

Scanning electron microscopy and EDX spectroscopy of commercial swabs used for COVID-19 lateral flow testing

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Supplementary figures

The next figures show, for each of the five COVID swab test brands analysed, the scanning electron micrographs and XED spectroscopy element analysis. The Supplementary Figures are presented in the following order:

Supplementary Figure	Brand	Fabric	CE	Manufacturer	Lot number
1	iHealth®	Foam	No	iHealth Labs, Inc	20211213
2	Puritan HydraFlock®	Nylon flocked	Yes	Puritan Med Products	(10) 50173
3	Nasal Swab	Nylon flocked	Yes	CM LAB SAS	20201221
4	MANTACC®	Nylon	Yes	Miraclean Technology Co., Ltd	2021120864
5	FLOQSwabs®	Nylon	Yes	COPAN	2010482

CE, Conformité Européenne

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SUPPLEMENTARY FIGURES

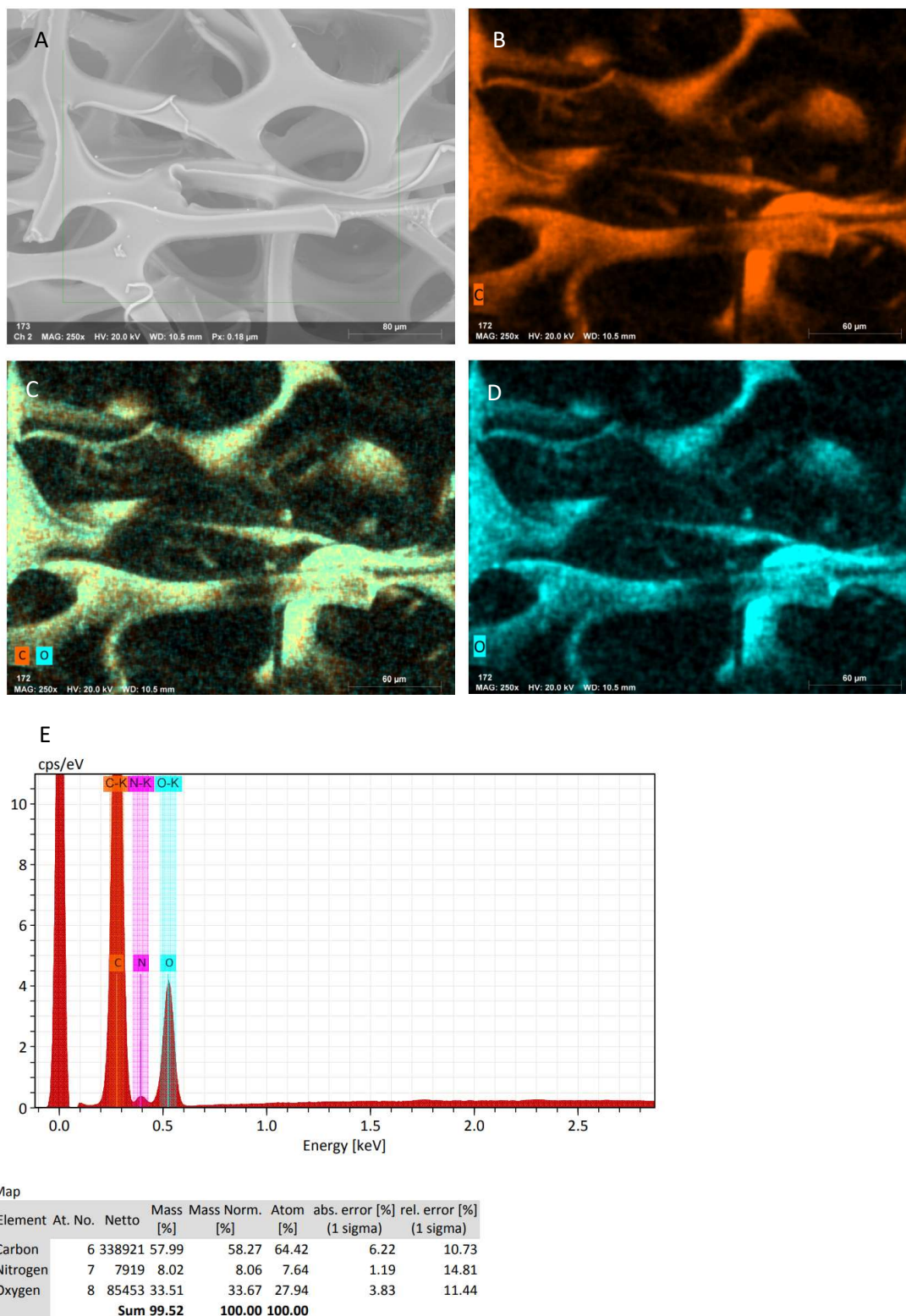


Figure S1. Analysis of swab 1 (foam head; brand: iHealth). A) Scanning electron micrograph of swab head; B) Distribution of Carbon; C) Distribution of Carbon and Oxygen; D) Distribution of Oxygen; E) Chemical elements identified by EDX spectroscopy.

