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Supporting Information

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Nasal Delivery of mRNA Using Thermoresponsive Gellable Aqueous Biphasic Systems

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Figure S1. Liquid-liquid phase diagram of PEG + gelatin + water systems at 40 °C and atmospheric pressure. The PEG molecular weight is represented with different colors. ● PEG 20 000, ● PEG 10 000, ● PEG 8 000, ● PEG 6 000, ● PEG 4 000, ● PEG 2 000.

Figure S2. Characterization of gellable ABS. A) Histograms showing the influence of PEG molecular weight on the size of gelatin microspheres produced from 5 wt% gelatin + 10 wt% PEG at 40 °C and various mixing speeds. B) Histograms showing the influence of temperature on the size of gelatin microspheres produced from 5 wt% gelatin + 10 wt% PEG 20 000 at 500 RPM. Measurements were carried out using ImageJ software.

Table S1. Experimental data for the binodal weight fraction percentage of the ABS formed by GP (1) + PEG (2) + H₂O (3) at 40 °C and atmospheric pressure (0.10 MPa).

Table S2. Experimental data for the binodal weight fraction percentage of the ABS formed by GP (1) + PEG (2) + H₂O (3) at 40 °C and atmospheric pressure (0.10 MPa).

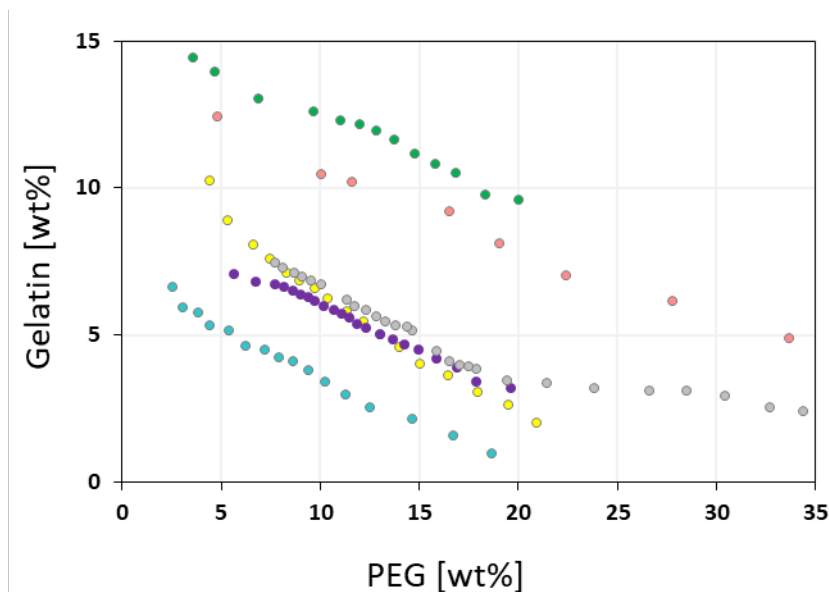


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Table S1. Experimental data for the binodal weight fraction percentage of the ABS formed by GP (1) + PEG (2) + H₂O (3) at 40 °C and atmospheric pressure (0.10 MPa).

