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## Blob size controls diffusion of free polymer in a chemically identical brush in semi-dilute solution

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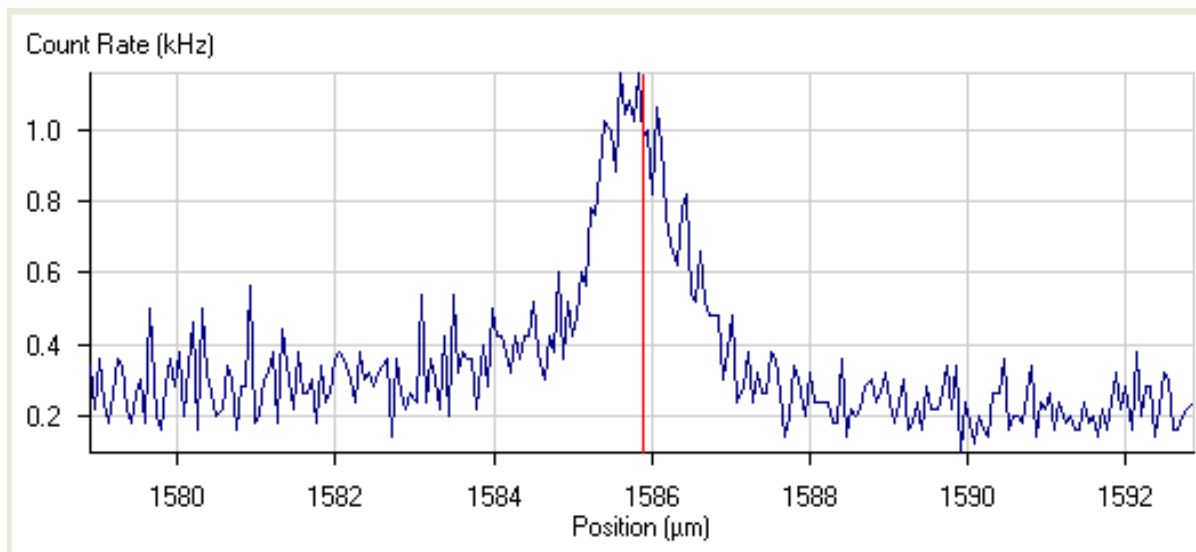
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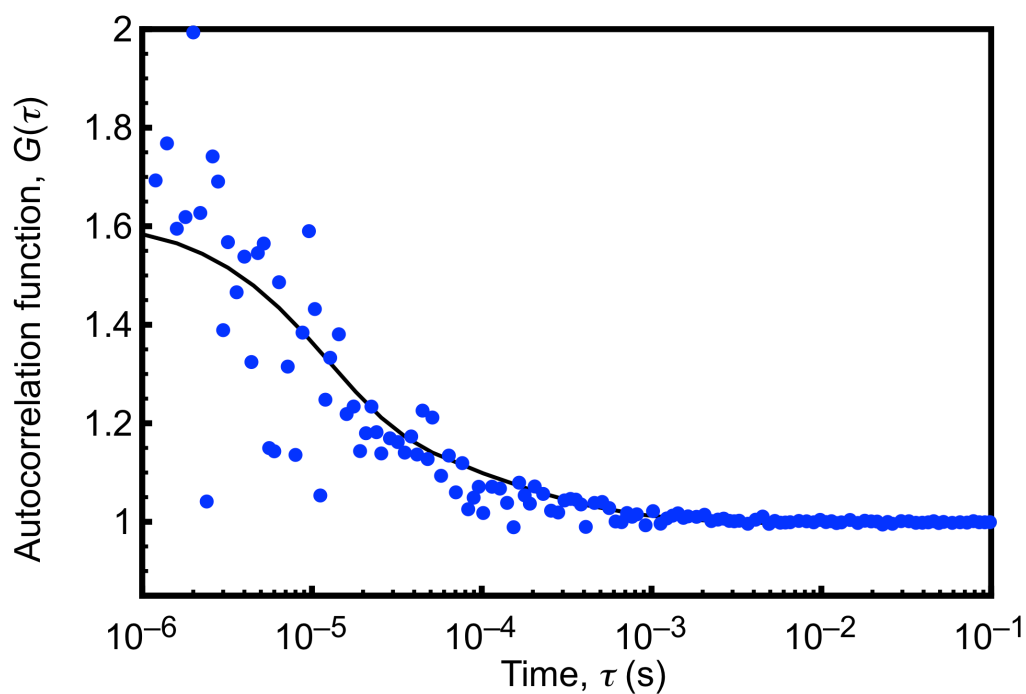
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## Additional figures



**Figure S1.** Screenshot of z-scan, as an increment of 30 nm, when bringing the objective of the optical microscope towards the PEG brush sample. Surface adsorbed r-PEG molecules result in an increased signal intensity, which indicates where the surface diffusion measurements should be carried out



**Figure S2.** FCS data and fit for the diffusion of 20 kDa r-PEG on a gold surface. A surface diffusion coefficient of  $11.7 \pm 1.5 \mu\text{m}^2/\text{s}$  was obtained from these data













