corrosion and materials degradation

MDPI

Supplementary File

Green-High-Performance PMMA–Silica–Li Barrier Coatings

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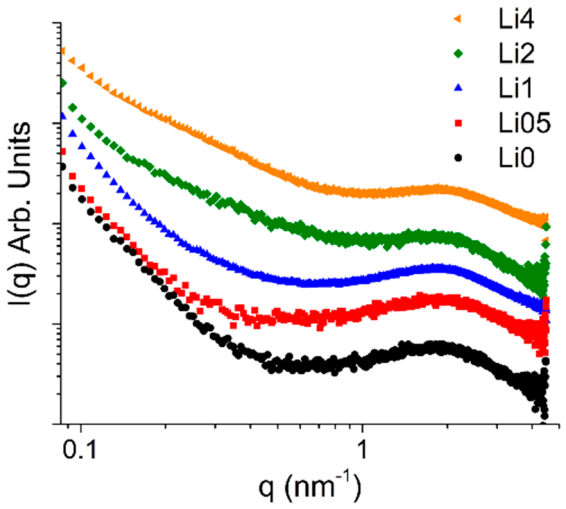

Figure S1. SAXS intensity profiles of hybrid duplicates prepared with different concentrations of lithium carbonate.

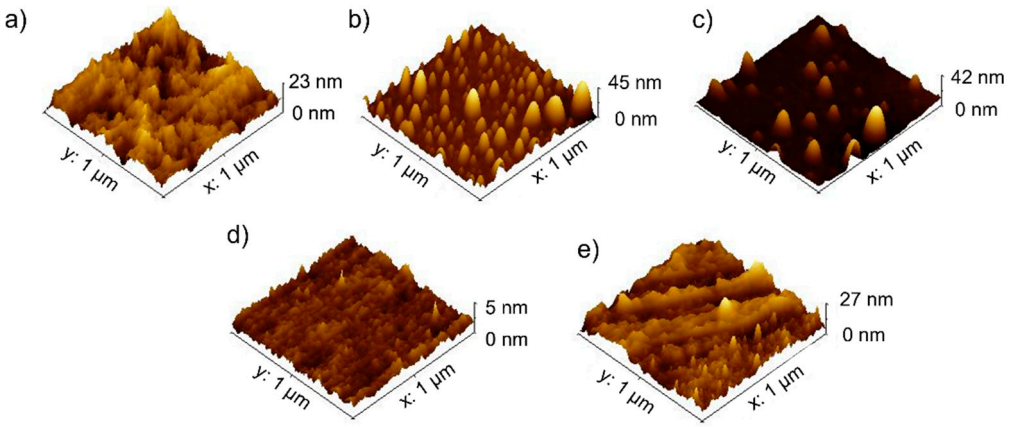

Figure S2. AFM images of the surfaces of duplicates of PMMA-silica coatings prepared with increasing concentrations of lithium; a) Li0 (PMMA-silica), b) Li05, c) Li1, d) Li2, e) Li4.

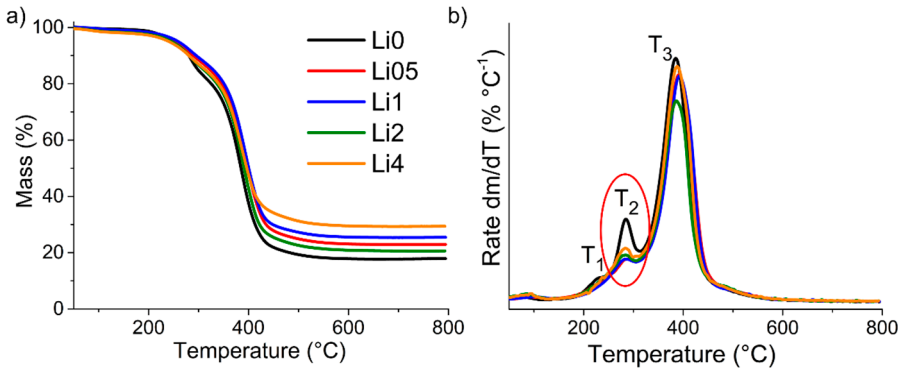

Figure S3. a) TG curves and b) dTG (first derivative of the TG curve) of duplicates of PMMA-silica coatings with different lithium concentrations.

