**[1] "filterID":** filter id (eg. GNXXX or KHCXXXX)

**[2] "downloadDate":** MicroPEM data download Date

**[3] "totalDownloadTime":** duration of downloading MicroPEM data

**[4] "deviceSerial.x":** MicroPEM device Serial Number

**[5] "dateTimeHardware":** Latest date of MicroPEM Hardware update

**[6] "dateTimeSoftware":** Latest date of MicroPEM software update

**[7] "version":** MicroPEM download software version

[**8] "participantID":** file path of the MicroPEM file

**[9] "participantWeight":** NA for this dataset

**[10] "inletAerosolSize":** type of Micropem air inlet (e.g. PM2.5 or PM10)

[**11] "laserCyclingVariablesDelay":** laser cycling delay (unit: second)

**[12] "laserCyclingVariablesSamplingTime":** laser cycling sampling time (unit: second)

**[13] "laserCyclingVariablesOffTime":** laser cycling off time (unit: second)

**[14] "SystemTimes":** system on and off time (3030 means system is on 30 seconds and then off 30 seconds)

**[15] "nephelometerSlope":** nephelometer slope (3 for this study)

[**16] "nephelometerOffset":** nephelometer offset

**[17] "nephelometerLogInterval":** nephelometer reading average period (10 second for this study)

**[18] "temperatureSlope":** temperature slope (1 for this study)

**[19] "temperatureOffset":** temperature offset

**[20] "temperatureLog":** temperature average period (30 second for this study)

**[21] "humiditySlope":** humidity slope (1 for this study)

**[22] "humidityOffset":** humidity offset

**[23] "humidityLog":** humidity average period (10 second for this study)

**[24] "inletPressureSlope":** inlet pressure slope

**[25] "inletPressureOffset":** inlet pressure offset

**[26] "inletPressureLog":** inlet pressure average period

**[27] "inletPressureHighTarget":** inlet pressure high target

**[28] "inletPressureLowTarget**": inlet pressure low target

**[29] "orificePressureSlope":** orifice pressure slope

**[30] "orificePressureOffset":** orifice pressure offset

[**31] "orificePressureLog":** orifice pressure average period

**[32] "orificePressureHighTarget":** orifice pressure high target

**[33] "orificePressureLowTarget":** orifice pressure low target

**[34] "flowLog":** flow rate average period (unit: second)

**[35] "flowHighTarget":** flow high target

**[36] "flowLowTarget":** flow low target

**[37] "flowRate":** flow rate (unit: liter per minute)

**[38] "accelerometerLog":** accelerometer average period (unit: second)

**[39] "batteryLog":** battery voltage average period (unit: second)

**[40] "ventilationSlope":** NA for this study

[**41] "ventilationOffset":** NA for this study

**[42] "starttime":** sampling start datetime

**[43] "endtime":** sampling end datetime

**[44] "mintime":** the minimum time stamp during sampling period

**[45] "maxtime":** the maximum time stamp during sampling period

**[46] "mean":** mean of raw nephelometer reading

**[47] "min":** the minimum raw nephelometer reading

**[48] "max":** the maximum raw nephelometer reading

**[49] "startbutton":** the number of times that start button was pressed

**[50] "button1"**: the number of times that button 1 was pressed

[**51] "button2":** the number of times that button 2 was pressed

**[52] "lowbattery":** the number of times of low battery warning

**[53] "deadbattery":** the number of times of dead battery warning

**[54] "timeerror":** the number of times of time error

**[55] "starttime\_new":** new sampling start datetime after corretting datetime error

[**56] "endtime\_new":** new sampling end datetime after corretting datetime error

