

Supplemental information of “Fast and Non-Invasive Electronic Nose Devices for Screening Out COVID-19 Virus Infection Based on Exhaled Breath VOC Detection”

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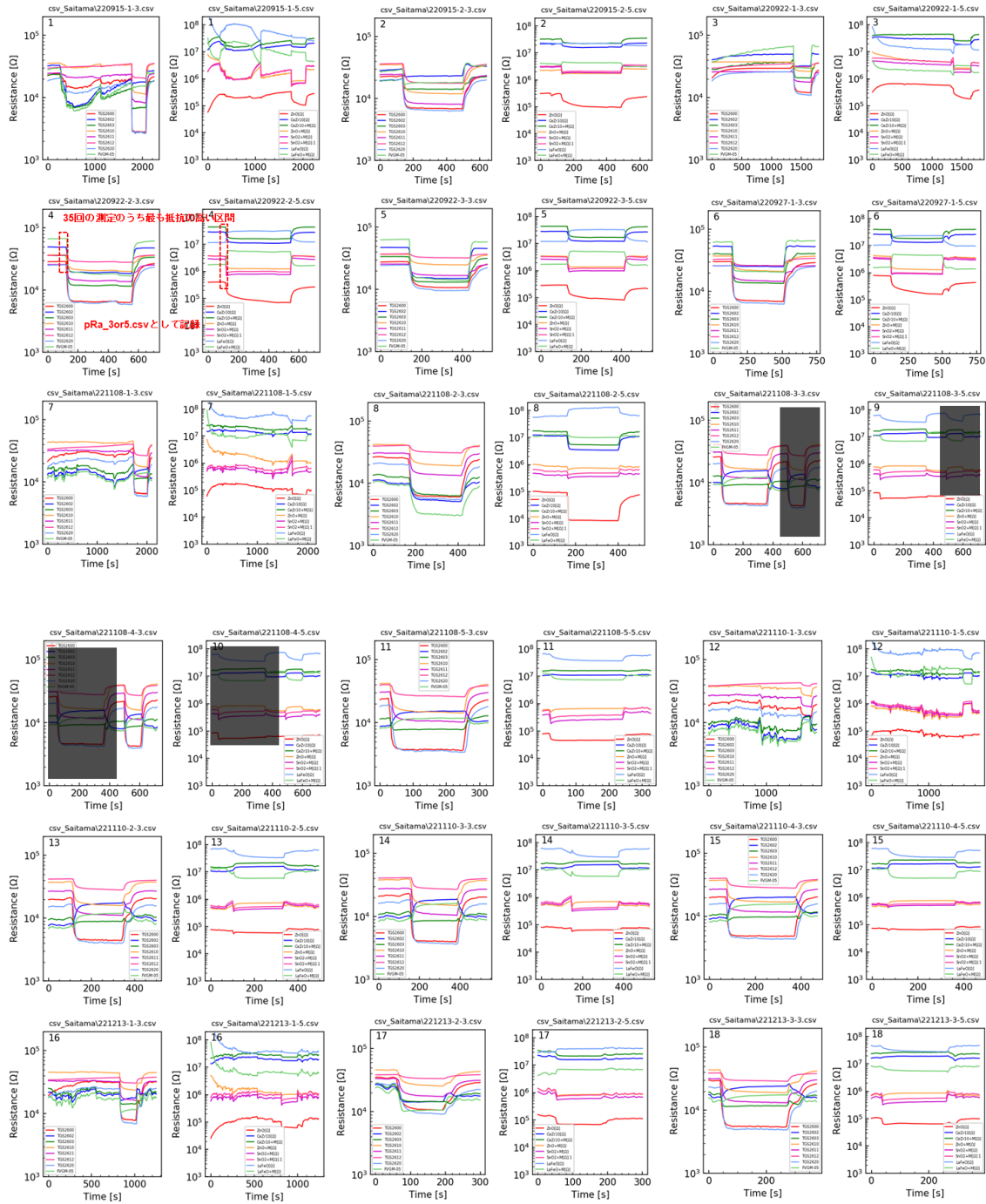
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Two detector of A and B containing an array of 8 sensors, which were commercial sensors and in-house sensors, respectively are used in this study, as listed in Table S1. Commercial sensors are semiconductor MOX sensors of TGS 2600, TGS2602, TGS2603, TGS2610, TGS2611, TGS2612, TGS2620, and TGS2644 (Figaro Engineering Inc., Minoh, Japan). The commercial sensors selected from the TGS series were, which were recognized as long term stable and highly sensitive in the gas sensor industry for VOC measurement. For comparison, a in-house sensors consisting of p-type LaFeO₃, n-types SnO₂, ZnO, Ce_{0.9}Zr_{0.1}O₂ (CeZr10), and noble metals loaded were also prepared.