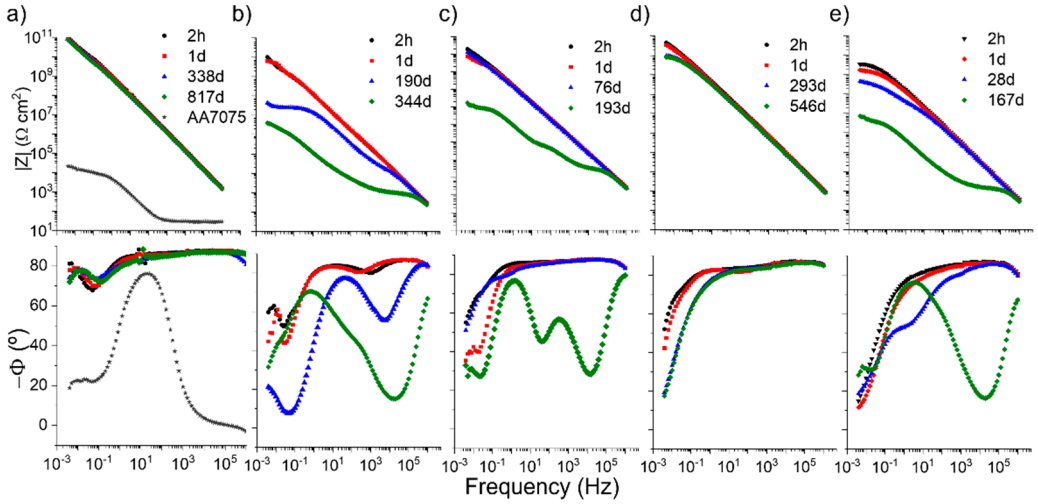

Figure S4. Bode plots as a function of time recorded for duplicates of PMMA-silica coatings with and without lithium addition; a) Li0 (PMMA-silica), b) Li05, c) Li1, d) Li2, e) Li4.

Table S1. Electrochemical parameters obtained by fitting EIS data using the EEC of Figure 7 for the intact coatings in the first and last days of exposure to NaCl 3.5% solution. The values in brackets correspond to the error (%) of each parameter.

Coating	**Li0**		**Li05**		**Li1**		**Li2**		**Li4**	
	2h	**430d**	**2h**	**446d**	**2h**	**768d**	**2h**	**872d**	**2h**	**411d**
$\chi 2$	3.9×10^{-4}	4.7×10^{-4}	2.5×10^{-3}	4.0×10^{-4}	3.1×10^{-4}	3.2×10^{-4}	1.7×10^{-3}	8.8×10^{-4}	4.9×10^{-3}	3.9×10^{-3}
R_s (Ω cm^2)	31	28	29	25	19	19	25	24	72	67
R_1 (MΩ cm^2)	45 (11)	64 (8)	27 (13)	4 (18)	13 (10)	2 (15)	29 (17)	2.4 (0.2)	0.02 (14)	2.2×10^{-3}
Q_1 (nΩ^{-1} cm^{-2} s^n)	0.25 (0.5)	0.34 (0.5)	0.83 (2)	1.0 (0.9)	0.86 (0.5)	0.98 (1.2)	0.29 (7)	0.41 (3)	0.53 (9)	270 (13)
n_1	0.97 (0.04)	0.95 (0.04)	0.96 (0.15)	0.96 (0.07)	0.97 (0.04)	0.97 (0.09)	0.96 (0.51)	0.95 (0.24)	0.97 (0.62)	0.75 (1.22)
R_2 (GΩ cm^2)	1290 (6.8)	95 (0.7)	191 (12.2)	10.7 (0.7)	71.2 (1.3)	0.3 (0.8)	122 (11.7)	0.6 (14.1)	1.4 (1.1)	4.3×10^{-3}
Q_2 (nΩ^{-1} cm^{-2} s^n)	0.08 (1.6)	0.07 (2.5)	0.12 (9.2)	0.45 (2.1)	0.29 (1.4)	0.92 (1.6)	0.09 (4.5)	0.69 (10.4)	1.05 (4.4)	366 (1.7)
n_2	0.75 (0.35)	0.85 (0.33)	0.53 (1.53)	0.66 (0.83)	0.74 (0.33)	0.60 (1.4)	0.44 (2.01)	0.55 (1.66)	0.74 (1.97)	0.77 (0.34)
R_3 (GΩ cm^2)						150 (14)		7.3 (4)		2.0×10^{-3}
Q_3 (nΩ^{-1} cm^{-2} s^n)						21.8 (0.8)		1.4 (6.4)		71300
n_3						0.89 (0.39)		0.68 (1.36)		0.40 (2.62)