Electronic Supplementary Material (ESI) for RSC Advances.

Electronic Supporting Information (ESI)

Influence of air contamination during heat-assisted plasma treatment on adhesion property of polytetrafluoroethylene (PTFE)

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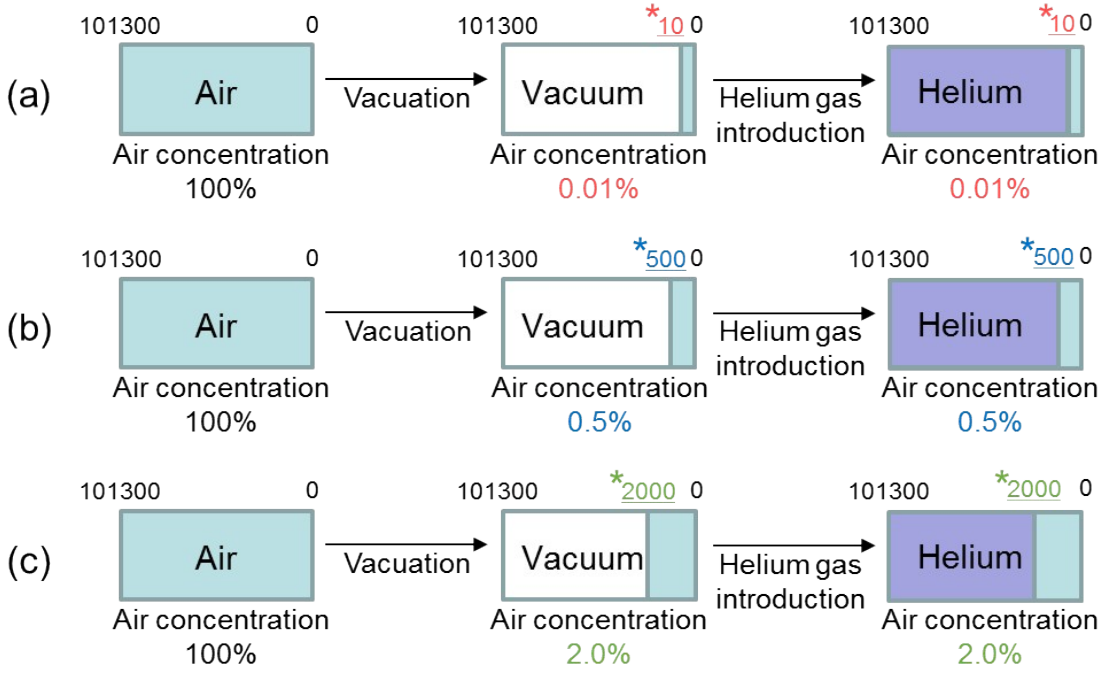


ESI-1 Schematic of the relation between the backpressure in the chamber and the air concentration: (a) backpressure of 10 Pa and air concentration of 0.01%, (b) backpressure of 500 Pa and air concentration of 0.5%, and (c) backpressure of 2000 Pa and air concentration of 2.0%. The * symbol and underlining denote the backpressure.

