Electronic Supplementary Material (ESI) for Journal of Materials Chemistry C.

Supporting Information

Optimization of bright, highly flexible and humidity insensitive porphyrin-based oxygen-sensing materials

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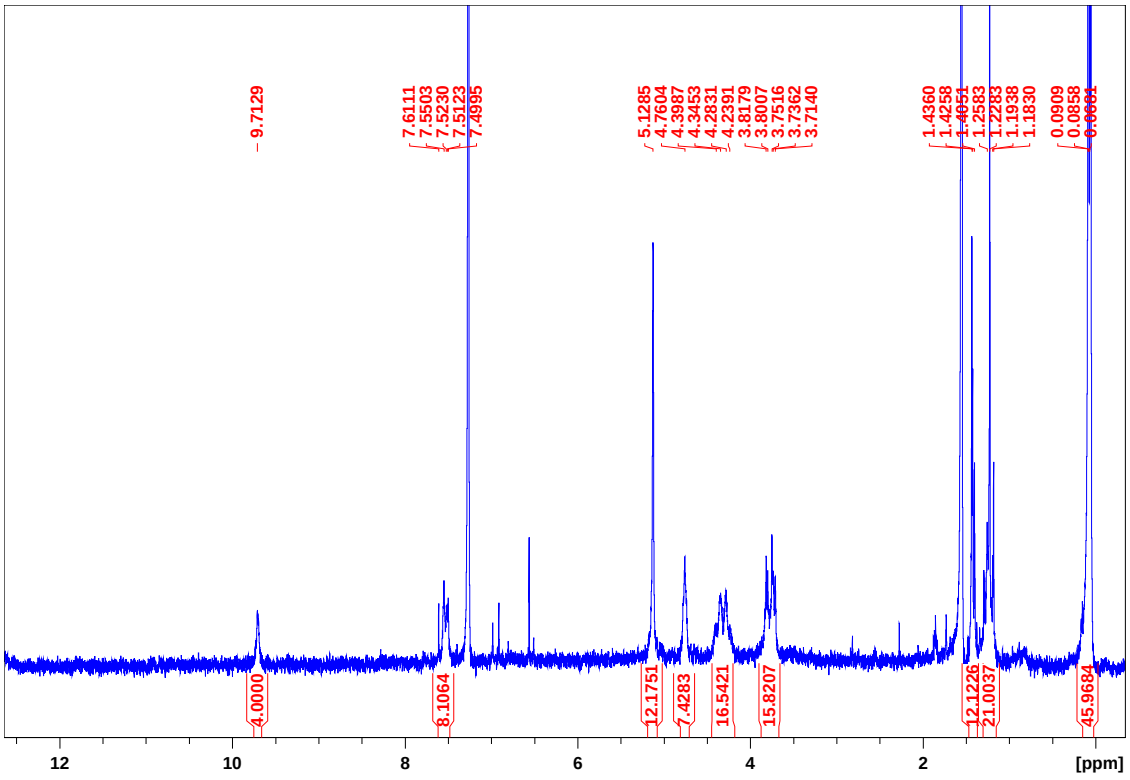

Figure S1: Proton NMR spectrum of silanated porphyrin

Dye /substrate materials	Sensitivity of phosphorescence	Lifetime (µs)	
	(I_0 / I_{air})	air	nitrogen
Pivaloyl porphyrin /PPMA /filter paper	14.12±2.39	18.15±2.35	96.17±1.56
Pivaloyl porphyrin /PPMA /white coating	11.08±1.35	17.65±0.61	94.58±1.55

Table S1: Oxygen sensitivity and lifetime of pivaloyl porphyrin /PPMA embedded within different substrate materials under air and nitrogen conditions.