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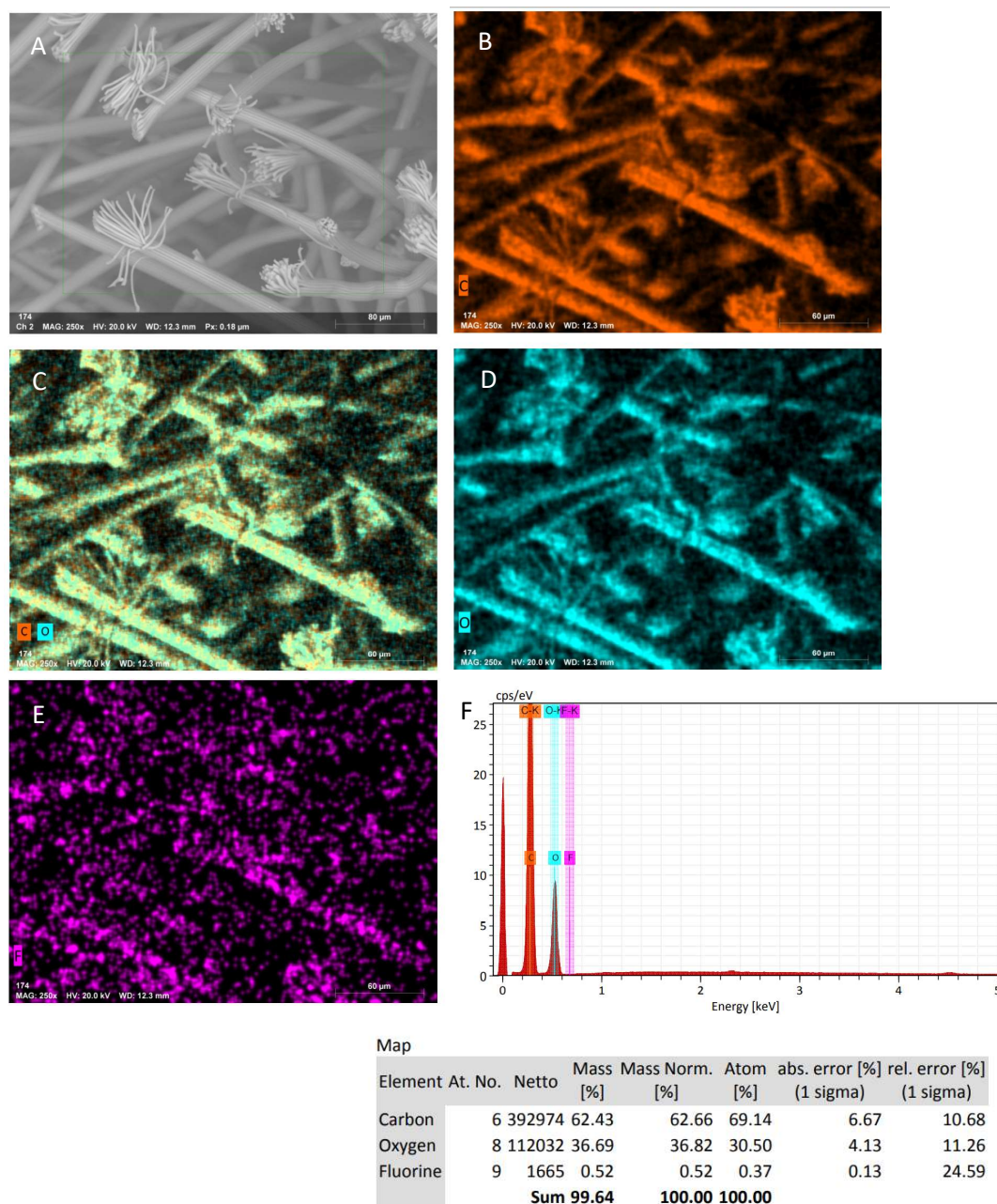
