Supporting Information

Nanocapsules on Liquid Cores Stabilized by Graft Amphiphilic Polyelectrolytes

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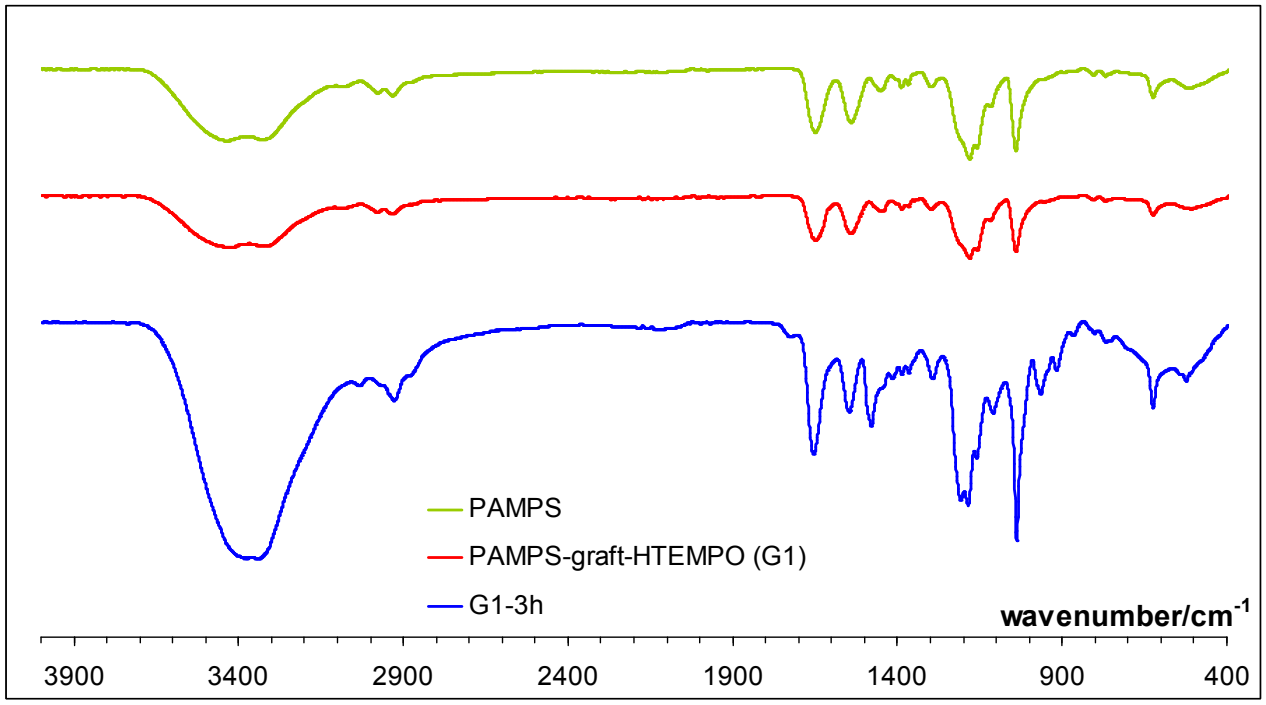

Figure S1. ATR-FTIR spectra of PAMPS, PAMPS-*graft*-HTEMPO (G1) and copolymer G1-3h.

The formation of PAMPS-*graft*-HTEMPO was confirmed by the ATR-FTIR spectra. The band with maximum at c.a. 1427 cm^{-1} may be assigned to N-O stretching vibration. Moreover, the spectra of copolymers PAMPS-*graft*-PVN exhibit bands characteristic for aromatic compounds (see Table S1).

Table S1 Assignment of bands characteristic for aromatic compounds of a series of PAMPS-*graft*-PVN.