PEG 2000			PEG 4000			PEG 6000		
<i>100w₁</i>	<i>100w₂</i>	<i>100w₃</i>	<i>100w₁</i>	<i>100w₂</i>	<i>100w₃</i>	<i>100w₁</i>	<i>100w₂</i>	<i>100w₃</i>
9.5793	20.0270	70.3937	4.8663	33.7024	61.4313	2.3977	34.4203	63.1820
9.7751	18.3361	71.8888	6.1416	27.7812	66.0771	2.5294	32.7028	64.7678
10.4928	16.8850	72.6223	7.0126	22.4394	70.5480	2.9053	30.4834	66.6113
10.8006	15.8227	73.3767	8.0779	19.0743	72.8478	3.0678	28.5156	68.4166
11.1367	14.8005	74.0628	9.2046	16.5486	74.2468	3.1013	26.6282	70.2706
11.6307	13.7728	74.5964	10.2059	11.6003	78.1938	3.1841	23.8807	72.9353
11.9333	12.8869	75.1797	10.4455	10.0684	79.4861	3.3554	21.4561	75.1885
12.1467	12.0095	75.8439	12.4137	4.8667	82.7196	3.4492	19.4822	77.0686
12.2704	11.0611	76.6685	18.4364	1.8911	79.6725	3.8201	17.9118	78.2681
12.5672	9.6824	77.7504				3.9013	17.5375	78.5612
13.0051	6.8791	80.1158				3.9501	17.0899	78.9600
13.9319	4.7116	81.3565				4.1050	16.5457	79.3493
14.4253	3.6382	81.9365				4.4156	15.8984	79.6860
17.6664	1.8849	80.4487				5.1513	14.6972	80.1516
9.5793	20.0270	70.3937				5.2741	14.3841	80.3418
9.7751	18.3361	71.8888				5.3035	13.8030	80.8936
10.4928	16.8850	72.6223				5.4572	13.3176	81.2251
10.8006	15.8227	73.3767				5.6103	12.8405	81.5491
11.1367	14.8005	74.0628				5.8176	12.3632	81.8192
11.6307	13.7728	74.5964				5.9765	11.7745	82.2489
11.9333	12.8869	75.1797				6.1875	11.3949	82.4176

12.1467	12.0095	75.8439	6.6822	10.1112	83.2066
12.2704	11.0611	76.6685	6.8274	9.5573	83.6153
12.5672	9.6824	77.7504	6.9831	9.1346	83.8823
13.0051	6.8791	80.1158	7.0852	8.6971	84.2178
13.9319	4.7116	81.3565	7.2774	8.1584	84.5642
14.4253	3.6382	81.9365	7.4242	7.7491	84.8267
17.6664	1.8849	80.4487	17.5403	1.9048	80.5549

Table S2. Experimental data for the binodal weight fraction percentage of the ABS formed by GP (1) + PEG (2) + H₂O (3) at 40 °C and atmospheric pressure (0.10 MPa).

PEG 8000			PEG 10 000			PEG 20 000		
<i>100w₁</i>	<i>100w₂</i>	<i>100w₃</i>	<i>100w₁</i>	<i>100w₂</i>	<i>100w₃</i>	<i>100w₁</i>	<i>100w₂</i>	<i>100w₃</i>
2.6327	33.7295	63.6378	1.9854	20.9455	77.0691	0.9420	18.6595	80.3985
3.6492	31.5044	64.8464	2.6070	19.5066	77.8864	1.5695	16.7146	81.7158
3.7992	27.5867	68.6141	3.0275	17.9667	79.0058	2.1354	14.6982	83.1664
3.8235	23.4708	72.7058	3.6037	16.5044	79.8919	2.5106	12.5690	84.9203
3.7605	19.1392	77.1003	4.0156	15.0402	80.9441	2.9492	11.3305	85.7203
3.7810	16.2439	79.9752	4.5649	14.0189	81.4162	3.3944	10.2647	86.3409
4.1608	15.2556	80.5836	4.9908	13.0560	81.9533	3.7623	9.4341	86.8036
4.3589	14.5723	81.0687	5.4299	12.2381	82.3320	4.1080	8.6853	87.2067
4.5462	13.9964	81.4574	5.7718	11.3995	82.8287	4.2183	7.9316	87.8502
4.8272	13.5638	81.6090	6.2221	10.3717	83.4062	4.4950	7.2204	88.2846
4.9542	12.9767	82.0692	6.5932	9.7616	83.6451	4.6171	6.2854	89.0975
5.1798	12.5160	82.3041	6.8301	8.9914	84.1785	5.1179	5.4475	89.4346
5.3509	12.0234	82.6257	7.0762	8.3345	84.5892	5.3108	4.4684	90.2208
5.5610	11.5275	82.9115	7.5806	7.5015	84.9179	5.7601	3.8595	90.3804
5.7879	10.9602	83.2519	8.0649	6.6619	85.2732	5.8993	3.0815	91.0192
6.0170	10.5200	83.4630	8.8854	5.3809	85.7337	6.6063	2.5745	90.8192
6.1264	10.1811	83.6924	10.2294	4.4307	85.3398	11.4846	1.4195	87.0959
6.2626	9.7681	83.9693	17.6627	1.8819	80.4554			
6.3534	9.1840	84.4627						
6.5198	8.6796	84.8006						
6.6311	8.0454	85.3236						
6.7217	7.5731	85.7052						
6.8250	7.1135	86.0615						
7.0228	6.6124	86.3648						
6.9736	5.8894	87.1370						

