SUPPORTING INFORMATION

Table S1: Infrared assignments of: maleic anhydride plasma polymer (MAP); cresyl violet perchlorate dye (CV); and plasma polymer functionalised with cresyl violet perchlorate (MAP + CV).

Assignments	Absorbance / cm^{-1}		
	MAP	**CV**	**MAP + CV**
Asymmetric C=O anhydride groups stretching	1860 [A]		1860 [A]
Symmetric C=O anhydride stretching	1796 [B]		1796 [B]
Carboxylic acid stretching			1721 [C]
Amide I (C=O stretching)			1656 [D]
C-O-C bending / C-N-C symmetric stretching		1649	
NH bending of the amino groups + NH_2^+ deformation		1591 [E]	1591 [E]
Amide II (NH bending)			1553 [F]
NH_2 out of phase bending		1544, 1526	
NH_2 in phase bending		1514 [G]	1514 [G]
NH_2 rocking		1485 [H]	1485 [H]
C-N stretching / NH_2 bending		1474	
CNH stretching of monosubstitued amide			1470 – 1420 [I]
C-N stretching / NH_2 bending / NH_2 in phase bending		1435	
CNC asymmetric stretching + CN out of phase stretching + NH_2 out of phase bending		1424	
CO_2 symmetric stretching			1405 [J]
NH_2 in phase bending		1405	
NH_2 rocking + C-N stretching		1379	
C-N stretching / C-N-H bending		1335 [K]	1335 [K]
C-H rocking and bending		1308 [L]	1308 [L]
C-H rocking		1298 [M]	1298 [M]
C-H bending and rocking / NH_2 rocking		1256	1256
C-O-C asymmetric stretching + C-H rocking and bending + NH_2 rocking		1246	1246
Cyclic anhydride stretching	1241 [N], 1196 [O]		1241 [N], 1196 [O]
C-H bending		1189	1189
C-O stretching / C-H bending and rocking		1163	

C-H bending and rocking + NH_2 rocking		1148	
C-H rocking / NH2 rocking / C-O-C symmetric stretching		1129	
COC stretching	1097 [P], 1062 [S]		1097 [P], 1062 [S]
C-H rocking		1093 [Q]	1093 [Q]
NH_2 rocking		1076 [R]	1076 [R]
NH_2 in phase rocking / C-H rocking		1046 - 1038	
NH_2 out of phase rocking + C-H rocking		1027	
NH_2 in phase rocking / C-O stretching		1004 [T]	1004 [T]
Cyclic unconjugated anhydride groups	964, 938, 906 [U]		964, 938, 906 [U]
C-H twisting		958	
C-H twisting		946	
NH_2 rocking		935	
C-H wagging and twisting		874	
C-C skeletal band		856 [V]	856 [V]
C-O-C bending / C-C-N bending / NH_2 rocking		845 [W]	845 [W]
C-H in phase wagging		832	
C-H wagging and twisting / NH_2 twisting		818 [X]	818 [X]
C-H wagging		776 [Y]	776 [Y]
C-H wagging		747	
C-H wagging and twisting		705	

Table S2: Infrared assignments of: maleic anhydride plasma polymer (MAP); plasma polymer functionalised with 4-ethylaniline (MAP + EA); plasma polymer functionalised with 4-ethylaniline and heated at 120°C (MAP + EA + 120°C); plasma polymer functionalised with imides groups and then successively UV irradiated and hydrolysed (MAP + EA + 120°C + UV-hydrolysis); plasma polymer functionalised with regenerated anhydrides groups (MAP + EA + 120°C + UV-hydrolysis + RA); and regenerated anhydride functionalised with cresyl violet perchlorate (MAP + EA + 120°C + UV-hydrolysis + RA + CV).

Assignments	**Absorbance / cm^{-1}**					
	MAP	**MAP + EA**	**MAP + EA + 120°C**	**MAP + EA + 120°C + UV + hydrolysis**	**MAP + EA + 120°C + UV + hydrolysis + RA**	**MAP + EA + 120°C + UV + hydrolysis + RA + CV**
Asymmetric C=O anhydride stretching	1860 [A]	1860	1860	1860	1859 [N]	1859
Symmetric C=O anhydride stretching	1796 [B]	1796	1796	1796	1790 [O]	1790
Imide bands			1777 [J], 1711 [K]			
Carboxylic acid stretching		1721 [F]	1725	1730 [L]	1730	1728
Amide I		1658 [G]	1658		1661	1666 [S]
NH bending of the amino groups + NH_2^+ deformation						1592 [V]
Amide II		1563 [H]	1563			1560 [T]
NH_2 in phase bending + NH_2 rocking						1514, 1485 [Y]
C-NH monosubstituted amide stretching		1490 – 1400 [I]	1490 - 1400			1470 - 1420
COO^- symmetric stretching				1411 [M]		1405 [U]
C-N stretching and C-N-H bending						1335 [W]
C-H bending and NH_2 rocking						1256 [X]
Cyclic conjugated anhydride stretching	1241, 1196 [C]	1241, 1196	1241, 1196	1241	1230, 1180 [P]	1230, 1180
COC stretching	1097, 1062 [D]	1097, 1062	1097, 1062	1097	1107, 1074 [Q]	1107, 1074
Cyclic unconjugated anhydride stretching	964, 938, 906 [E]	964, 938, 906	964, 938, 906	938	937 [R]	937
C-H wagging and twisting						872 [Z]