23.63105	0.60901	21.73216	-8.00E-03	22.11538	0.34858
24.4289	0.5554	22.99915	0.07912	22.75904	0.24871
25.24909	0.50848	23.5736	-0.04151	23.42649	0.15597
26.11396	0.47497	24.86293	0.05232	24.14149	0.0775
26.62139	0.33423	26.01822	0.10593	25.54608	0.2059
27.79902	0.39455	26.61501	-8.00E-03	26.78422	0.28437
28.48518	0.30743	27.81498	0.05902	27.83212	0.30577
29.19367	0.227	28.79155	0.05902	28.80669	0.30577
29.96918	0.16668	29.8128	0.07242	29.78526	0.30577
31.07979	0.2069	30.40959	-0.04151	30.33382	0.17737
31.967	0.18009	31.34148	-0.05491	31.26283	0.1631
32.76485	0.12647	32.56379	0.01881	32.07294	0.11317
34.0095	0.2069	33.71908	0.07242	32.9544	0.08463
34.80629	0.09296	34.56161	0.03221	34.78701	0.34144
35.67222	0.11977	35.20308	-0.06832	35.14533	0.15597
36.87219	0.18679	36.60411	0.05902	36.02678	0.12743
37.51366	0.08626	37.78174	0.11934	37.24114	0.19877
38.42321	0.06615	38.15513	-0.06162	37.59946	0.01329
39.8019	0.18679	39.1317	-0.06162	39.19428	0.19877
40.33167	0.05275	40.28699	-8.00E-03	40.0044	0.14883
41.55398	0.12647	41.57632	0.08583	41.09986	0.1845
42.55289	0.13317	42.50821	0.07242	41.64841	0.0561
43.2167	0.03935	43.14968	-0.02811	43.19567	0.2273
44.59539	0.15998	44.12625	-0.02811	43.57777	0.04896
45.41558	0.11307	45.3709	0.05232	44.95858	0.17024
46.25811	0.07286	46.12407	-0.0147	45.34068	-8.11E-03
46.87724	-0.03437	46.94426	-0.06162	46.43615	0.02756
48.05487	0.02594	48.16657	0.01211	47.84074	0.15597
49.18782	0.07286	49.1208	5.40E-03	48.46062	0.04896
50.09737	0.05275	50.16439	0.02551	49.3183	0.01329
51.34202	0.13317	51.1633	0.03221	50.43754	0.0561
52.00583	0.03935	51.96115	-0.0214	51.55679	0.0989
53.00474	0.04605	52.91538	-0.02811	52.31935	0.0347
53.35579	-0.14161	53.98131	-1.30E-03	53.67638	0.14883
55.1366	0.09966	55.35999	0.11934	54.15359	-9.73E-04
56.24721	0.13988	55.86743	-0.0214	55.6533	0.15597
56.9557	0.05945	56.77698	-0.04151	56.46341	0.10603
57.64185	-0.02767	57.88759	-1.30E-03	57.67777	0.17737
59.02054	0.09296	58.79714	-0.0214	58.51167	0.13457
59.90775	0.06615	59.61733	-0.06832	59.06022	6.16E-03
60.75028	0.02594	60.61624	-0.06162	60.29835	0.08463
61.74919	0.03265	61.92791	0.03891	61.75051	0.2273
62.7481	0.03935	62.5247	-0.07502	62.1326	0.04896
63.41191	-0.05448	63.34489	-0.12193	63.44207	0.14883
64.76826	0.05945	64.52252	-0.06162	63.89551	-8.11E-03
65.54377	-8.65E-04	65.58844	-0.03481	64.80074	-0.02951
66.18524	-0.10139	66.63204	-0.0147	66.49068	0.1845
67.65329	0.04605	67.78733	0.03891	67.20568	0.10603
68.60752	0.03935	68.33944	-0.08842	68.30115	0.1417
69.53941	0.02594	69.42771	-0.05491	68.8497	0.01329
70.56066	0.03935	70.76171	0.05232	70.20673	0.12743
71.51489	0.03265	71.64893	0.02551	70.87417	0.0347
72.37976	-8.65E-04	72.58082	0.01211	71.73185	-9.73E-04
73.33399	-7.57E-03	73.33399	-0.05491	73.23155	0.15597
74.69033	0.10637	74.4446	-0.0147	73.13808	-0.16505
75.75627	0.13317	75.28713	-0.05491	74.23354	-0.12938