Table S1. Semiconductor gas sensors and theirs features installed in the detector A and detector B.

Detector	Sensor	Detection target	features
A	TGS2600	H ₂ and ethanol	High durability
	TGS2602	Ethanol, VOCs and H ₂ S	High sensitivity
	TGS2603	TMA, CH ₃ SH etc.	Bad odor
	TGS2610	Liquefied petroleum (LP) gas	Quick response for leakage
	TGS2611	CH ₄ and LP gas	Quick response for leakage
	TGS2612	CH ₄ , propane, isobutane	Suppressed ethanol response
	TGS2620	Ethanol, and organic solvents	Ethanol detection
	TGS2444	TMA, NH ₃ etc.	For higher concentration
B	ZnO	Inflammable gas	surface-reaction type
	M/ZnO	Inflammable gas	metal catalyzed
	SnO ₂	H ₂ and VOCs	surface-reaction type
	M/SnO ₂	VOCs and Aldehyde	metal catalyzed
	LaFeO ₃	Acetone	p-type
	M/LaFeO ₃	Acetone	p-type, metal catalyzed
	CeZr10	H ₂ and VSCs	Bulk response type
	M/CeZr10	VSCs	metal catalyzed



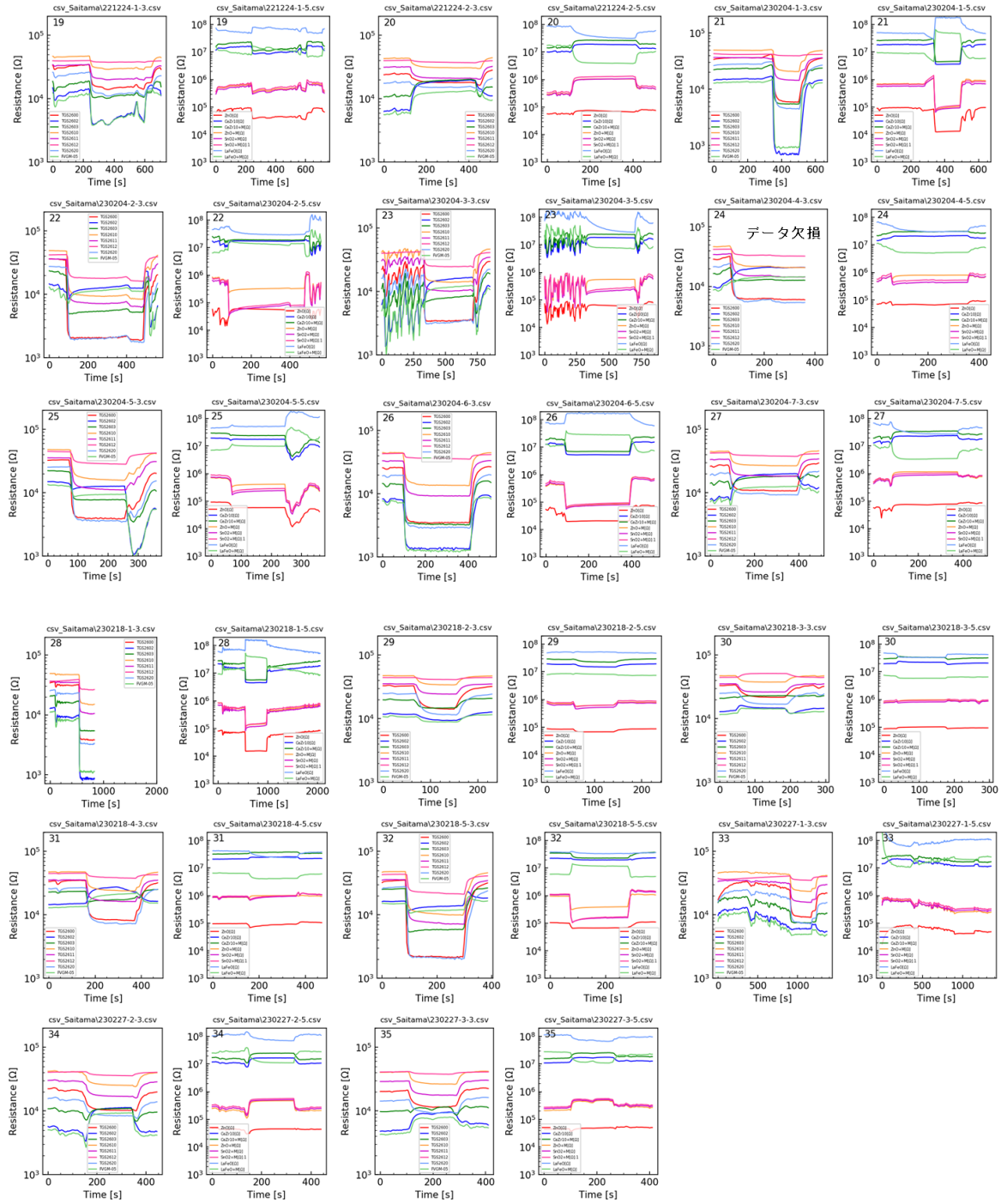


Figure S1. Resistance-change behavior of the gas sensors of the two VOC detectors to the breath of COVID19. The response of black-shaded area is not used in the analysis.

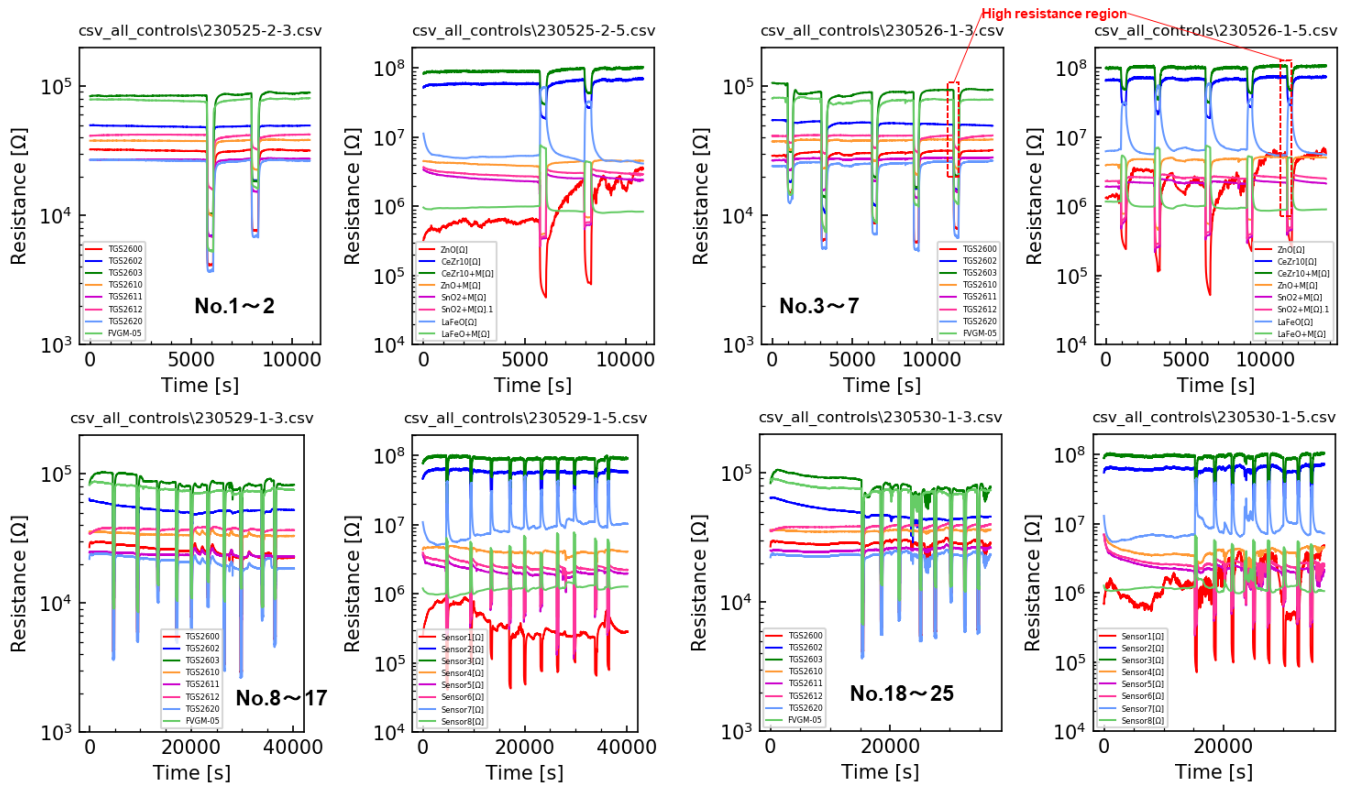


Figure S2. Resistance-change behavior of the gas sensors of the two VOC detectors to the breath of control.