Sample	Bands characteristic for aromatic compound [cm^{-1}]		
	C-H bending (out-of-plane)	**C=C stretching**	**C-H stretching**
G1-3h	865, 897, 964	1420	2945
G1-6h	863, 899, 954	1423	2957
G1-9h	861, 899, 954	1424	2958
G2-3h	862, 897, 954	1423	2958
G3-3h	865, 899, 954	1423	2950

The results presented in Figure S2 for PAMPS-*graft*-PVN copolymers indicate that G1-3h exist in an aqueous solution exclusively in the form of intermolecular aggregates while the other copolymers do not significantly aggregate. Although the plot of the size distribution by intensity (Figure S2 C) shows certain content of large object for all of the investigated systems it is just due to the fact that bigger particles scatter light much stronger (scattering intensity is proportional to d^6) and the actual volume content of objects of various sizes is better represented in Figure S2 A.

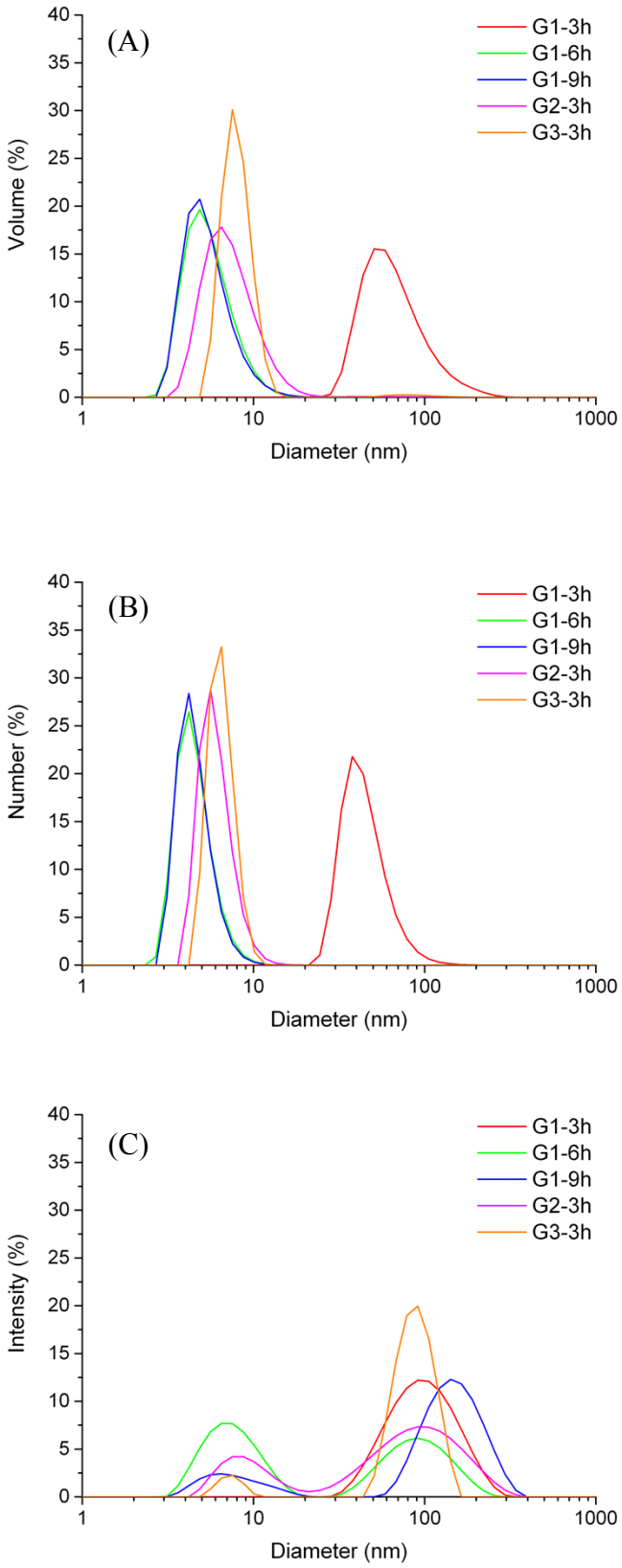

Figure S2 Size distribution by volume (A), number (B) and intensity (C) of series of PAMPS-*graft*-PVN copolymers.

