

Supplementary Information

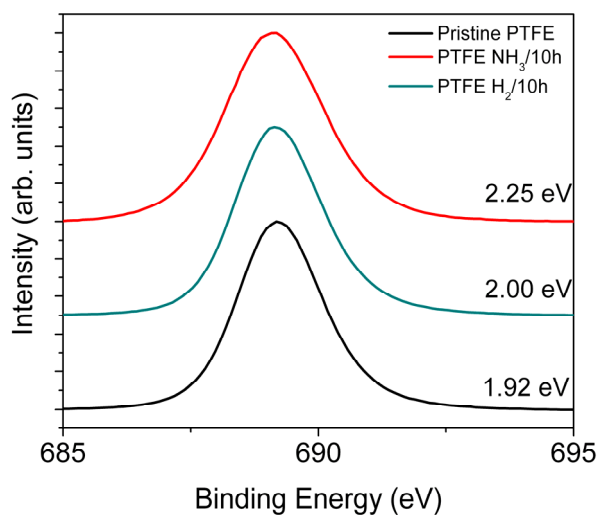


Figure S1. XPS F1s spectra for pristine and plasma treated PTFE powders showing the increase in the F1s FWHM.

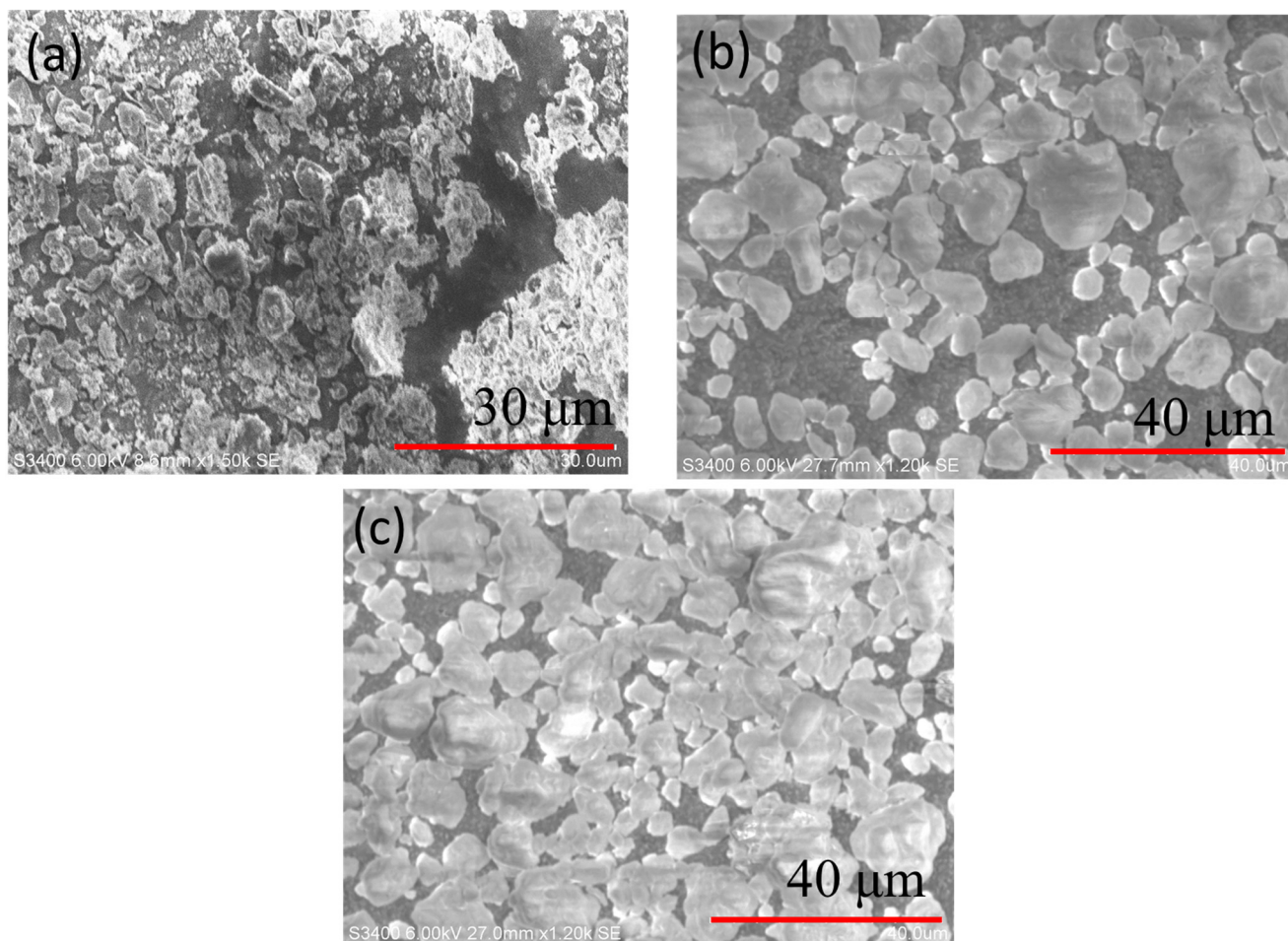


Figure S2. SEM images of (a) pristine, (b) H_2 -plasma treated and (c) NH_3 -plasma treated PTFE powders.

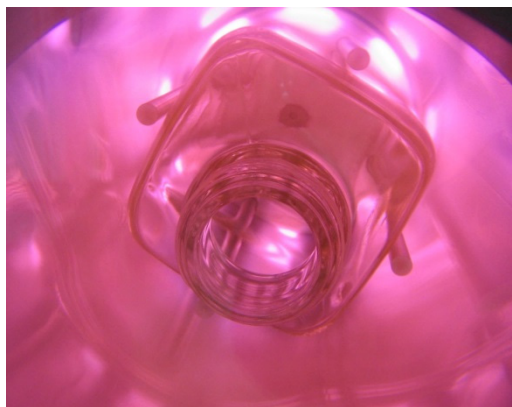


Figure S3. Excitation of the microwave plasma inside the glass drum of the “nano” plasma device.

Table T1. Atomic percentages and associated elemental ratios of PTFE samples at various temperatures.

Sample Temperature	Atomic Percentage [%]				Elemental Ratios		
PTFE NH₃/10 h	C	F	O	N	F/C	O/C	N/C
30 °C	44.85	50.81	1.66	2.68	1.13	0.04	0.06
100 °C	47.48	47.51	1.94	3.07	1.00	0.04	0.06
200 °C	44.75	52.19	1.03	2.04	1.16	0.02	0.04
300 °C	43.36	54.97	0.49	1.18	1.26	0.01	0.03
325 °C	43.58	54.59	0.58	1.24	1.26	0.01	0.03
PTFE H₂/10 h							
30 °C	43.11	56.04	0.85	--	1.30	0.02	--
100 °C	46.88	52.39	0.73	--	1.12	0.01	--
200 °C	45.03	54.52	0.46	--	1.21	0.01	--
300 °C	44.09	55.59	0.32	--	1.26	0.01	--
325 °C	44.46	55.39	0.15	--	1.26	0.01	--

Table T2. Plasma samples and treatment parameters.

Sample Name	Process Gas	Effective Power [W]	Pressure [mbar]	Treatment Time [h]
PTFE NH ₃ /2.5 h	Ammonia	270	0.8	2.5
PTFE NH ₃ /10 h	Ammonia	270	0.8	10
PTFE H ₂ /10 h/2012	Hydrogen	270	0.8	10
PTFE H ₂ /10 h/2011	Hydrogen	270	0.8	10
PTFE MAX H ₂ /10 h	Hydrogen	900	0.4	10