## **Supporting Information**

m	Layer 1	Layer 2	Layer 3	Layer 4	Layer 5	Layer 6	Layer 7
	1 = 192						
0.5	$\rho = 1.31$						
	$\sigma = 0$						
	1 = 198	1 = 74	1 = 74				
1	ρ = 1.4	ρ = 1.9	$\rho = 0.92$				
	$\sigma = 0$	σ = 10	σ = 25				
	1 = 205	1 = 79	1 = 97	1 = 70	1 = 81		
2	ρ = 1.05	ρ = 1.6	ρ = 1.41	ρ = 1.02	ρ = 0.49		
	σ = 10	$\sigma = 7$	σ = 26	σ = 18	σ = 35		
	1 = 205	1 = 68	1 = 113	1 = 76	1 = 88	1 = 100	
3	ρ = 1.05	ρ = 1.45	ρ = 1.3	ρ = 1.2	ρ = 1	$\rho = 0.4$	
	$\sigma = 0$	$\sigma = 8$	σ = 26	σ = 6	σ = 29	σ = 29	
	1 = 205	1 = 30	1 = 181	1 = 114	1 = 83	1 = 85	1 = 80
4	ρ = 1.05	ρ = 1.75	ρ = 1.34	$\rho = 1.27$	ρ = 1.15	$\rho = 0.78$	$\rho = 0.29$
	$\sigma = 10$	σ = 10	σ = 29	$\sigma = 5$	σ = 26	σ = 22	σ = 10

**Table S.I.** Parameters from the best fits obtained with a box model for samples PEI/PSS/(PAH/PSS)<sub>4</sub>/(PAH/d-CNXLs)<sub>m</sub> and for the polyelectrolyte primer layer (m = 0.5, also denominated PE in the figures). Thickness *l* and roughness  $\sigma$  are given in Å and scattering length density  $\rho$  is given in 10<sup>-6</sup> Å<sup>-2</sup>.

m	Layer 1	Layer 2	Layer 3	Layer 4	Layer 5	Layer 6	Layer 7
	1 = 192						
0.5	ρ = 1.31						
	$\sigma = 0$						
1	1 = 191	1 = 77	1 = 69				
	ρ = 1.17	ρ = 1.4	$\rho = 0.76$				
	σ = 19	σ = 35	σ = 29				
	1 = 211	1 = 92	1 = 71	1 = 65	1 = 81		
2	ρ = 1.1	ρ = 1.4	ρ = 1.34	ρ = 1.01	$\rho = 0.56$		
	σ = 12	σ = 35	σ = 3	σ = 24	σ = 35		
	1 = 194	1 = 92	1 = 230	1 = 98	1 = 83	1 = 102	
3	ρ = 1.15	ρ = 1.4	ρ = 1.31	ρ = 1.13	$\rho = 0.51$	ρ = 0.19	
	σ = 12	$\sigma = 8$	σ = 26	$\sigma = 6$	σ = 29	σ = 29	
4	1 = 206	1 = 171	1 = 137	1 = 129	1 = 90	1 = 88	1 = 95
	ρ = 1.43	ρ = 1.58	ρ = 1.51	ρ = 1.39	ρ = 1.22	ρ = 1	$\rho = 0.51$
	σ = 10	$\sigma = 21$	σ = 35	σ = 35	$\sigma = 17$	σ = 30	σ = 35

**Table S.II.** Parameters from the best fits obtained with a box model for samples  $PEI/PSS/(PAH/PSS)_4/(PAH/h-CNXLs)_m$  and for the polyelectrolyte primer layer (m = 0.5, also denominated PE in the figures). Thickness *l* and roughness  $\sigma$  are given in Å and scattering length density  $\rho$  is given in 10<sup>-6</sup> Å<sup>-2</sup>.



**Figure S.1.** 8 x 8  $\mu$ m<sup>2</sup> AFM topography image of sample PEI/PSS/(PAH/d-CNXLs)<sub>5</sub>. Two small (50 nm) dust particles are observed on this picture. They were probably deposited after or during the neutron reflectivity experiments done several days before the AFM observations.



Figure S.2. 8 x 8  $\mu$ m<sup>2</sup> AFM topography image of sample PEI/PSS/(PAH/d-CNXLs)<sub>5</sub>.