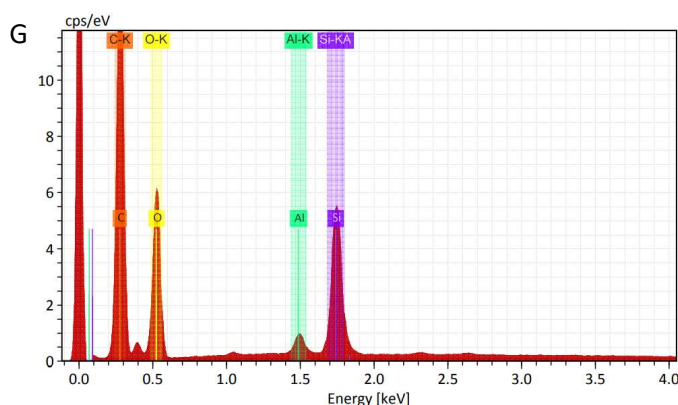
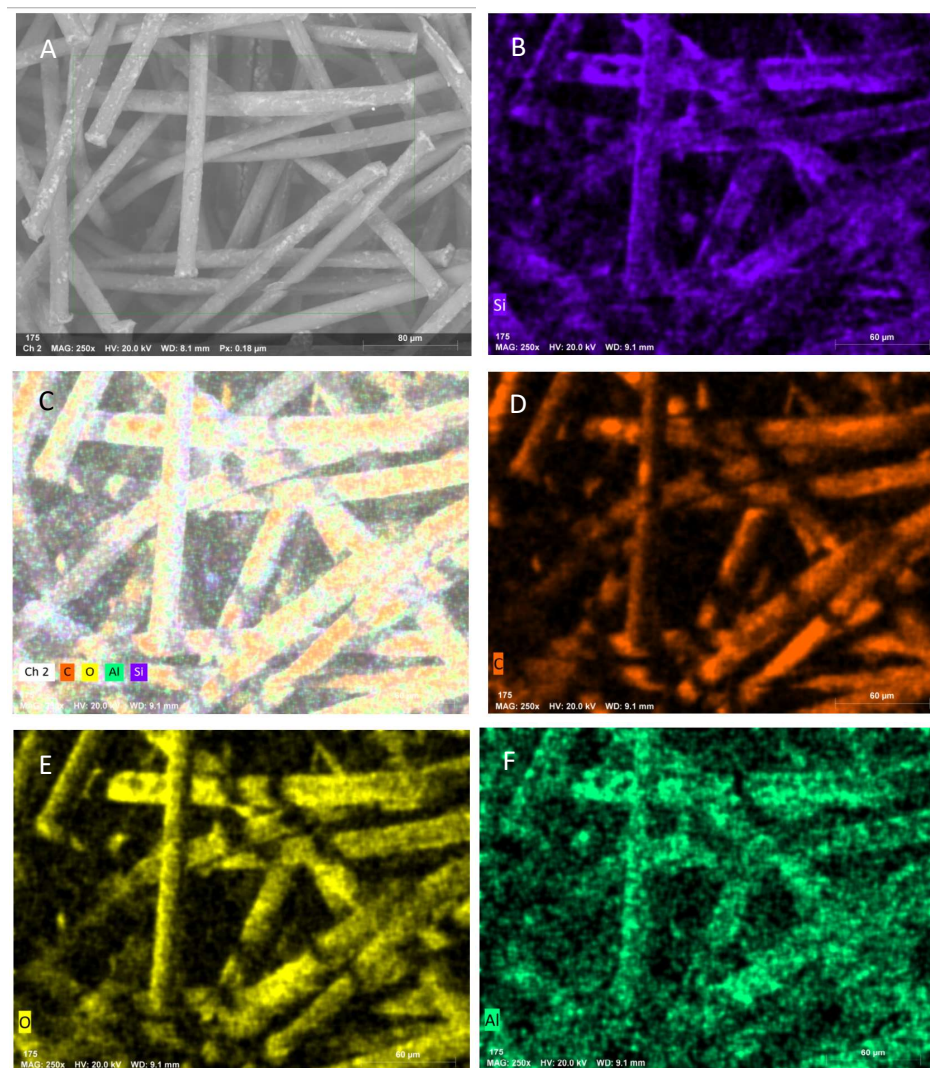