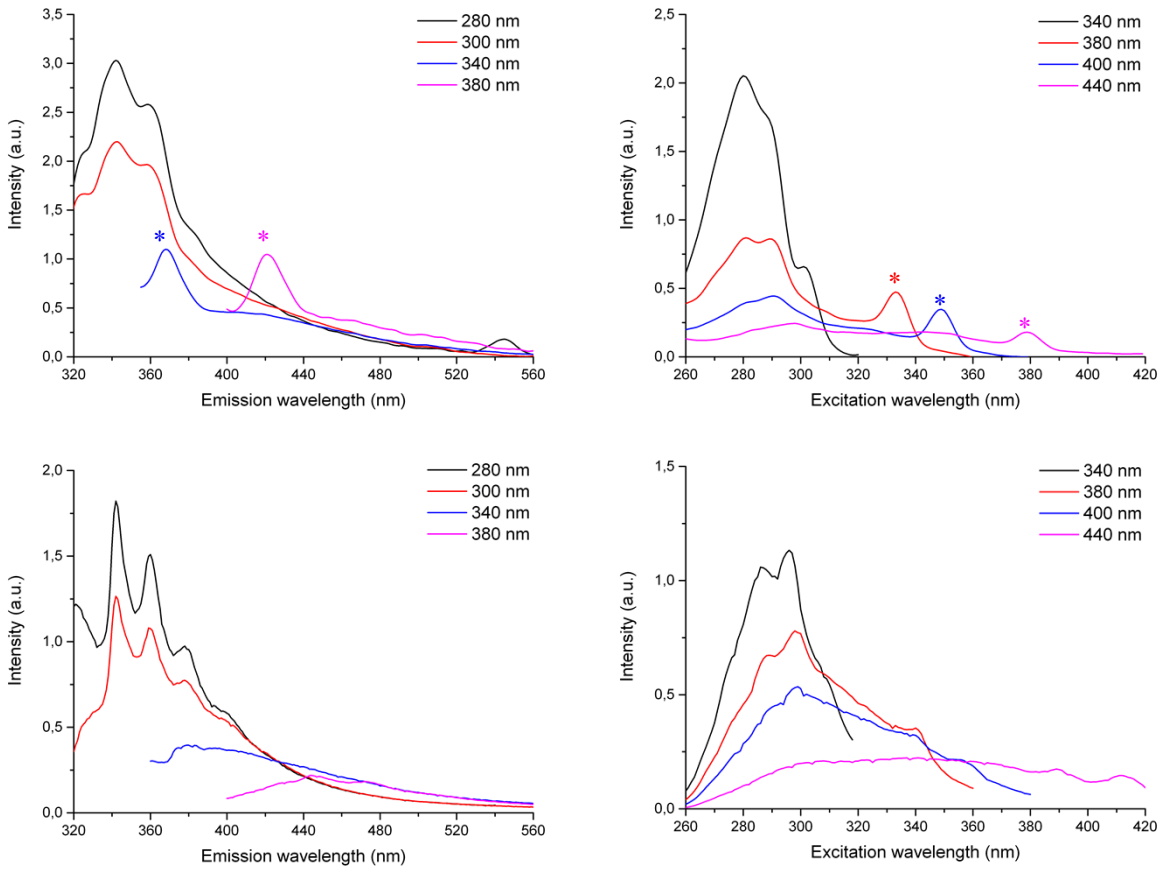

Figure S3 Steady-state emission (left panel) and excitation (right panel) spectra of PAMPS-*graft*-PVN (G2-3h) dissolved in water (up) and DMSO (down).

