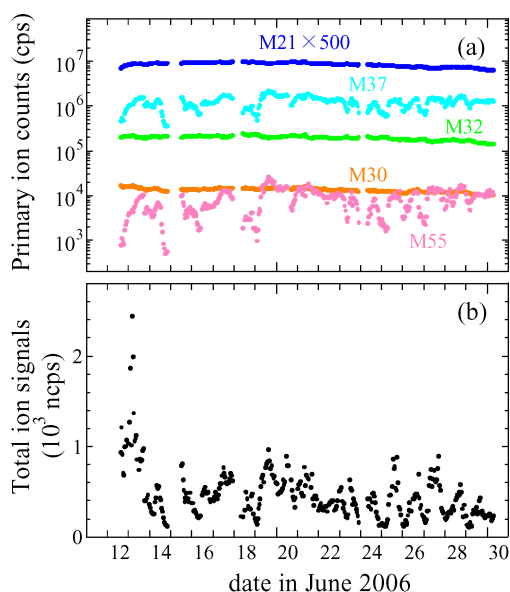
Sampling mode: xx:00 ~ (xx+1):30 (xx = even) ambient air  
(xx+1):30 ~ (xx+2):30 zero-air (Thermo, Model 111)  
11:00 ~ 11:30, 23:00 ~ 23:30 standard gas (diluted into 10 ppbv)

Standard gas: 7-VOC mixture  
(propene, acetaldehyde, acetone, isoprene, benzene, toluene, *p*-xylene, 5 ppmv)

## Data acquisition:

	6/11(Sun)	6/12(Mon)	6/13(Tue)	6/14(Wed)	6/15(Thu)	6/16(Fri)	6/17(Sat)
PTR-MS							
standard							
	6/18(Sun)	6/19(Mon)	6/20(Tue)	6/21(Wed)	6/22(Thu)	6/23(Fri)	6/24(Sat)
PTR-MS							
standard						x	
	6/25(Sun)	6/26(Mon)	6/27(Tue)	6/28(Wed)	6/29(Thu)	6/30(Fri)	7/1(Sat)
PTR-MS							
standard		x	x	x	x	x	

## Stability of primary ions:



## Standard gas mode

**Table 2. Concentrations of standard gases during the campaign.<sup>a</sup>**

Standard gases	Concentration (ppbv)
Propene	11.7 ± 2.4 <sup>b</sup>
Acetaldehyde	9.5 ± 1.3 <sup>b</sup>
Acetone	9.3 ± 1.2 <sup>b</sup>
Isoprene	10.0 ± 1.7 <sup>b</sup>
Benzene	10.2 ± 1.6 <sup>b</sup>
Toluene	10.9 ± 1.8 <sup>b</sup>
<i>p</i> -xylene	13.8 ± 2.5 <sup>b</sup>
	ave. 10.8 ± 1.3 <sup>c</sup>

<sup>a</sup>Concentration of each standard gas was set to be **10.5 ppbv** by the dynamic dilution.

<sup>b</sup>Error limits represent 2 $\sigma$ .

<sup>c</sup>Error limits represent 95% confidence levels by *t*-test.

10-min averaged PTR-MS data: PTRMS\_Taishan\_10-min\_ave\_ver7a.xls (Final version)

column 1	AVEPoint	Numbers of scan used for average
column 2	Year	
column 3	Month	
column 4	Day	
column 5	Hour	Data of xx:yy : 10-min averaged data from xx:yy to xx:(yy+10)
column 6	Minute	
column 7	Pdrift	Pressure in drift tube (mbar)
column 8	Udrift	Voltage of drift tube (V) (Length of drift tube = 9.2 cm)
column 9	Tdrift	Temperature of drift tube (°C)
column 10	H2O	Water vapour concentration (mmol/mol) <i>(calculated from meteorology data)</i>
column 11	Wind D	Wind direction <i>(from meteorology data)</i>
column 12	Wind S	Wind speed (m/s) <i>(from meteorology data)</i>
column 13	m:21	Signal at m/z 21 (cps) [H <sub>3</sub> <sup>18</sup> O <sup>+</sup> ]
column 14	m:30	Signal at m/z 30 (cps) [NO <sup>+</sup> ]
column 15	m:32	Signal at m/z 32 (cps) [O <sub>2</sub> <sup>+</sup> ]
column 16	m:37	Signal at m/z 37 (cps) [H <sub>3</sub> O <sup>+</sup> •H <sub>2</sub> O]
column 17	m:55	Signal at m/z 55 (cps) [H <sub>3</sub> O <sup>+</sup> •(H <sub>2</sub> O) <sub>2</sub> ]
column 18 ~	m:M (k)	<p>Mixing ratio (ppbv)</p> <p>§Calibration was performed for formaldehyde, methanol, propene, acetaldehyde, ethanol, acetone, isoprene, benzene, toluene, <i>p</i>-xylene, and HCN (same as formaldehyde).</p> <p>§For other species, mixing ratio was calculated from Signal* at m/z M as follows:</p> $\text{Signal}^* = (\text{Signal @ ambient}) - (\text{Signal @ zero air})$ $(\text{Conc}) = \frac{(\text{Signal}^*) \cdot 1E9 \cdot 1013 \cdot 22400 \cdot (273.15 + T\text{drift})}{k \cdot t \cdot (m : 21) \cdot 500 \cdot P\text{drift} \cdot 6.022E23 \cdot 273.15}$ <p><math>k = 2.6 \times 10^{-9} \text{ cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}</math> for NH<sub>3</sub></p> <p><math>k = 2.0 \times 10^{-9} \text{ cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}</math> for others</p> <p><math>t = 114 \mu\text{s}</math></p> <p><math>P\text{drift} = 2.1 \text{ mbar}</math>, <math>T\text{drift} = 105 \text{ }^\circ\text{C}</math></p>

\* If you need full data, please contact us.

Final revision: 07 Feb 2008