Supplemental Information

Aerosol Size Distribution Measurement of Electronic Cigarette Emissions Using Combined Differential Mobility and Inertial Impaction Methods. Smoking Machine and Puff Topography Influence.

Vladimir B. Mikheev[a], Alexander Ivanov[a], Eric A. Lucas[a], Patrick L. South[a], Hendrik O. Colijn[b], and Pamela I. Clark[c].

[a] Battelle Memorial Institute, Columbus, OH, USA

[b] Center for Electron Microscopy and Analysis, Ohio State University, Columbus, OH, USA

[c] University of Maryland, College Park, MD, USA

Figure S1. E—cigarettes used for the study.

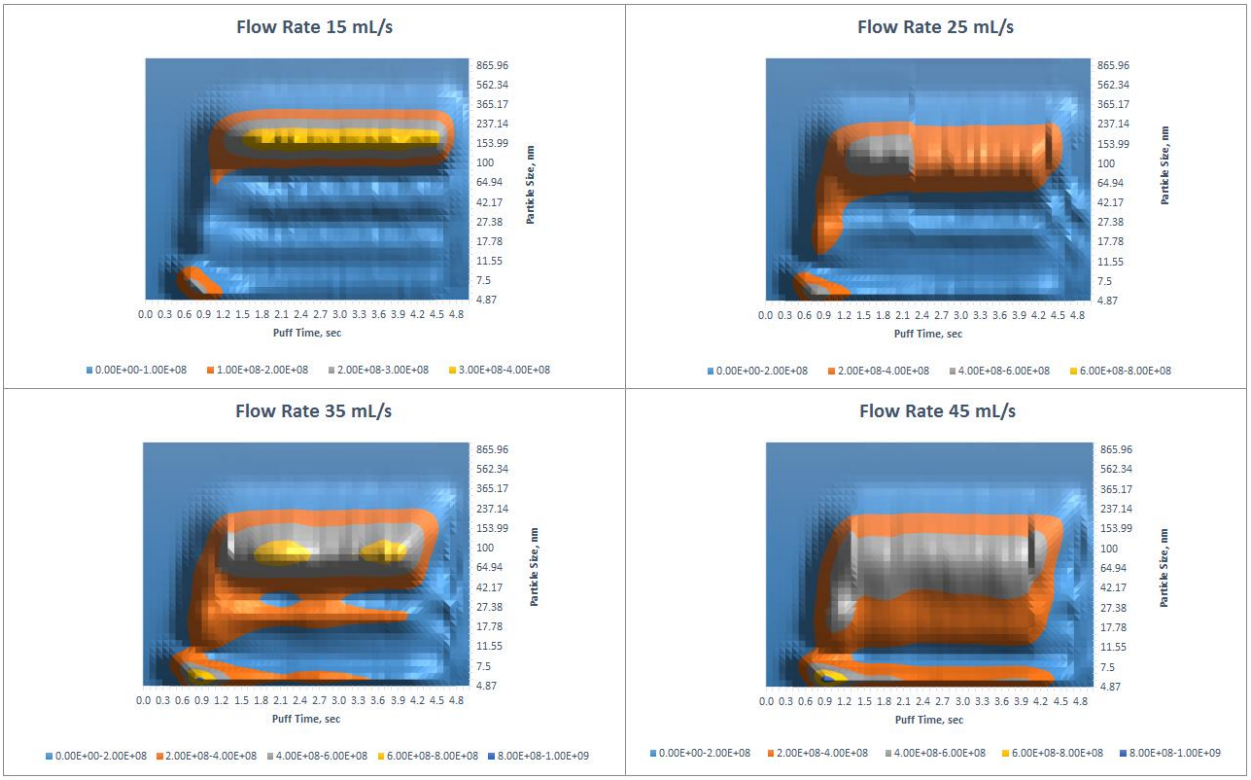

Figure S2. Aerosol Size Distribution, blu Classic Tobacco mid-nicotine. 5 s puff. Flow Rates 15, 25, 35, and 45 mL/s. Contour Plots.