76.57646	0.08626	76.46476	5.40E-03	76.06615	0.12743
77.30728	0.01254	77.53069	0.03221	76.94761	0.0989
78.12748	-0.03437	78.39556	-1.30E-03	78.01929	0.12743
79.32745	0.03265	79.5285	0.04562	78.6154	0.01329
80.3487	0.04605	80.19232	-0.04821	79.68708	0.04183
80.99017	-0.05448	81.30293	-8.00E-03	81.11545	0.17737
82.30184	0.04605	82.54757	0.07242	81.54511	0.01329
83.07735	-0.01427	83.32309	0.01211	82.45034	-8.11E-03
84.12093	5.84E-03	84.47837	0.06572	83.35557	-0.02951
84.87411	-0.06118	85.16452	-0.0214	84.87905	0.13457
86.18578	0.03935	86.29748	0.02551	85.61784	0.06323
87.05064	5.84E-03	87.4751	0.08583	86.87975	0.14883
88.11658	0.03265	87.91552	-0.07502	87.78499	0.12743
89.13783	0.04605	89.16017	5.40E-03	88.52377	0.0561
90.36013	0.11977	90.2261	0.03221	89.50034	0.0561
90.80055	-0.04108	90.95692	-0.04151	90.64336	0.10603
91.91115	-8.65E-04	92.1569	0.02551	91.4297	0.04896
93.02177	0.03935	93.33452	0.08583	92.66784	0.12743
94.15471	0.08626	94.11004	0.02551	93.5493	0.0989
95.01959	0.05275	94.55045	-0.13534	94.31185	0.0347
95.9068	0.02594	95.99616	5.40E-03	94.74151	-0.12938
96.90571	0.03265	97.06208	0.03221	96.07476	-0.02237
97.68122	-0.02767	97.92696	-1.30E-03	97.62202	0.14883
98.97055	0.06615	98.81416	-0.02811	97.8139	-0.08658
99.52266	-0.06118	99.99179	0.03221	99.33738	0.0775
101.2588	0.16668	101.013	0.04562	-	-
102.012	0.09966	101.8109	-8.00E-03	-	-
102.7428	0.02594	103.0332	0.06572	-	-
103.697	0.01924	103.6534	0.01881	-	-
104.9863	0.11307	104.9417	0.05232	-	-
105.5831	-8.65E-04	105.9829	0.06572	-	-
106.9171	0.10637	106.6714	-0.0147	-	-
107.4916	-0.01427	108.0054	0.09253	-	-
108.6469	0.03935	108.6022	-0.0214	-	-
109.5564	0.01924	109.8022	0.04562	-	-
110.533	0.01924	110.8681	0.07242	-	-
111.867	0.12647	111.9787	0.11263	-	-
112.6425	0.06615	112.6649	0.02551	-	-
113.351	-0.01427	113.3734	-0.05491	-	-
114.7074	0.09966	114.484	-0.0147	-	-
115.5722	0.06615	115.3488	-0.04821	-	-
116.4818	0.04605	116.5041	5.40E-03	-	-
117.503	0.05945	117.1679	-0.08842	-	-
118.3232	0.01254	118.569	0.03891	-	-
119.4338	0.05275	119.2998	-0.03481	-	-
120.3881	0.04605	120.4327	0.01211	-	-
121.2083	-8.65E-04	121.2753	-0.02811	-	-
121.9838	-0.06118	122.1625	-0.05491	-	-
123.0944	-0.02097	123.3625	0.01211	-	-
124.2943	0.04605	124.4507	0.04562	-	-
125.3379	0.06615	125.405	0.03891	-	-
126.3592	0.07956	126.2028	-0.0147	-	-
126.8656	-0.1215	127.157	-0.0214	-	-
128.3123	0.07956	128.2006	-1.30E-03	-	-
129.3336	0.09296	129.1549	-8.00E-03	-	-
130.0197	5.84E-03	129.9304	-0.06832	-	-
131.2197	0.07286	130.8176	-0.09513	-	-
132.2186	0.07956	131.8388	-0.08172	-	-
133.0388	0.03265	133.1058	5.40E-03	-	-
133.9037	-8.65E-04	133.7026	-0.10853	-	-
134.7238	-0.04778	135.0143	-8.00E-03	-	-
135.9685	0.03265	135.9238	-0.02811	-	-
136.9004	0.01924	136.744	-0.07502	-	-
138.078	0.07956	138.5248	0.16625	-	-
138.6301	-0.04778	138.7195	-0.06832	-	-
139.7854	5.84E-03	140.2769	0.10593	-	-