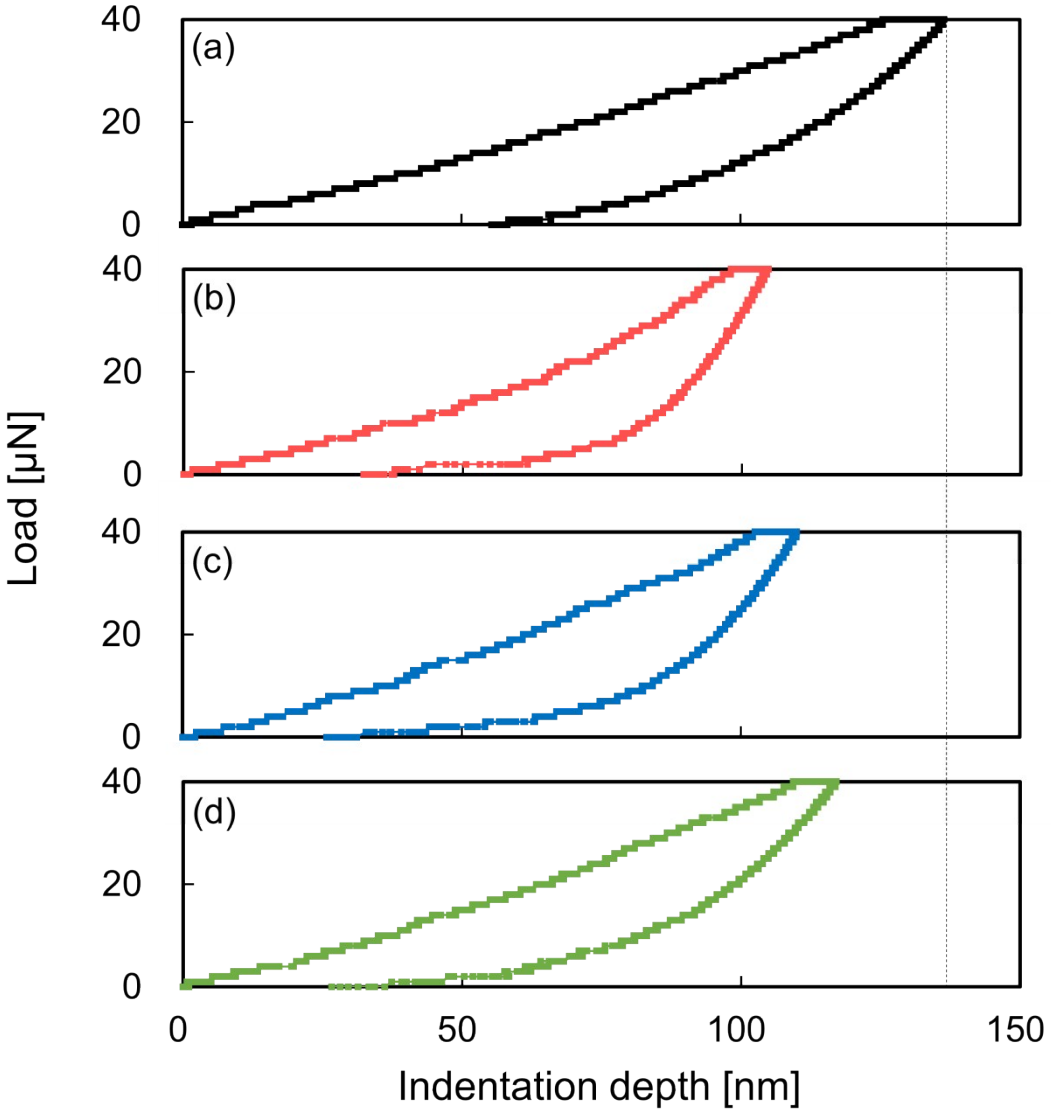
ESI-2 Gas compositions of the different air concentrations used for HAP treatment. The data were derived from the OES spectra (**Fig. 1**), and each peak intensity was normalized to the peak intensity of helium at 706 nm.

Species	**Wavelength [nm]**	**0.01% air**	**0.5% air**	**2.0% air**
OH	309	5	13	19
N_2	337	1	125	172
He	706	100	100	100
O	777	14	21	26

ESI-3 PTFE sample weight before and after treatment and average etching depth with or without HAP treatments in different air concentrations.

Treatment	Trial	Weight before treatment [mg]	Weight after treatment [mg]	Change in weight [mg]	Average change in weight [mg]	Average change in depth [a] [μm]
Heating only	1	1302.6	1302.2	0.4	0.2	0.0
	2	1345.6	1345.3	0.3		
	3	1365.5	1365.5	0.0		
0.01% air	1	1357.5	1349.4	8.1	8.5	0.4
	2	1351.9	1344.8	7.1		
	3	1377.5	1367.3	10.2		
0.5% air	1	1353.4	1325.9	27.5	23.7	1.1
	2	1355.0	1333.0	22.0		
	3	1379.2	1357.5	21.7		
2.0% air	1	1364.2	1329.6	34.6	35.2	1.6
	2	1355.4	1317.0	38.4		
	3	1333.4	1300.7	32.7		

[a] The average etching depth was calculated under the assumption that the specific weight of PTFE is 2.150 $g \cdot cm^{-3}$.



ESI-4 Representative load-depth curves of PTFE samples without or with HAP treatments in different air concentrations: (a) as-received, (b) HAP-treated in 0.01% air, (c) HAP-treated in 0.5% air, and (d) HAP-treated in 2.0% air.