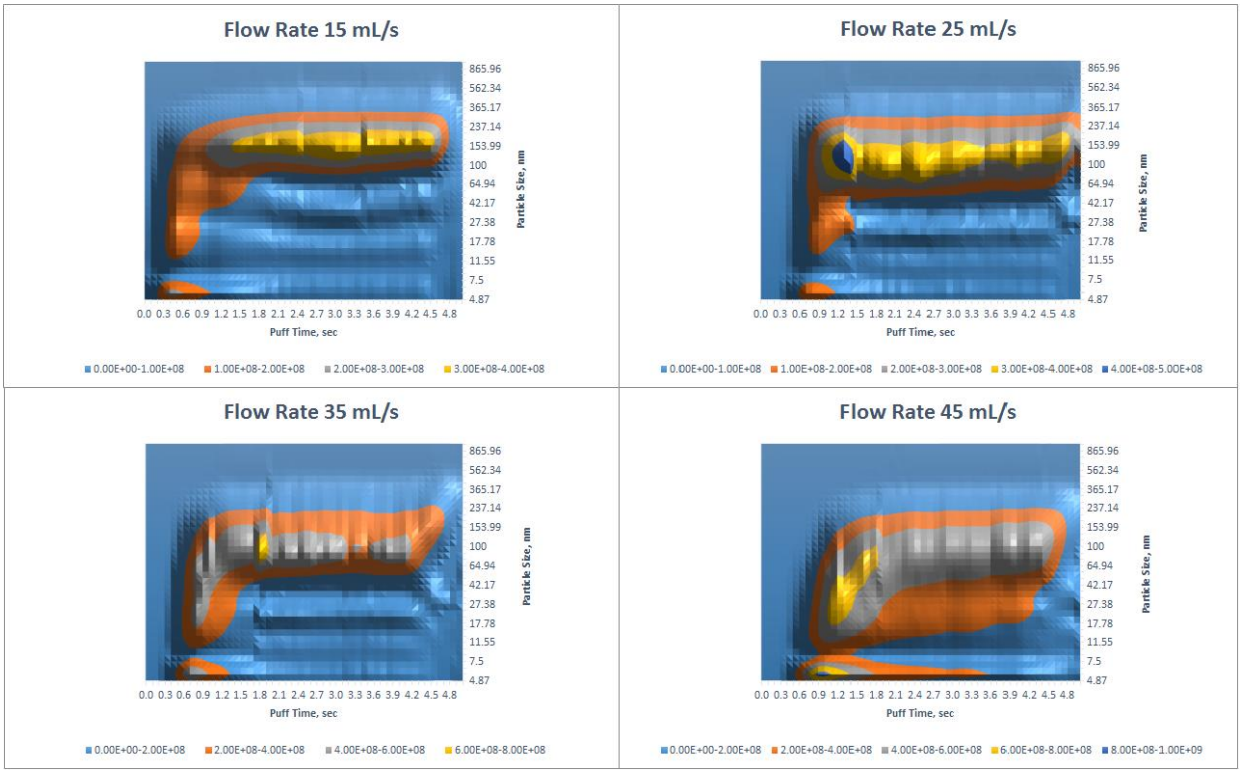

Figure S3. Aerosol Size Distribution, iTaste SVD, PG/VG=50/50, 5 V, 1.8 ohm. 5 s puff. Flow Rates 15, 25, 35, and 45 mL/s. Contour Plots.