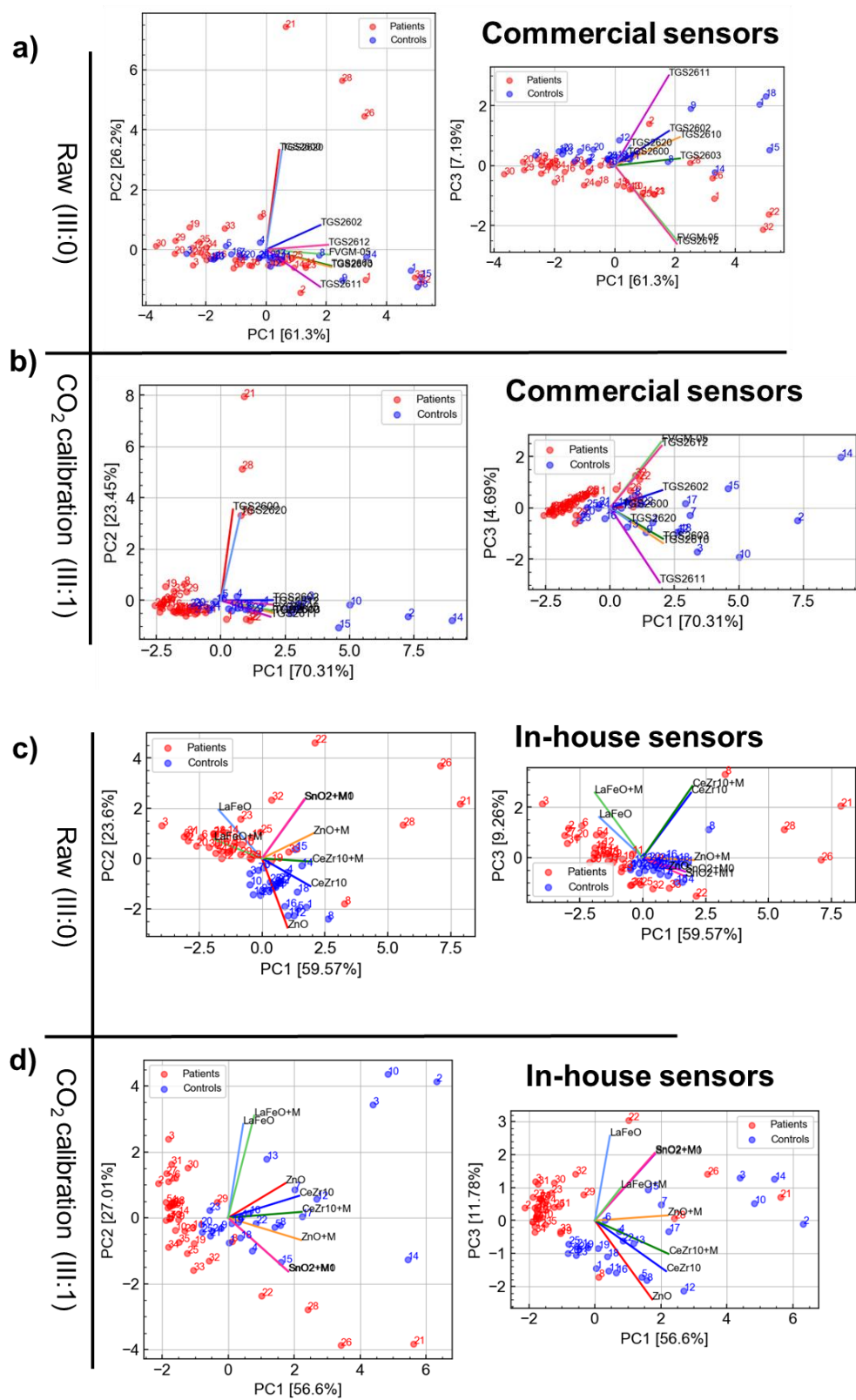


Figure S3. PCA analysis of the two VOC detectors. Two plots of PC1 vs. PC2, and PC1 and PC3 are shown.