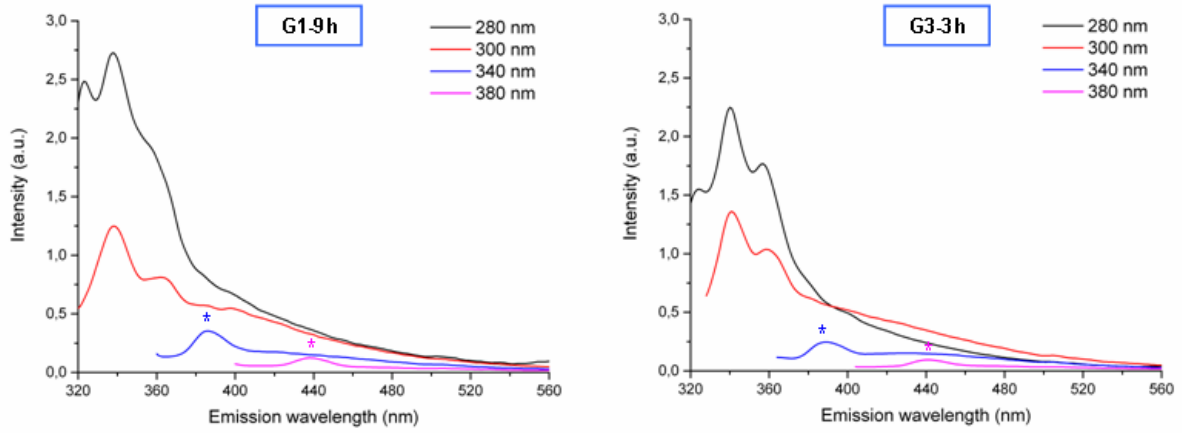

Figure S4 Steady-state emission spectra of PAMPS-*graft*-PVN copolymers in aqueous solutions.

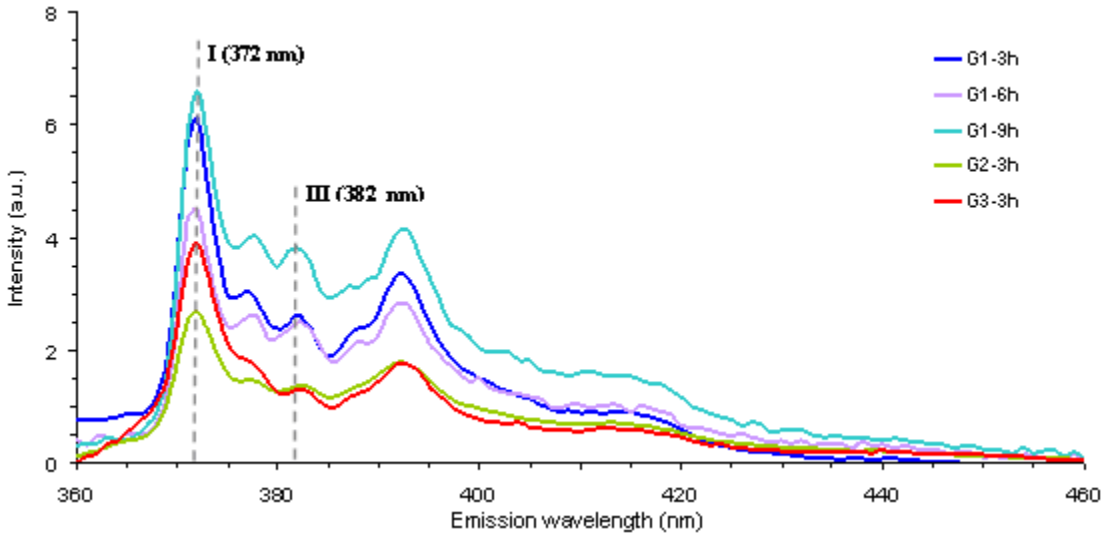

Figure S5 Steady-state emission spectra of pyrene sulubilized in polymeric aqueous solutions (λ_{ex}=330 nm).

Table S2 Zeta potential of capsules covered by multilayer polymeric films.