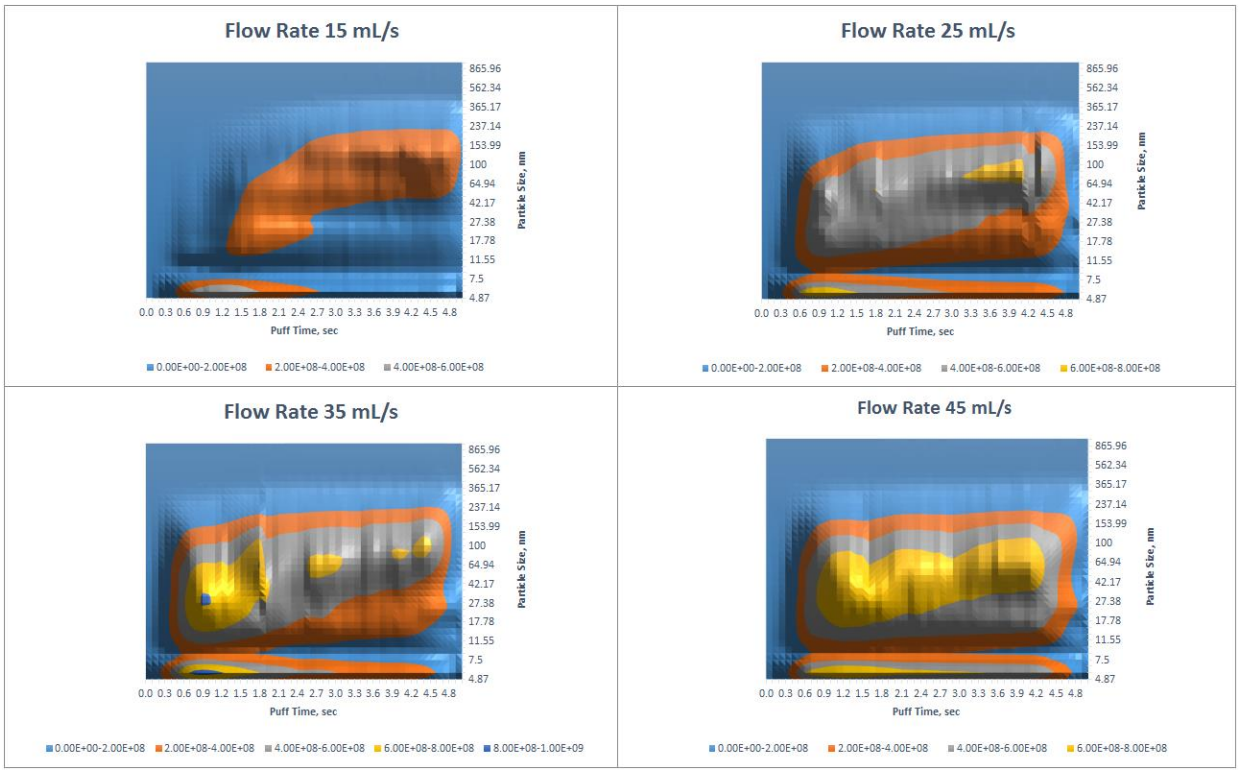

Figure S4. Aerosol Size Distribution, iTaste VTR, PG/VG=50/50, 4 V, 2.1 ohm. 5 s puff. Flow Rates 15, 25, 35, and 45 mL/s. Contour Plots.

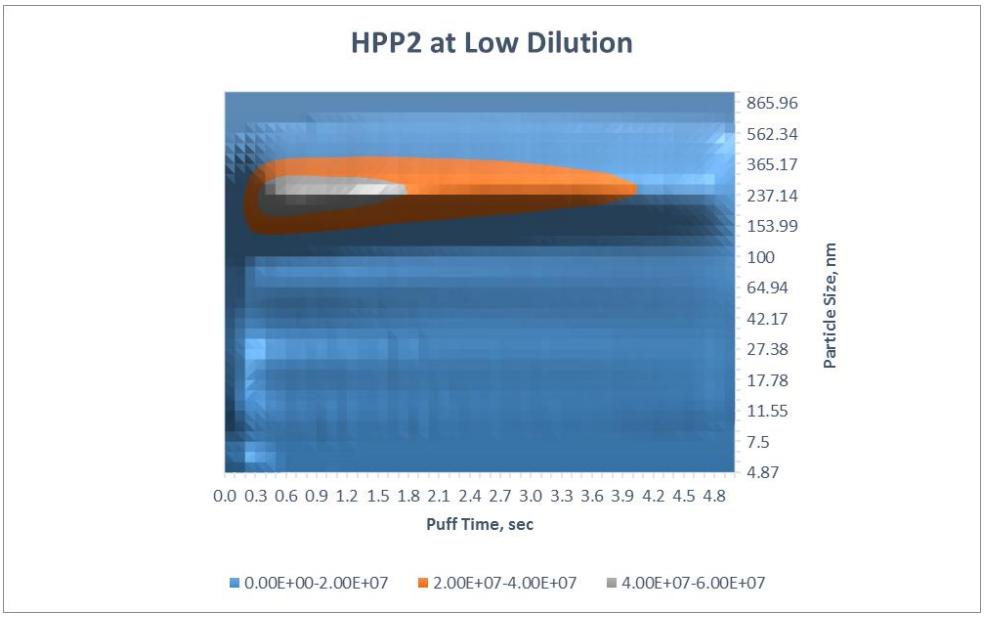

Figure S5. Aerosol Size Distribution, HPP2, blu Classic Tobacco mid-nicotine. 5 s puff. Flow Rate 25 mL/s. Contour Plot.