Figure S2. Analysis of swab 2 (nylon flocked head; brand: Puritan HydraFlock). A) Scanning electron micrograph of swab head; B) Distribution of Carbon; C) Distribution of Carbon and Oxygen; D) Distribution of Oxygen; E) Distribution of Fluorine; F) Chemical elements identified by EDX spectroscopy.

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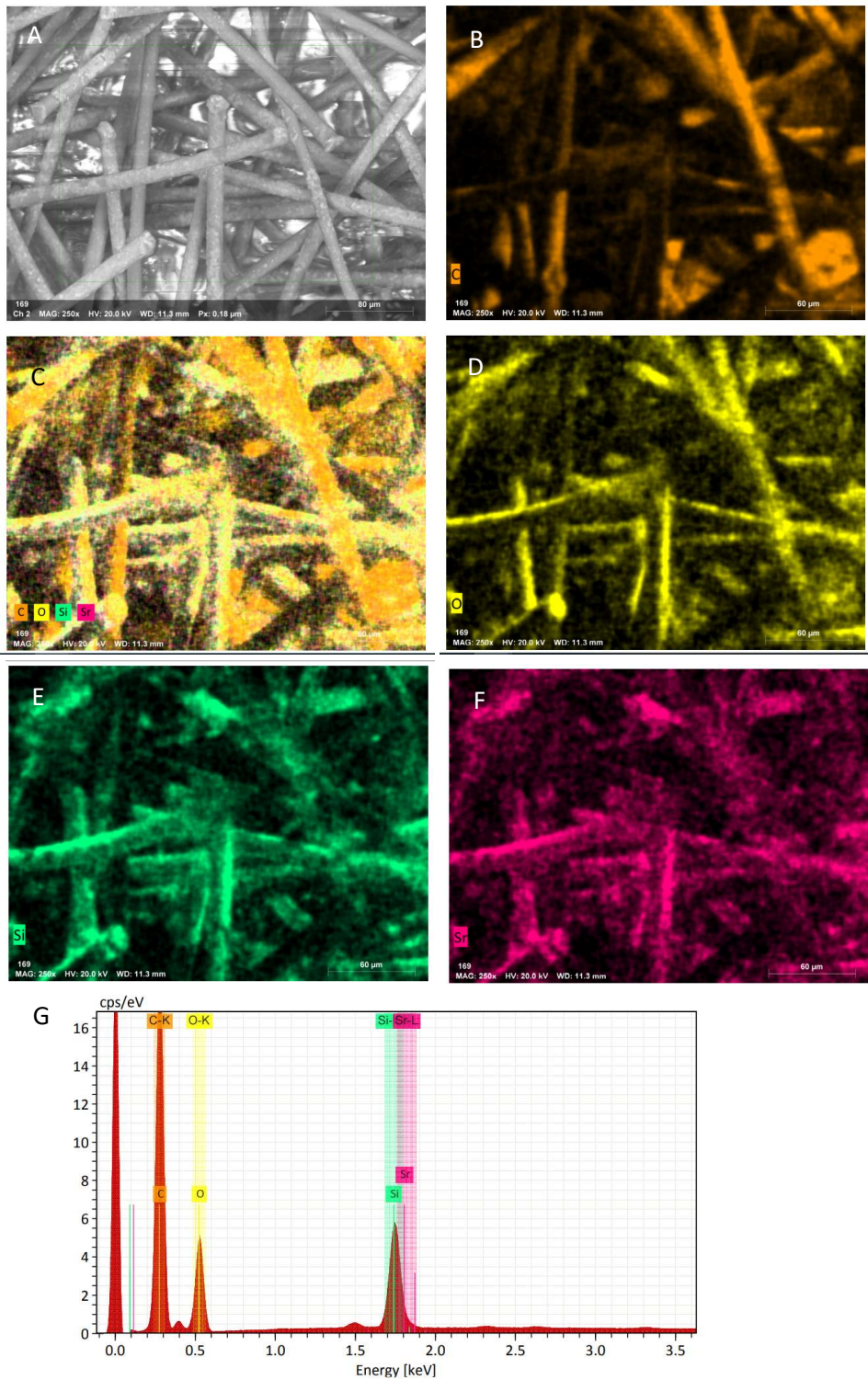