140.4269	-0.09469	140.9407	0.01211	-	-
142.0513	0.09966	141.9173	0.01211	-	-
142.6705	-7.57E-03	142.7375	-0.03481	-	-
143.7587	0.02594	143.8704	0.01211	-	-
144.8693	0.06615	144.5789	-0.06832	-	-
145.5555	-0.02097	145.8012	5.40E-03	-	-
146.4427	-0.04778	146.6438	-0.03481	-	-
147.531	-0.01427	147.598	-0.04151	-	-
148.3958	-0.04778	148.7309	5.40E-03	-	-
149.5958	0.01924	149.6181	-0.0214	-	-
150.3937	-0.03437	150.6394	-8.00E-03	-	-
151.5489	0.01924	151.4596	-0.05491	-	-
152.7042	0.07286	152.5925	-8.00E-03	-	-
153.7478	0.09296	153.8819	0.08583	-	-
154.6797	0.07956	154.5904	5.40E-03	-	-
155.2765	-0.03437	155.4552	-0.02811	-	-
156.5435	0.05275	156.4541	-0.0214	-	-
157.4754	0.03935	157.4307	-0.0214	-	-
158.3403	5.84E-03	158.519	0.01211	-	-
159.5626	0.07956	159.5179	0.01881	-	-
160.4498	0.05275	160.2934	-0.04151	-	-
161.6944	0.13317	161.538	0.03891	-	-
162.4923	0.07956	162.3582	-8.00E-03	-	-
163.2901	0.02594	163.1337	-0.06832	-	-
164.1773	-8.65E-04	164.1997	-0.04151	-	-
165.6677	0.15328	165.2433	-0.0214	-	-
166.4656	0.09966	166.0635	-0.06832	-	-
167.3528	0.07286	167.0847	-0.05491	-	-
168.2177	0.03935	168.2177	-8.00E-03	-	-
169.5963	0.15998	168.7027	-0.15544	-	-
170.3495	0.09296	170.3272	0.03891	-	-
171.3261	0.09296	171.2367	0.01881	-	-
171.9899	-8.65E-04	171.9676	-0.05491	-	-
173.0335	0.01924	172.7207	-0.12193	-	-
174.2111	0.07956	174.1888	0.02551	-	-
174.9866	0.01924	175.277	0.05902	-	-
175.8738	-7.57E-03	175.7398	-0.09513	-	-
176.9398	0.01924	176.8727	-0.04821	-	-
177.9834	0.03935	178.1621	0.04562	-	-
179.0046	0.05275	178.8035	-0.05491	-	-
180.1152	0.09296	180.0482	0.02551	-	-
180.9131	0.03935	180.846	-0.02811	-	-
182.0237	0.07956	181.7779	-0.04151	-	-
183.0226	0.08626	182.3524	-0.16215	-	-
183.6641	-0.01427	183.5523	-0.09513	-	-
184.5513	-0.04108	184.7076	-0.04151	-	-
185.7512	0.02594	185.7959	-8.00E-03	-	-
186.7948	0.04605	186.8618	0.01881	-	-
187.5033	-0.03437	187.7491	-8.00E-03	-	-
188.5692	-7.57E-03	188.5022	-0.07502	-	-
189.6128	0.01254	189.6575	-0.0214	-	-
190.5447	-8.65E-04	190.6341	-0.0214	-	-
191.7223	0.05945	191.7894	0.03221	-	-
192.4085	-0.02767	192.5202	-0.04151	-	-
193.9882	0.15328	193.4744	-0.04821	-	-
194.8308	0.11307	194.4733	-0.04151	-	-
195.5169	0.02594	195.6733	0.02551	-	-
196.5829	0.05275	196.4265	-0.04151	-	-
197.5148	0.03935	197.4477	-0.02811	-	-
198.3796	5.84E-03	198.603	0.02551	-	-
199.4456	0.03265	199.5126	5.40E-03	-	-
200.3774	0.01924	200.8689	0.11934	-	-
201.354	0.01924	201.3093	-0.04151	-	-
202.3529	0.02594	202.2636	-0.04821	-	-
203.3518	0.03265	202.972	-0.12864	-	-
204.3507	0.03935	203.9933	-0.11523	-	-
205.238	0.01254	205.0816	-0.08172	-	-
206.0358	-0.04108	206.1922	-0.04151	-	-
207.2581	0.03265	207.2805	-8.00E-03	-	-
208.1006	-7.57E-03	207.8996	-0.11523	-	-
208.7198	-0.1148	209.3453	0.02551	-	-
210.0538	-7.57E-03	209.9421	-0.08842	-	-
211.1197	0.01924	210.8739	-0.10183	-	-
212.0292	-8.65E-04	212.3196	0.03891	-	-
212.9388	-0.02097	213.1398	-8.00E-03	-	-
214.027	0.01254	213.9153	-0.06832	-	-
215.2046	0.07286	214.8472	-0.08172	-	-
215.8014	-0.04108	215.9355	-0.04821	-	-
217.0907	0.05275	216.8003	-0.08172	-	-
218.0003	0.03265	217.7769	-0.08172	-	-
218.7758	-0.02767	218.9321	-0.02811	-	-
219.931	0.02594	219.864	-0.04151	-	-
220.8406	5.84E-03	220.7289	-0.07502	-	-
221.9958	0.05945	221.6607	-0.08842	-	-
223.0394	0.07956	223.1288	0.05902	-	-
223.6189	-0.04108	223.9286	5.40E-03	-	-
224.4564	-0.08129	225.1712	0.08583	-	-
225.9244	0.06615	225.9244	0.01881	-	-
226.9233	0.07286	226.5212	-0.09513	-	-
227.8775	0.06615	227.6541	-0.04821	-	-
228.5413	-0.02767	228.3403	-0.13534	-	-
229.5626	-0.01427	229.2275	-0.16215	-	-
230.4944	-0.02767	230.5391	-0.06162	-	-
231.1135	-0.1349	231.605	-0.03481	-	-
232.5816	0.01254	232.7156	5.40E-03	-	-
233.6922	0.05275	233.3347	-0.10183	-	-
234.6687	0.05275	234.49	-0.04821	-	-
235.3549	-0.03437	235.1985	-0.12864	-	-
236.3538	-0.02767	236.4208	-0.05491	-	-
237.4197	-8.65E-04	237.3973	-0.05491	-	-
238.5079	0.03265	238.1282	-0.12864	-	-
239.7302	0.10637	239.3504	-0.05491	-	-
240.3047	-0.01427	240.461	-0.0147	-	-
241.1695	-0.04778	241.2812	-0.06162	-	-
242.3471	0.01254	242.5259	0.01881	-	-
243.2343	-0.01427	243.0556	-0.11523	-	-
244.3449	0.02594	244.2556	-0.04821	-	-
245.1651	-0.02097	245.2321	-0.04821	-	-
246.231	5.84E-03	246.1193	-0.07502	-	-
247.1182	-0.02097	247.1629	-0.05491	-	-
247.6033	-0.16841	248.2958	-8.00E-03	-	-
249.0043	-0.04108	248.9149	-0.11523	-	-
250.3606	0.07286	250.2266	-0.0147	-	-
251.2478	0.04605	251.3595	0.03221	-	-
251.934	-0.04108	251.7553	-0.14204	-	-
253.1116	0.01924	252.8658	-0.10183	-	-
254.0881	0.01924	254.1998	5.40E-03	-	-
254.8413	-0.04778	255.2881	0.03891	-	-
256.0413	0.01924	256.354	0.06572	-	-
257.2189	0.07956	256.9955	-0.03481	-	-
258.0391	0.03265	257.7486	-0.10183	-	-
258.6358	-0.08129	259.0379	-8.00E-03	-	-