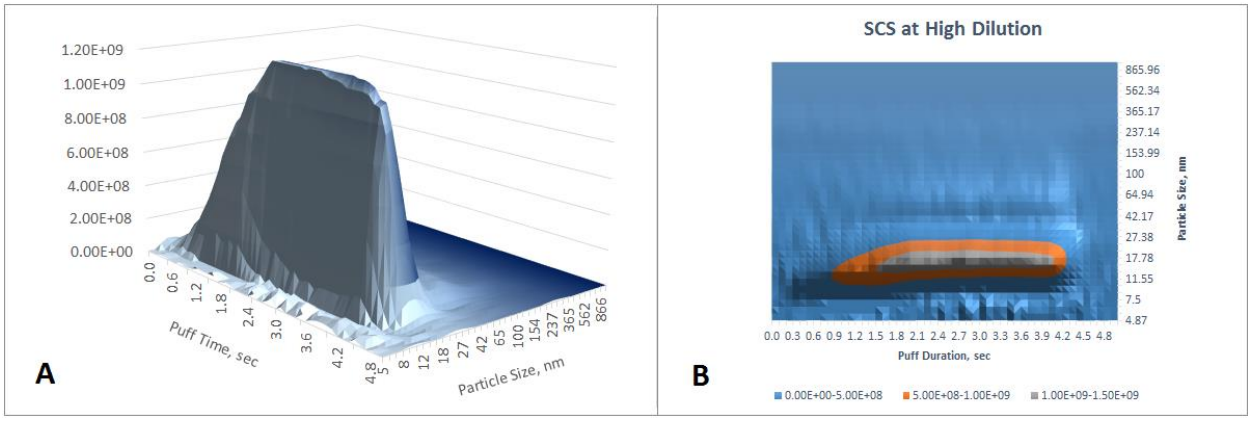

Figure S6. Aerosol Size Distribution, SCS, blu Classic Tobacco mid-nicotine. 5 s puff. Flow Rate 25 mL/s. Extra 1/500 Dilution. A - 3D image generated by DMS500 software, B – is a contour plot.

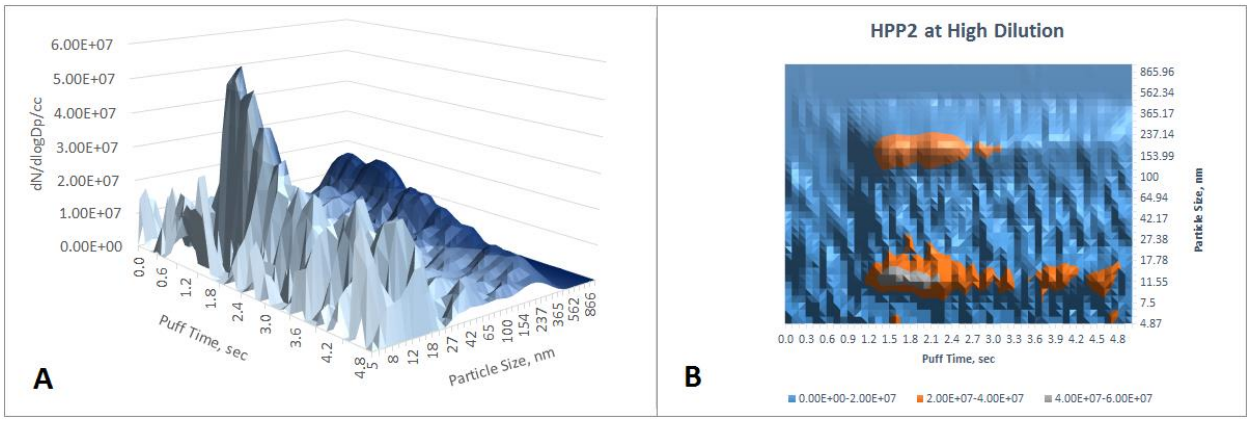

Figure S7. Aerosol Size Distribution, HPP2, blu Classic Tobacco mid-nicotine. 5 s puff. Flow Rate 25 mL/s. Extra 1/500 Dilution. A -3D image generated by DMS500 software, B – is a contour plot.