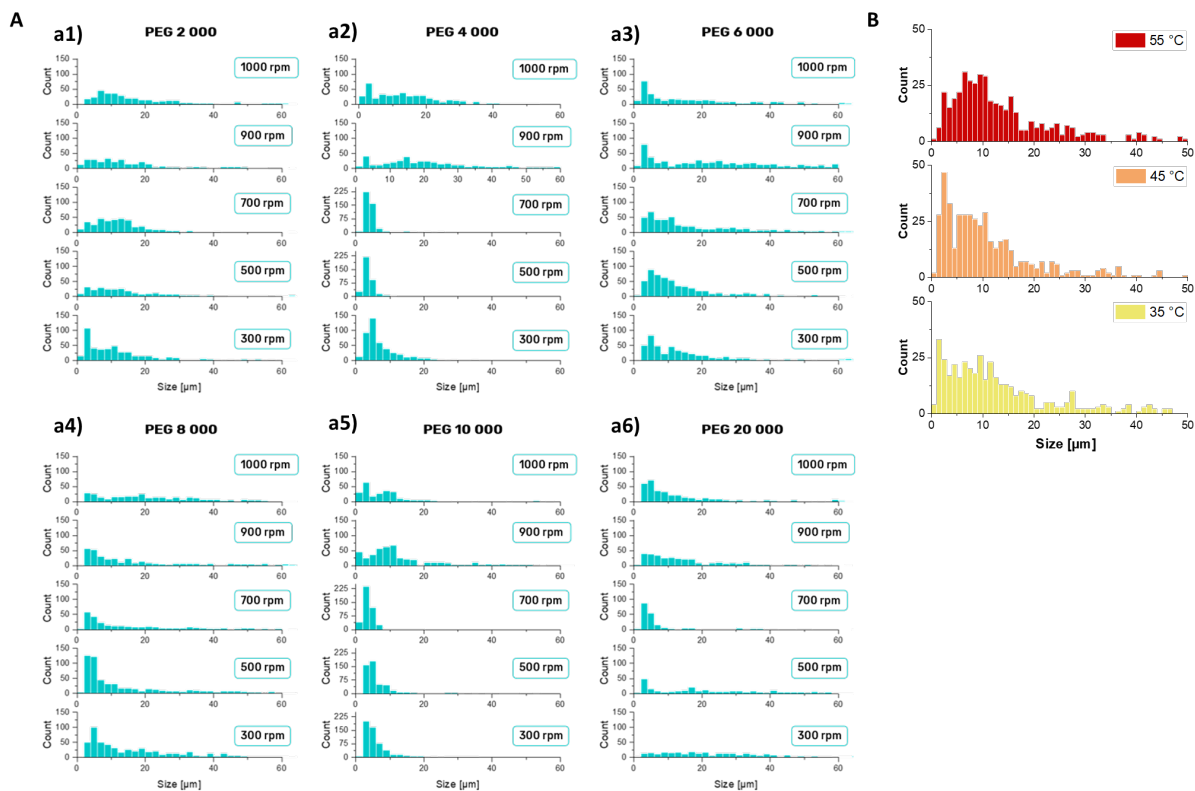


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