Layer	Zeta potential [mV]				
	G1-3h	**G1-6h**	**G1-9h**	**G2-3h**	**G3-3h**
1	19.5±2.0	23.2±0.7	22.4±1.4	20.9±0.3	20.6±0.6
2	-29.8±1.2	-32.8±0.8	-30.4±1.9	-25.5±1.5	-35.1±0.8
3	20.2±0.7	24.8±0.8	27.9±0.6	29.4±0.4	27.4±1.3
4	-30.4±0.3	-33.9±0.6	-32.6±0.1	-33.4±0.8	-40.8±2.3
5	29.0±1.1	35.5±2.6	36.1±0.6	38.2±2.0	37.1±2.7
6	-33.5±1.8	-42.3±2.9	-34.2±0.6	-41.8±2.6	-37.3±2.3
7	35.7±2.5	38.6±2.5	38.4±2.5	37.6±1.6	36.6±0.7

Table S3 Zeta potential and hydrodynamic diameters of capsules during two months following preparation process.

Sample	Zeta [mV]				Diameter [nm]	
	0 days	**7 days**	**17 days**	**2 months**	**0 days**	**2 months**
G1-3h	-8.5±1.5	-5.0±1.1	-7.0±1.2	-23.9±1.5	52 ± 7	---
G1-6h	-27.5±1.2	-22.1±6.4	-23.4±1.0	-15.7±0.4	118 ± 6	7±1
G1-9h	-18.4±0.7	-36.8±1.0	-26.7±2.2	-29.5±3.1	32±10	10±3
G2-3h	-30.8±0.7	-31.3±2.0	-32.3±1.6	-28.8±2.4	41±10	71±20

G3-3h	-37.3±3.9	-35.2±0.9	-36.9±1.7	-27.4±2.6	147±10	169±42

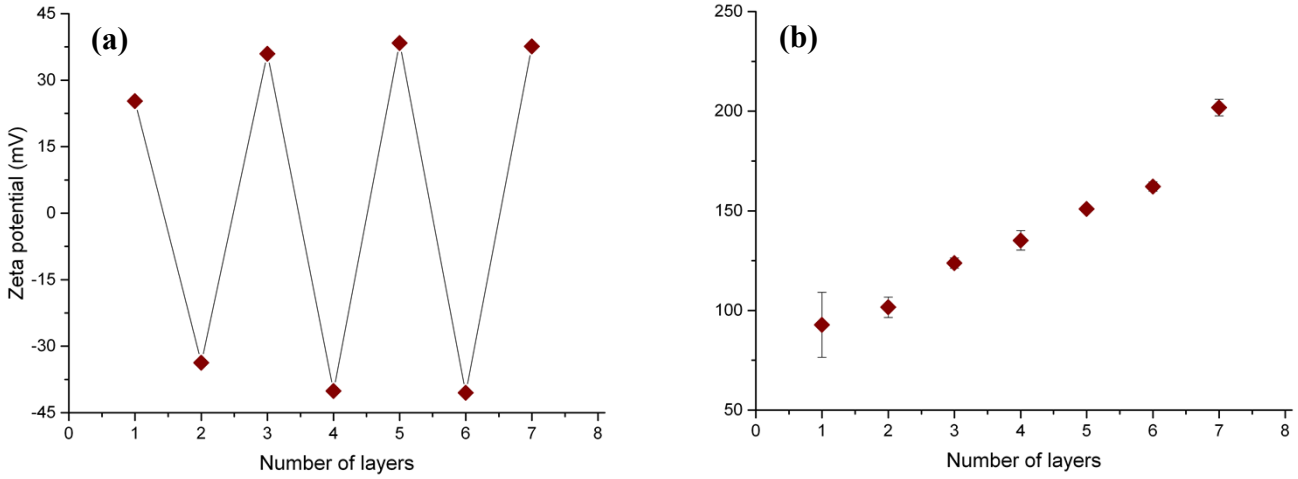

Figure S6 Zeta potential (a) and mean size by volume (b) of the capsules (with perylene in their cores) stabilized by G2-3h copolymer as a function of number of polyelectrolyte layers (PDADMAC and PAMPS).