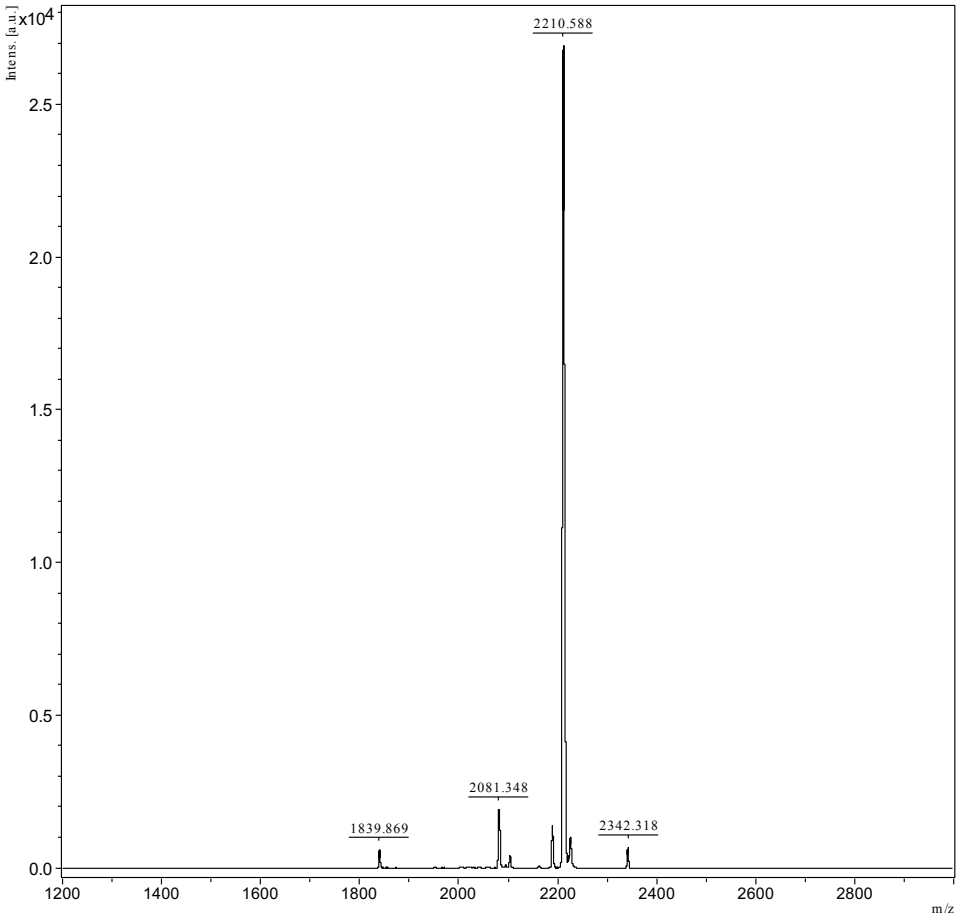

Figure S2: MALDI-TOF mass spectrum of silanated porphyrin.

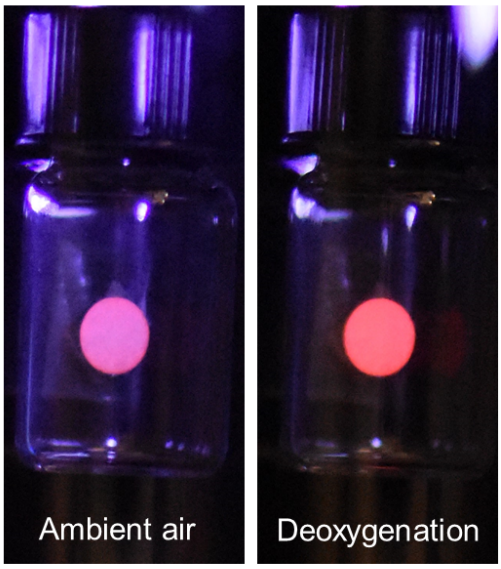

Figure S 3: Visible phosphorescence intensity change of a PPMA-based material from ambient air to deoxygenated conditions, upon excitation by a handheld UV-flashlight. The photographs shown were captured by a commercial point-and-shoot camera.

	Sensitivity of phosphorescence	Lifetime (μs)	
	(I_0/I_{air})	air	nitrogen
Before autoclave	11.08±1.35	17.65±0.61	94.58±1.55
After autoclave	8.38±2.76	22.50±1.57	83.90±2.17

Table S2: Oxygen sensitivity and lifetime of PPMA-based material before/after autoclave under air and nitrogen conditions.

