miniDiSC application note #1: standard operating procedure (SOP)

The purpose of this application note is to ensure that the data you collect with your miniDiSC is as accurate as possible.

(1)   Turn on the instrument and wait for it to warm up (5 minutes)

(2)   If accurate timing is important, set the instrument clock. It is not very accurate, typically gaining a few seconds per day – we are very sorry about this but cannot fix it in this design.

(3)   If you are using the impactor, unscrew the impactor cap from the impactor body (which can remain in the instrument), and wipe the cylindrical impaction surface with your fingers to remove built up dirt.

(4)   After the warmup phase, the instrument starts measuring, but is not collecting data yet. Perform a zero check by connecting a HEPA filter to the instrument. Switch to the current display (press the right arrow button) and verify that the displayed currents are below 1fA absolute.

(5)   Press the recording button once to start recording data. Warning: if you keep it pressed for more than about 3 seconds, it will stop recording again, so don't do that. A blinking circle/1 appears on the upper right in the display to indicate that the instrument is recording. Keep the instrument running for about 1 minute with the HEPA filter, then disconnect it and perform your measurement.

(6)   Reconnect the HEPA filter for another minute after your measurement. Bracketing your measurement with zero data is good for quality assurance.

(7)   Press the recording button for about 3 seconds until a beep confirms that the recording has been stopped.

(8)   Run the Java data analysis tool and load the file you just saved

(9)   If any warnings are displayed, follow the instructions in the application note on software warnings

(10) If you have rapidly changing aerosol concentrations, the induction correction can give improved results. Switch to the diameter display, and check the look of the data with and without induction correction. If over- and undershoots during rapid transients are reduced with the induction correction, then use it, otherwise do not use it, because it adds some noise to the diffusion stage signal

(11) Use the averaging option to reduce the number of data points if necessary

(12) Use the "time since midnight" option to get seconds since midnight rather than seconds-since start-of-file if you this is useful for you (to align data of multiple runs/instruments)

(13) Use the "align averages" option to align averaged values if this is useful to you. For example, for hourly values, this option will give you averages between full hours rather than averages over the first 3600 seconds. Be aware that you will lose the first noncomplete hour of data (i.e. if you start measuring at 10:30, your first data point will be the hour between 11:00 and 12:00).

(14) Export the data for further analysis in your favorite program (Excel, Igor, Origin etc)