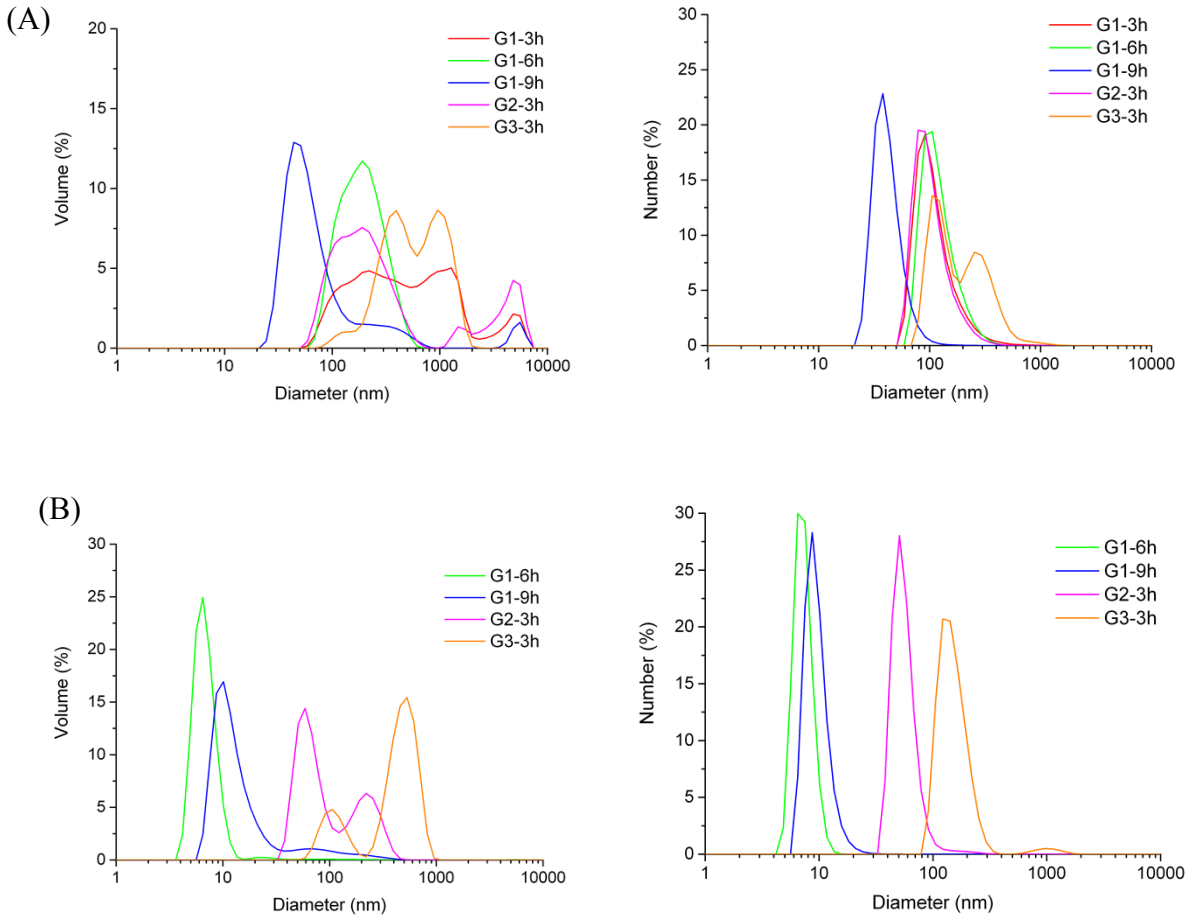

Figure S7 Size distribution by volume and number of nanocapsules as determined by DLS immediately after formation (A) and after 2 months of storage (B).