260.4166	0.15998	260.1485	0.03221	-	-
261.1698	0.09296	261.3262	0.09253	-	-
261.7666	-0.02097	261.9229	-0.0214	-	-
262.8995	0.02594	262.8548	-0.03481	-	-
263.8537	0.01924	264.1665	0.06572	-	-
264.5398	-0.06788	264.9419	5.40E-03	-	-
265.9409	0.05945	265.7175	-0.05491	-	-
266.8727	0.04605	266.8727	-1.30E-03	-	-
267.3355	-0.1081	267.7376	-0.03481	-	-
268.8928	0.06615	268.5354	-0.08842	-	-
269.7801	0.03935	269.7801	-8.00E-03	-	-
270.3768	-0.07459	270.7119	-0.0214	-	-
271.5991	-8.65E-04	271.6682	-0.02811	-	-
272.531	-0.01427	272.7097	-8.00E-03	-	-
273.5522	-8.65E-04	273.6416	-0.0214	-	-
274.5735	0.01254	274.8192	0.03891	-	-
275.5947	0.02594	275.5947	-0.0214	-	-
276.4372	-0.01427	276.4149	-0.06832	-	-
277.4808	5.84E-03	277.3691	-0.07502	-	-
278.5914	0.04605	278.569	-8.00E-03	-	-
279.5009	0.02594	279.568	-1.30E-03	-	-
280.2764	-0.03437	280.6785	0.03891	-	-
281.4094	0.01254	281.4094	-0.03481	-	-
282.2295	-0.03437	282.2072	-0.08842	-	-
282.938	-0.1148	283.4742	-1.30E-03	-	-
284.1156	-0.05448	284.205	-0.07502	-	-
285.4943	0.06615	285.1369	-0.08842	-	-
286.0911	-0.04778	286.3368	-0.0214	-	-
287.291	0.01924	287.4921	0.03221	-	-
288.1559	-0.01427	287.9772	-0.11523	-	-
289.1548	-7.57E-03	289.1101	-0.06832	-	-
289.9303	-0.06788	290.176	-0.04151	-	-
290.9515	-0.05448	291.1079	-0.05491	-	-
292.1738	0.01924	292.2185	-0.0147	-	-
292.994	-0.02767	292.994	-0.07502	-	-
293.8588	-0.06118	294.1269	-0.02811	-	-
294.7014	-0.10139	295.3492	0.04562	-	-
295.9237	-0.02767	295.2587	0.02551	-	-
297.0566	0.01924	297.0789	-0.0214	-	-
297.8097	-0.04778	298.0331	-0.02811	-	-
299.2108	0.07956	299.1884	0.02551	-	-
299.9639	0.01254	300.1203	0.01211	-	-
300.7394	-0.04778	300.9628	-0.02811	-	-
301.3362	-0.16171	301.8947	-0.04151	-	-
302.8936	0.01254	302.8936	-0.03481	-	-
303.5127	-0.09469	304.0935	0.03221	-	-
304.4223	-0.1148	304.8244	-0.04151	-	-
305.7339	-0.01427	305.9349	-1.30E-03	-	-
306.42	-0.10139	307.1349	0.06572	-	-
307.5753	-0.04778	307.9551	0.01881	-	-
308.2168	-0.14831	308.8423	-8.00E-03	-	-
309.3274	-0.1081	309.5731	-0.08172	-	-
310.4603	-0.06118	310.706	-0.03481	-	-
311.5039	-0.04108	311.9507	0.04562	-	-
312.19	-0.1282	312.6592	-0.03481	-	-
313.3453	-0.07459	313.4123	-0.10183	-	-
314.3442	-0.06788	314.6793	-0.0147	-	-
315.209	-0.10139	315.5665	-0.04151	-	-
315.8505	-0.20192	316.6547	-8.00E-03	-	-
317.4749	-7.57E-03	317.5196	-0.04151	-	-
318.3845	-0.02767	318.4291	-0.06162	-	-
319.5174	0.01924	318.562	-0.0147	-	-
320.0918	-0.10139	320.4046	-0.05491	-	-
321.5375	0.03935	321.5375	-8.00E-03	-	-
322.3577	-7.57E-03	322.313	-0.06832	-	-
322.9545	-0.1215	323.2225	-0.08842	-	-
324.0427	-0.08799	324.4895	-1.30E-03	-	-
325.3767	0.01924	325.7342	0.07912	-	-
326.1969	-0.02767	326.7554	0.09253	-	-
326.883	-0.1148	327.5309	0.03221	-	-
328.2394	-8.65E-04	328.15	-0.07502	-	-
328.9032	-0.09469	329.3499	-8.00E-03	-	-
330.1031	-0.02767	330.4159	0.01881	-	-
330.968	-0.06118	331.3254	-1.30E-03	-	-
332.1233	-7.57E-03	332.2126	-0.02811	-	-
332.7424	-0.1148	333.2115	-0.0214	-	-
333.9424	-0.04778	334.1211	-0.04151	-	-
334.9413	-0.04108	335.3434	0.03221	-	-
335.7614	-0.08799	335.9401	-0.08172	-	-
337.3189	0.08626	337.2965	0.03221	-	-
338.005	-8.65E-04	338.206	0.01211	-	-
338.8252	-0.04778	339.0709	-0.0214	-	-
340.0922	0.03935	340.1145	-1.30E-03	-	-
340.823	-0.03437	341.2251	0.03891	-	-
342.1123	0.05945	341.9783	-0.02811	-	-
342.374	-0.15501	342.2676	0.06572	-	-
343.5069	-0.1081	344.0431	5.40E-03	-	-
344.4388	-0.1215	345.0643	0.01881	-	-
345.9292	0.03265	346.1749	0.05902	-	-
346.66	-0.04108	346.9728	5.40E-03	-	-
347.994	0.06615	348.0164	0.02551	-	-
348.7025	-0.01427	348.7248	-0.05491	-	-
349.7908	0.01924	349.7908	-0.02811	-	-
350.4769	-0.06788	350.9684	0.03221	-	-
351.6322	-0.01427	351.7662	-0.0214	-	-
352.43	-0.06788	352.6087	-0.06162	-	-
353.6076	-7.57E-03	353.9874	0.05902	-	-
354.5842	-7.57E-03	354.6289	-0.04151	-	-
355.6725	0.02594	355.7395	-1.30E-03	-	-
356.4926	-0.02097	356.5597	-0.04821	-	-
357.1118	-0.1282	357.2682	-0.12864	-	-
358.5128	-8.65E-04	358.7139	0.01211	-	-
359.1989	-0.08799	359.9808	0.09923	-	-
360.1085	-0.1081	360.9351	0.09253	-	-
361.4648	5.84E-03	361.5989	-1.30E-03	-	-
362.218	-0.06118	362.084	-0.14874	-	-
363.3286	-0.02097	363.686	0.03891	-	-
364.0594	-0.09469	364.7968	0.07912	-	-
365.3934	0.01254	365.6168	0.03221	-	-
366.3476	5.84E-03	366.3323	-0.02811	-	-
367.2795	-7.57E-03	367.3466	-0.03481	-	-
368.2561	-7.57E-03	368.3901	-0.0147	-	-
369.0763	-0.05448	369.5007	0.02551	-	-
370.3209	0.02594	370.3656	-8.00E-03	-	-
371.1635	-0.01427	371.3645	-1.30E-03	-	-
372.073	-0.03437	372.274	-0.0214	-	-
372.9155	-0.07459	373.3846	0.01881	-	-
374.2495	0.03265	374.3165	5.40E-03	-	-
374.8239	-0.08799	375.5388	0.07912	-	-
376.1579	0.01924	376.2473	-1.30E-03	-	-
377.1122	0.01254	377.3132	0.02551	-	-
378.2451	0.05945	378.7142	0.15285	-	-