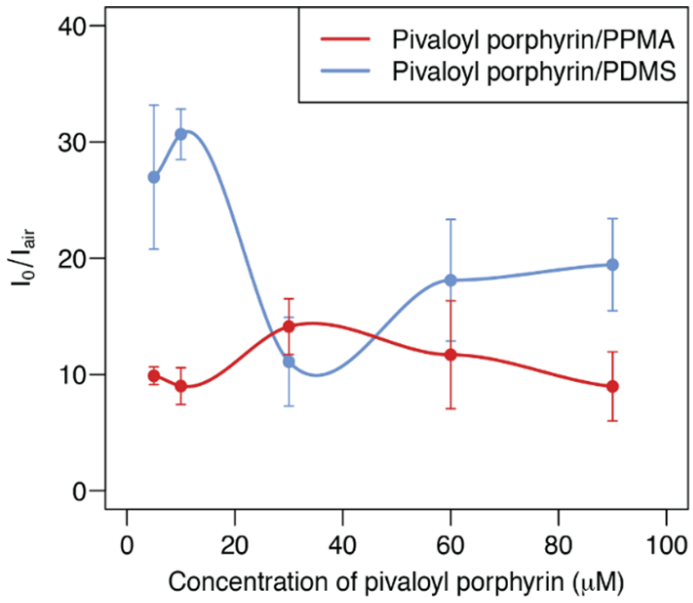

Figure S 4: Oxygen sensitivity of 5uM, 10uM, 30uM, 60uM, 90uM pivaloyl porphyrin embedded within PPMA and PDMS matrices.

		Lifetime (μs)	
		Pivaloyl porphyrin /PPMA	Pivaloyl porphyrin /PDMS
5 μM	Air	17.68±1.72	8.15±0.46
	Nitrogen	92.81±3.66	65.16±4.16
10 μM	Air	19.75±0.98	8.28±0.40
	Nitrogen	94.90±1.22	68.72±6.00
30 μM	Air	18.15±2.35	8.61±1.08
	Nitrogen	96.17±1.56	58.44±6.17
60 μM	Air	16.39±0.18	8.78±0.15
	Nitrogen	96.86±0.90	67.50±3.02
90 μM	Air	16.77±0.40	11.15±1.89
	Nitrogen	94.78±4.04	66.68±3.65

Table S 3: Phosphorescence lifetimes of different concentrations of pivaloyl porphyrin embedded within PPMA and PDMS under air and nitrogen conditions.

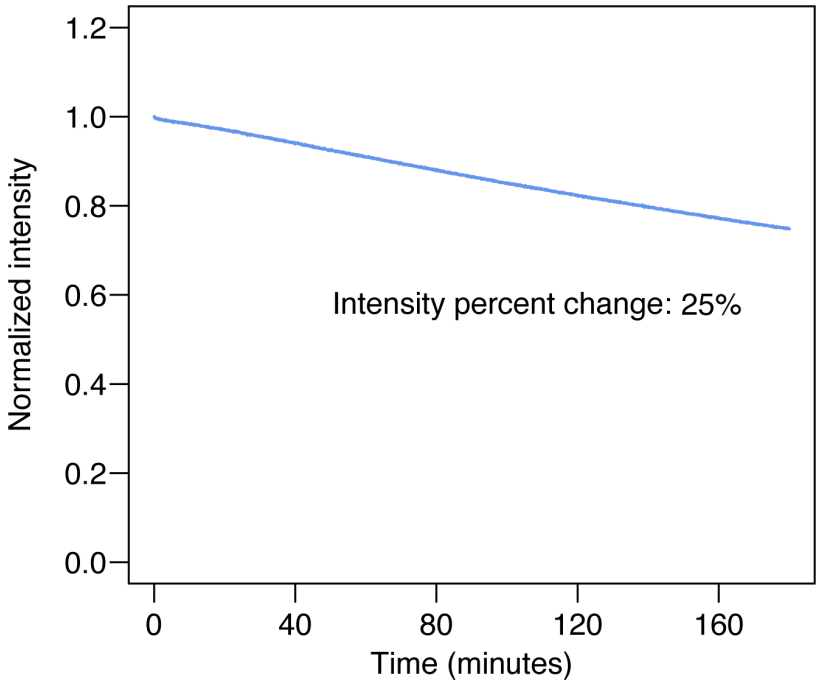

Figure S 5: Photostability of coumarin/PPMA upon continuous illumination for 3 hours under air condition.