Element	At. No.	Netto	Mass [%]	Mass Norm. [%]	Atom [%]	abs. error [%] (1 sigma)	rel. error [%] (1 sigma)
Carbon	6	207987	53.13	53.49	61.26	5.80	10.92
Nitrogen	7	4714	4.83	4.86	4.78	0.79	16.34
Oxygen	8	96529	36.04	36.29	31.20	4.09	11.36
Fluorine	9	1489	0.53	0.53	0.38	0.13	25.13
Aluminium	13	13154	0.62	0.62	0.32	0.06	9.01
Silicon	14	114757	4.18	4.21	2.06	0.20	4.87
Sum		99.32		100.00	100.00		

Figure S3. Analysis of swab 3 (nylon flocked head; brand: Nasal Swab). A) Scanning electron micrograph of swab head; B) Distribution of Silicon; C) Distribution of Carbon, Oxygen, Aluminium, Silicon; D) Distribution of Carbon; E) Distribution of Oxygen; F) Distribution of Aluminium; G) Chemical elements identified by EDX

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Map

Element	At. No.	Netto	Mass [%]	Mass Norm. [%]	Atom [%]	abs. error [%] (1 sigma)	rel. error [%] (1 sigma)
Carbon	6	329608	59.60	60.19	68.08	6.40	10.74
Nitrogen	7	5644	4.75	4.80	4.66	0.75	15.85
Oxygen	8	93964	29.22	29.51	25.05	3.33	11.39
Silicon	14	146188	3.79	3.83	1.85	0.19	4.93
Titanium	22	18324	0.78	0.79	0.22	0.05	6.09
Strontium	38	16740	0.87	0.88	0.14	0.06	7.11
		Sum	99.02	100.00	100.00		

Figure S4. Analysis of swab 4 (nylon head; brand: MANTACC). A) Scanning electron micrograph of swab head; B) Distribution of Carbon; C) Distribution of Carbon, Oxygen, Silicon, Strontium; D) Distribution of Oxygen; E) Distribution of Silicon; F) Distribution of Strontium; G) Chemical elements identified by EDX spectroscopy.