378.8642	-0.04778	379.311	0.03891	-	-
379.8631	-0.04108	380.2652	0.03221	-	-
380.728	-0.07459	381.1078	-8.00E-03	-	-
381.5929	-0.1081	382.1737	0.01881	-	-
382.9939	0.01924	383.0162	-0.0214	-	-
383.9481	0.01254	384.4843	0.12604	-	-
384.5896	-0.08799	385.014	-8.00E-03	-	-
385.7895	-0.02097	386.3704	0.10593	-	-
386.7438	-0.02767	387.0119	5.40E-03	-	-
387.7203	-0.02767	388.1225	0.04562	-	-
388.6522	-0.04108	388.7192	-0.06832	-	-
389.249	-0.15501	390.0309	0.03221	-	-
390.583	-0.04778	391.1638	0.07912	-	-
391.5819	-0.04108	392.0287	0.04562	-	-
392.5585	-0.04108	392.9829	0.03891	-	-
393.7361	0.01924	393.9818	0.04562	-	-
394.6903	0.01254	395.0701	0.07912	-	-
395.5775	-0.01427	395.7115	-0.0214	-	-
396.353	-0.07459	396.9785	0.06572	-	-
397.5753	-8.65E-04	398.0668	0.09923	-	-
398.6189	0.01924	398.7306	5.40E-03	-	-
399.4614	-0.02097	399.5731	-0.03481	-	-
400.505	-8.65E-04	400.8401	0.05232	-	-
401.6379	0.04605	401.6379	-1.30E-03	-	-
402.5475	0.02594	402.7932	0.05232	-	-
403.524	0.02594	403.6581	0.01881	-	-
404.5453	0.03935	404.2772	-0.08842	-	-
405.2091	-0.05448	405.3655	-0.05491	-	-
406.074	-0.08799	406.4314	-0.02811	-	-
407.4973	0.04605	407.6537	0.04562	-	-
408.1611	-0.04778	408.3622	-0.03481	-	-
409.5621	0.07956	409.4951	0.01211	-	-
410.5387	0.07956	410.1813	-0.07502	-	-
411.3812	0.03935	411.3365	-0.0214	-	-
412.2014	-7.57E-03	412.5142	0.03891	-	-
412.9769	-0.06788	413.4907	0.03891	-	-
413.8865	-0.08799	414.4226	0.02551	-	-
415.0194	-0.04108	415.3545	0.01211	-	-
416.1077	-7.57E-03	416.3087	5.40E-03	-	-
417.6874	0.17339	417.531	0.07912	-	-
417.5023	-0.17512	418.2842	0.01211	-	-
418.9927	-0.02097	419.1044	-0.03481	-	-
420.4384	0.11977	420.0363	-0.04821	-	-
421.0352	5.84E-03	421.2139	0.01211	-	-
421.7213	-0.08129	421.9671	-0.05491	-	-
423.167	0.05945	423.0106	-0.03481	-	-
423.7191	-0.06788	423.6968	-0.12193	-	-
424.9414	5.84E-03	425.0755	-1.30E-03	-	-
425.8733	-7.57E-03	426.3871	0.09923	-	-
426.8275	-0.01427	426.9839	-0.0147	-	-
427.8934	0.01254	427.8934	-0.03481	-	-
429.0264	0.05945	429.2051	0.06572	-	-
429.8466	0.01254	430.3604	0.11934	-	-
430.5774	-0.06118	430.8901	-0.0147	-	-
432.0901	0.09966	432.0007	0.02551	-	-
432.6646	-0.02097	432.8433	-0.0147	-	-
433.7528	0.01254	433.5964	-0.08172	-	-
434.5953	-0.02767	434.8857	0.01211	-	-
435.5719	-0.02767	435.9293	0.03221	-	-
436.7272	0.02594	436.8836	0.02551	-	-
437.5027	-0.03437	438.1729	0.11934	-	-
438.7473	0.04605	438.4346	-0.08913	-	-
439.5452	-7.57E-03	439.4782	-0.07502	-	-
440.5217	-7.57E-03	440.5664	-0.04151	-	-
441.3419	-0.05448	441.61	-0.0214	-	-
442.6759	0.05275	442.6983	0.01211	-	-
443.5408	0.01924	443.7195	0.02551	-	-
444.4057	-0.01427	444.428	-0.05491	-	-
445.3599	-0.02097	445.6503	0.01881	-	-
446.2918	-0.03437	446.6268	0.01881	-	-
447.447	0.01924	447.6928	0.04562	-	-
448.0662	-0.08799	448.5353	5.40E-03	-	-
449.4002	0.01924	449.7353	0.07242	-	-