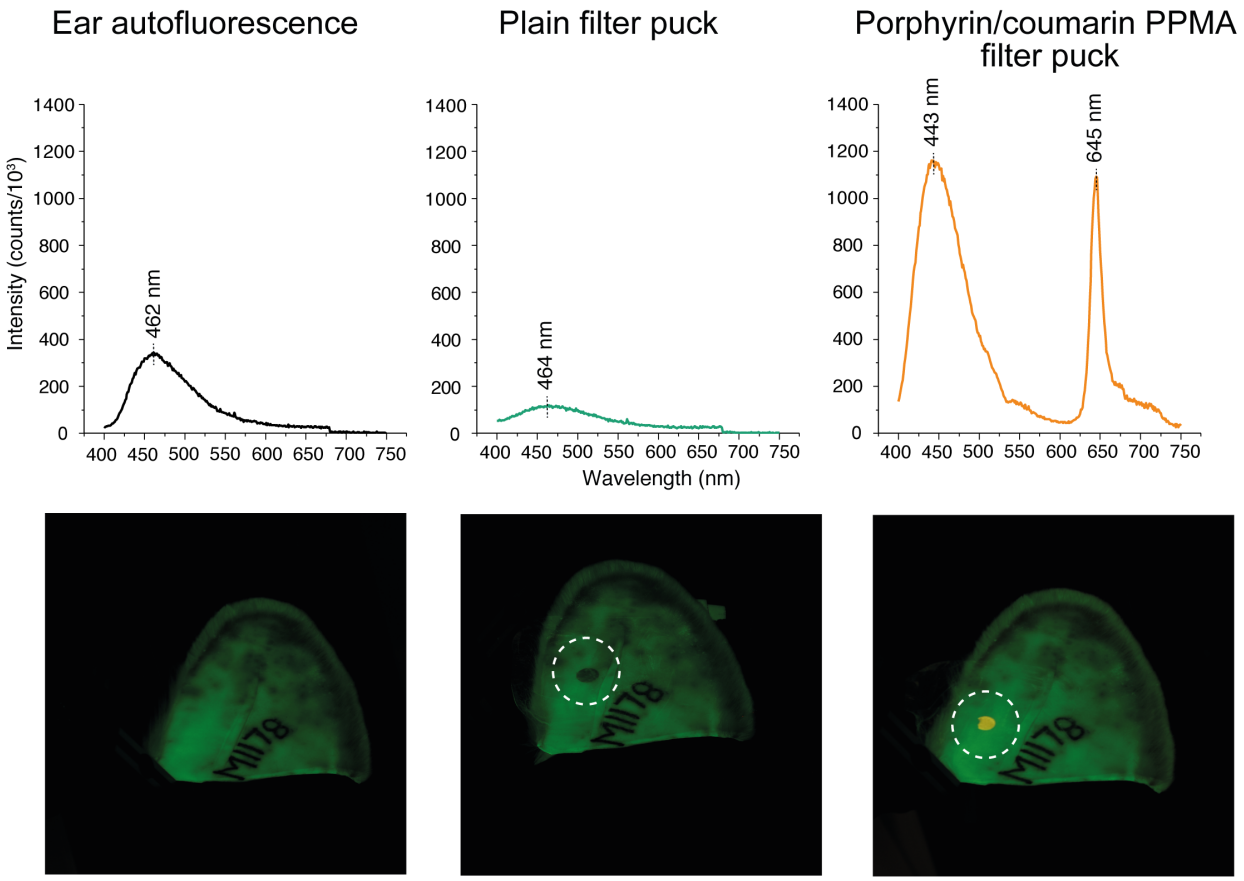

Figure S 6: Autofluorescence images of blank rabbit ear, ear with plain filter puck or oxygen-sensing puck with the corresponding emission spectrum.