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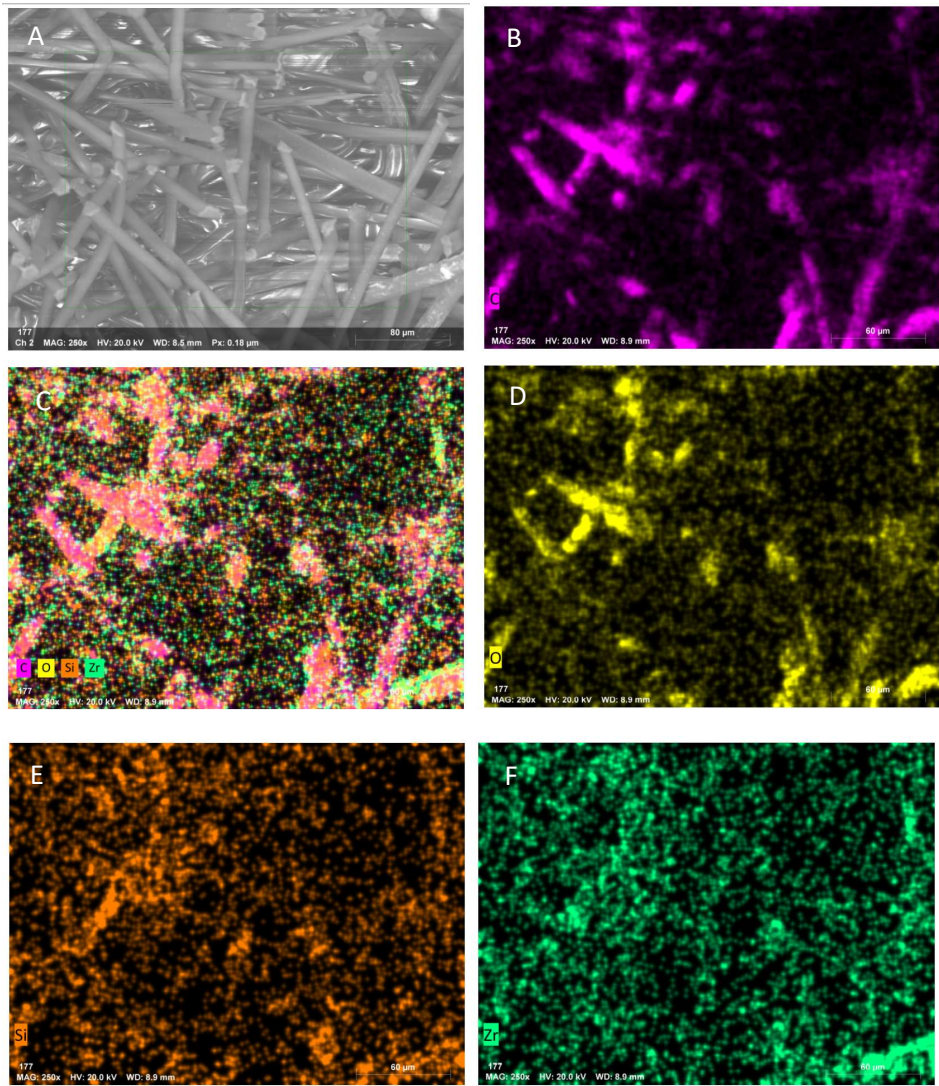


Figure S5. Analysis of swab 5 (nylon flocked head; brand: FLOQSwabs). A) Scanning electron micrograph of swab head; B) Distribution of Carbon; C) Distribution of Carbon, Oxygen, Silicon, Zirconium; D) Distribution of Oxygen; E) Distribution of Silicon; F) Distribution of Zirconium; G) Chemical elements identified by EDX spectroscopy.

Map							
Element	At. No.	Netto	Mass [%]	Mass Norm. [%]	Atom [%]	abs. error [%] (1 sigma)	rel. error [%] (1 sigma)
Carbon	6	95535	63.84	64.04	70.44	7.24	11.33
Nitrogen	7	2488	10.26	10.29	9.70	1.87	18.26
Oxygen	8	13758	23.24	23.31	19.25	3.14	13.52
Silicon	14	3630	0.54	0.55	0.26	0.05	9.44
Titanium	22	3464	0.60	0.60	0.17	0.05	7.55
Zirconium	40	4909	1.21	1.21	0.18	0.08	6.31
		Sum	99.70	100.00	100.00		