**[57] "deviceSerial.y":** MicroPEM device Serial Number

**[58] "HEPAsttime1":** start datetime of START HEPA

[**59] "HEPAsttime2":** end datetime of START HEPA

**[60] "HEPAendtime1":** start datetime of END HEPA

**[61] "HEPAendtime2":** end datetime of END HEPA

**[62] "Startdate":** start date of sampling

**[63] "HEPAstnumber":** the number of date points during START HEPA

**[64] "HEPAendnumber":** the number of date points during END HEPA

**[65] "HEPASt":** mean of raw nephelometer reading during START HEPA

**[66] "HEPAEnd":** mean of raw nephelometer reading during END HEPA

**[67] "Duration":** sampling duration (unit: hour)

**[68] "nephelometer\_avg":** mean of raw nephelometer reading

**[69] "nephelometer\_corr\_avg":** mean of HEPA-corrected nephelometer reading

**[70] "vol":** sampling air volume (unit: Liter)

**[71] "flow.avg":** mean of flow rate

**[72] "flow.sd":** standard deviation of flow rate

**[73] "flow.min":** minimum flow rate

**[74] "flow.max":** maximum flow rate

**[75] "flow28.good":** the percentage of flow rate > 0.28 LPM and < 0.55 LPM

**[76] "flow30.good":** the percentage of flow rate > 0.30 LPM and < 0.55 LPM

**[77] "Negative1":** the percentage of raw nephelometer reading < 0

**[78] "Negative2":** the percentage of HEPA-corrected nephelometer reading < 0

**[79] "Validity":** visual validity of nephelometer data (1: visually valid, 2: visually suspect, 3: visually suspect after adjustment, 4: visually invalid)

**[80] "Note":** Note of visual validity check

**[81] “Harmattan”:** Index of elevated baseline between December and February.

0: not elevated; 1: elevated

**[82] "netmass":** net mass of filter (post-weight – pre-weight)

**[83] “index”:** index of gravimetric PM sample: including GOOD, Unmatched, Outlier, and Damaged

**[84] “duration\_index”:** index of sampling duration. 0: < 22 hr, 1: >= 22hr

**[85] “flow\_index”:**  index of flow rate. 0: normal flow rate < 85% of time, 1: normal flow rate >= 85% of time. Normal flow rate is between 0.28 and 0.55 LPM

**[86] "PM":** raw gravimetric PM concentration ((netmass – blank)/ volume))

**[87] "CF":** gravimetric correction factor

**[88] “CF\_index”:** index of gravimetric correction factor. 1: CF is not NA and index is GOOD and duration\_index is 1 and flow\_index is 1. 0: all others.

**[89] "CF\_new":** validity corrected gravimetric correction factor (set to NA if visual validity of nephelometer data is 4)

**[90] "nephelometer\_final\_avg":** mean of HEPA and gravimetric-corrected nephelometer reading

**[91] "PMday\_1":** start datetime of first 24 hr sampling

**[92] "PMday\_2":** start datetime of second 24 hr sampling

**[93] "PMday\_3":** start datetime of third 24 hr sampling

**[94] "PMday4":** start datetime of fourth 24 hr sampling

**[95] "Day\_1":** label of first 24 hr

**[96] "Day\_2":** label of second 24 hr

**[97] "Day\_3":** label of third 24 hr

**[98] "OldPM\_1":** mean of raw nephelometer reading in first 24 hr

**[99] "OldPM\_2":** mean of raw nephelometer reading in second 24 hr

**[100] "OldPM\_3":** mean of raw nephelometer reading in third 24 hr

**[101] "CorPM\_1":** mean of corrected nephelometer reading in first 24 hr

**[102] "CorPM\_2":** mean of corrected nephelometer reading in second 24 hr

**[103] "CorPM\_3":** mean of corrected nephelometer reading in third 24 hr

**[104] "PMn\_1":** number of nephelometer reading in first 24 hr

**[105] "PMn\_2":** number of nephelometer reading in second 24 hr

**[106] "PMn\_3":** number of nephelometer reading in third 24 hr

**[107] "compliance\_1":** wearing compliance in first 24 hr

**[108] "compliance\_2":** wearing compliance in second 24 hr

**[109] "compliance\_3":** wearing compliance in third 24 hr

**[110] "complianceWake\_1":** wearing compliance in the wake time of first 24 hr (6 am to 10 pm)

**[111] "complianceWake\_2":** wearing compliance in the wake time of second 24 hr (6 am to 10 pm)

**[112] "complianceWake\_3":** wearing compliance in the wake time of third 24 hr (6 am to 10 pm)

**[113] "PMAverage24":** mean of corrected nephelometer reading in first 24 hr

**[114] "PMAverage48":** mean of corrected nephelometer reading in first 48 hr

**[115] "PMAverage72":** mean of corrected nephelometer reading in first 72 hr