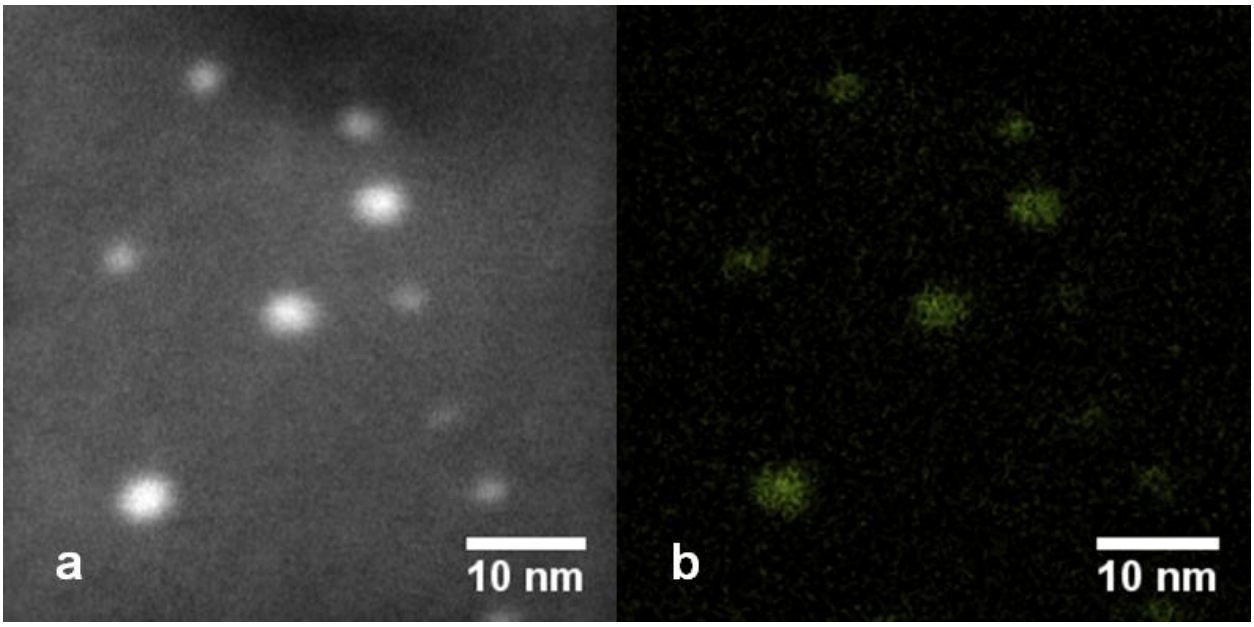

Figure S8. (a) HAADF STEM image of metallic nanoparticles collected on ELPI stage #5 (cut-off size ~93 nm). (b) STEM EDX map indicating the distribution of copper.

Table S1. LC-TOFMS Instrument Conditions

<table>
<tr><td>LC-HRMS System

UPLC

Mass Spectrometer</td><td>

Waters Acquity I-class

AB Sciex TripleTOF 5600</td></tr>
<tr><td>Mass Spectrometer Source</td><td>DuoSpray: includes TurboIonSpray and APCI probes</td></tr>
<tr><td>Scan Ranges</td><td>TOF MS: 50-1000 m/z

IDA: 20-1000 m/z [High Resolution]</td></tr>
<tr><td>Mass Spec software</td><td>Analyst TF v 1.6</td></tr>
<tr><td>Analytical Column</td><td>GL Sciences InertSustain C18; 2.1 × 150 mm, 3 µm</td></tr>
<tr><td>Column Temperature</td><td>60°C</td></tr>
<tr><td>Autosampler Temperature</td><td>5°C</td></tr>
<tr><td>Mobile Phase Components</td><td>A: 0.1% (v/v) acetic acid in water

B: 0.1% (v/v) acetic acid in methanol</td></tr>
<tr><td>Gradient Profile</td><td>
<table>
<tr><th>Time, min</th><th>%B</th><th>Flow rate, mL/min</th></tr>
<tr><td>0</td><td>10</td><td>0.2</td></tr>
<tr><td>0.5</td><td>10</td><td>0.2</td></tr>
<tr><td>15</td><td>100</td><td>0.2</td></tr>
<tr><td>20</td><td>100</td><td>0.2</td></tr>
<tr><td>20.01</td><td>10</td><td>0.2</td></tr>
<tr><td>30</td><td>10</td><td>0.2</td></tr>
</table>

All changes linear with respect to time.</td></tr>
<tr><td>Injection Volume</td><td>10 µL</td></tr>
<tr><td>Run Time</td><td>30 min</td></tr>
</table>

Table S2. Newly formed organic compounds detected in blu e-cig aerosol by LC-TOFMS method.

Flavors	Observed m/z	LC column retention time, min	Mass Spectrometer Signal Intensity	Candidate Formula
Both CC and PC	213.07322	5.15	20005	C8H11O3F3
	287.13655	5.98	38596	C10H19N6O2P
	291.13381	7.33	59950	C15H18N2O4
	215.11858	8.57	63037	C13H14N2O
	215.11779	9.06	57964	C13H14N2O
	239.08879	9.25	95246	C8H20N2P2S
	295.14427	12.29	527691	C18H18N2O2
	309.16	13.25	203073	C19H20N2O2
CC	241.06821	5.35	35704.5	C9H11O4F3
	225.07326	7.05	16081.5	C7H16N2O2S2
	211.08645	8.04	48740.75	C13H10N2O
	255.07644	8.22	17532.5	C14H10N2O3
	293.12834	14.61	83302.5	C18H16N2O2
PC	297.15932	6.62	31673	C18H20N2O2
	289.10661	11.78	30544	C14H18O2F2S