Figure 3a FCS data

Time (s)	G 50%	G 40%	G 30%	G 20%	G 10%	G 0%
0.0000002	8.69565	8.6526	1.13E+01	1.01E+01	1.37E+01	12.55134
0.0000004	3.97137	4.151	4.36E+00	4.64E+00	4.77E+00	4.54649
0.0000006	3.05643	2.8822	2.89E+00	3.00E+00	2.96E+00	2.78691
0.0000008	2.61336	2.7608	2.48E+00	2.67E+00	2.36E+00	2.06687
0.000001	2.51172	2.60438	2.27E+00	2.26E+00	2.29E+00	1.85839
0.0000012	2.17066	2.56505	2.28E+00	2.64E+00	2.13E+00	1.83985
0.0000014	2.44248	2.50849	2.37E+00	2.33E+00	1.82E+00	1.52137
0.0000016	2.31533	2.54048	2.09E+00	2.19E+00	2.06E+00	1.27577
0.0000018	2.22823	2.43998	2.07E+00	2.25E+00	1.76E+00	1.33243
0.000002	2.09268	2.21612	2.10E+00	2.12E+00	1.46E+00	1.4536
0.0000022	2.40627	2.20702	1.82E+00	2.03E+00	1.93E+00	1.72341
0.0000024	2.13449	2.32545	2.13E+00	1.99E+00	1.69E+00	1.61604
0.0000026	2.37059	2.18725	2.42E+00	2.07E+00	1.45E+00	1.43269
0.0000028	2.22069	2.41521	1.80E+00	2.04E+00	1.45E+00	1.32824
0.000003	2.16101	2.3915	2.13E+00	2.03E+00	1.63E+00	1.08749
0.0000032	2.06279	2.43431	1.87E+00	1.99E+00	1.97E+00	1.24909
0.0000036	2.14887	2.17173	1.84E+00	2.03E+00	1.43E+00	1.43806
0.000004	2.08803	2.25274	1.90E+00	1.99E+00	1.54E+00	1.53025
0.0000044	2.001	2.32195	1.71E+00	2.01E+00	1.52E+00	1.22708
0.0000048	2.11994	2.32013	2.02E+00	2.00E+00	1.56E+00	1.3212
0.0000052	2.16678	2.29533	1.99E+00	1.96E+00	1.75E+00	1.35247
0.0000056	2.22953	2.3312	1.97E+00	1.89E+00	1.39E+00	1.43313
0.000006	1.83205	2.36321	1.75E+00	2.06E+00	1.42E+00	1.32298
0.0000064	2.07638	2.18352	1.85E+00	2.10E+00	1.55E+00	1.07185
0.0000072	2.05251	2.2585	1.97E+00	1.82E+00	1.52E+00	1.26656
0.000008	2.02313	2.15423	1.72E+00	1.91E+00	1.39E+00	1.22308
0.0000088	2.02953	2.15771	1.71E+00	1.90E+00	1.50E+00	1.21826
0.0000096	2.14714	2.10896	1.84E+00	1.86E+00	1.57E+00	1.22833
0.0000104	2.01506	2.14513	1.68E+00	1.98E+00	1.40E+00	1.29638
0.0000112	2.01927	2.14592	1.88E+00	1.88E+00	1.43E+00	1.15713
0.000012	1.999	2.1695	1.83E+00	1.82E+00	1.38E+00	1.17133
0.0000128	2.08556	2.0919	1.55E+00	1.86E+00	1.34E+00	1.30494
0.0000144	1.98341	2.10066	1.63E+00	1.88E+00	1.23E+00	1.14722
0.000016	1.93922	2.12487	1.69E+00	1.76E+00	1.40E+00	1.21253
0.0000176	1.94431	2.03709	1.71E+00	1.75E+00	1.26E+00	1.25278
0.0000192	1.95623	1.98789	1.61E+00	1.80E+00	1.39E+00	1.15769
0.0000208	1.85683	2.03054	1.66E+00	1.73E+00	1.38E+00	1.12886
0.0000224	1.91896	1.98323	1.54E+00	1.72E+00	1.29E+00	1.18052
0.000024	1.84755	1.93694	1.61E+00	1.67E+00	1.22E+00	1.19849
0.0000256	1.90428	1.9841	1.54E+00	1.73E+00	1.44E+00	1.16971
0.0000288	1.85535	1.88558	1.55E+00	1.64E+00	1.16E+00	1.15864
0.000032	1.82967	1.89162	1.56E+00	1.66E+00	1.20E+00	1.13126
0.0000352	1.81031	1.83635	1.51E+00	1.61E+00	1.21E+00	1.10639
0.0000384	1.83598	1.82297	1.58E+00	1.60E+00	1.17E+00	1.09947



4.44E-03	1.11625	3.41E-03	1.0926	9.76E-03	1.02455	5.77E-03	1.03176	0.02787	0.996	0.06125	0.99091
7.50E-03	1.09185	5.77E-03	1.07567	0.01649	1.01629	9.76E-03	1.02182	0.04711	0.99471	0.10354	0.99078
0.01268	1.06943	9.76E-03	1.06121	0.02787	1.0094	0.01649	1.01416	0.07964	0.99388	-	-
0.02144	1.04929	0.01649	1.04755	0.04711	1.00406	0.02787	1.00847	0.13461	0.99337	-	-
0.03624	1.03251	0.02787	1.03453	0.07964	1.00022	0.04711	1.00447	-	-	-	-
0.06125	1.01973	0.04711	1.02294	0.13461	0.99764	0.07964	1.00181	-	-	-	-
0.10354	1.01074	0.07964	1.01358	-	-	0.13461	1.00012	-	-	-	-
-	-	0.13461	1.00669	-	-	-	-	-	-	-	-

