What is My Vaporizer Temperature?

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Bottom Line

- Want vaporizer at 600 to 650 C to maximize signal for NH4NO3, (NH4)2SO4 and organics.
- Warning: T/C readout can be off by 100’s of degrees!
- Future: embed T/C in vaporizer for better T measurement.
- If vaporizer current is NOT about 1A, need to check true vaporizer temperature! Probably should check it anyway.
- Look at NaNO3 mz30 PToF. Sharpens up at 700 to 750 C. Subtract 0.1 from amps to get operating current.
- Look at back of vaporizer. If glowing dull orange, 700 to 750 C. Too hot for normal operation.
**Method for Checking Vaporizer T**

- Use size selected 225 nm NaNO3 particles. Make a solution to get a few hundred particles/cc at 225 nm without using a flow divider so as to minimize the number of Q2's.
- Step the vaporizer current from 0.9 to 1.3 in steps of 0.05 amps.
  - Record amps, voltage and T/C reading at each step.
  - Measure the pToF at each step at m/z 30 (there is almost no signal at m/z 46 for NaNO3).
- If you are using a ToF system, set number of co-adds to 1.
- Analyze the data by fitting a single exponential to the falling side of the pToF from ~95% of max to ~5% of max.

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**Method for Checking Vaporizer T cont.**

- Plot the exponential decay constant (tau) as a function of vaporizer current.
- Find the vaporizer current where tau levels off at a small value (100 to 200 microseconds, depending on chopper slit width, chopper speed, chamber length, etc.) This corresponds to 700 to 750 C.
- Subtract 0.1 amps to get operating current, corresponding to a vaporizer temperature of 600 to 650 C.