Figure 3b Diffusion coefficient data

Grafting density	grafting density error	diffusion coefficient ( $\mu\text{m}^2/\text{s}$ )	error in diffusion coefficient ( $\mu\text{m}^2/\text{s}$ )
0.01606	0.000803	9.46122	2.16082
0.01891	0.0009455	7.0777	1.12899
0.0233	0.001165	4.31124	0.14347
0.04944	0.002472	3.10552	0.212
0.05756	0.002878	1.69277	0.05959
0.0592	0.00296	1.12441	0.03321

Figure 3b Diffusion coefficient fit

Grafting density	diffusion coefficient ( $\mu\text{m}^2/\text{s}$ )
0.01	16.87309
0.01081	15.11218
0.01168	13.53504
0.01263	12.12249
0.01365	10.85736
0.01476	9.72426
0.01595	8.70942
0.01724	7.80048
0.01864	6.98641
0.02015	6.25729
0.02178	5.60427
0.02354	5.01939
0.02545	4.49556
0.02751	4.02639
0.02973	3.60619
0.03214	3.22984
0.03474	2.89277
0.03755	2.59087
0.04059	2.32048
0.04388	2.07831
0.04743	1.86141
0.05127	1.66715
0.05542	1.49317
0.05991	1.33734
0.06476	1.19777
0.07	1.07277

Figure 3c

Grafting density	grafting density error	r-PEG areal density	areal density error	number of chains in confocal volume ( $n$ )	number of chains in confocal volume error	$f$	$f$ error	number of absorbed chains	number of absorbed chains error
0.01606	0.000803	0.802361106	0.10132495	4.97223	0.0016743	0.019	0.0024	0.09447	0.01193
0.01891	0.0009455	1.312892768	0.018386639	2.96132	0.0137	0.0522	0.00069	0.15458	0.0021648
0.0233	0.001165	0.587990467	0.033009104	1.17144	0.0067847	0.0591	0.0033	0.06923	0.0038865
0.04944	0.002472	0.75853573	0.05245901	1.39545	0.02288	0.064	0.0043	0.08931	0.0061765
0.05756	0.002878	0.499745184	0.027539824	0.86908	0.0061615	0.0677	0.0037	0.05884	0.0032425
0.0592	0.00296	0.778494961	0.035408908	0.88134	0.0045336	0.104	0.0047	0.09166	0.00416905

Figure 4 bulk diffusion

PEG volume fraction	diffusion coefficient ( $\mu\text{m}^2/\text{s}$ )	error in diffusion coefficient ( $\mu\text{m}^2/\text{s}$ )
1.77E-07	77.53149	6.74714
8.87E-05	79.30941	3.92633
8.85E-04	75.0938	5.07137
1.77E-03	73.87287	6.1915
4.43E-03	71.08643	5.57294
7.53E-03	57.30806	7.66152
0.0133	48.39348	4.11002
0.0174	39.07942	3.35695
0.04719	24.54079	2.49038
0.05347	21.71612	1.67089
0.06245	19.01009	1.3341
0.07596	14.39748	1.33972
0.08953	13.07072	1.30707
0.13507	4.69592	0.46959
0.18116	3.8246	0.38246

Figure 4 surface diffusion force spectroscopy

PEG volume fraction	PEG volume fraction error	diffusion coefficient ( $\mu\text{m}^2/\text{s}$ )	error in diffusion coefficient ( $\mu\text{m}^2/\text{s}$ )
0.2385	9.46122	0.0645	2.16082
0.119	7.0777	0.015	1.12899
0.1305	4.31124	0.0415	0.14347
0.2773	3.10552	0.0267	0.212
0.231	1.69277	0.085	0.05959
0.336	1.12441	0.073	0.03321

Figure 4 surface diffusion ellipsometry

PEG volume fraction	diffusion coefficient ( $\mu\text{m}^2/\text{s}$ )	error in diffusion coefficient ( $\mu\text{m}^2/\text{s}$ )
0.139	4.31122	0.14347
0.14	3.10549	0.212
0.262	1.69278	0.05959
0.167	1.1244	0.03321

Figure 4 power law fit

PEG volume fraction	diffusion coefficient ( $\mu\text{m}^2/\text{s}$ )
6.00E-05	615358.2388
8.61E-05	357518.0234
1.24E-04	207715.0007
1.77E-04	120680.6894
2.54E-04	70114.47774
3.65E-04	40735.92895
5.24E-04	23667.23622
7.52E-04	13750.46758
1.08E-03	7988.9074
1.55E-03	4641.48882
2.22E-03	2696.66643
3.19E-03	1566.74079
4.57E-03	910.26338
6.56E-03	528.85546
9.41E-03	307.26063

0.01351	178.51587
0.01939	103.71624
0.02782	60.25827
0.03992	35.00956
0.05728	20.34026
0.08219	11.81752
0.11793	6.86588
0.16923	3.98902
0.24283	2.31759
0.34845	1.3465
0.5	0.7823

Figure S2

Time (s)	G fit	G data
1.0000e-7	1.61805	-
2.0000e-7	-	18.63857
2.0000e-7	1.61433	-
4.0000e-7	-	6.28656
4.0000e-7	1.60697	-
6.0000e-7	-	3.40970
8.0000e-7	-	2.75848
8.0000e-7	1.59262	-
1.0000e-6	-	2.03236
1.2000e-6	-	1.69295
1.4000e-6	-	1.76811
1.6000e-6	-	1.59492
1.6000e-6	1.56532	-
1.8000e-6	-	1.61856
2.0000e-6	-	1.99340
2.2000e-6	-	1.62688
2.2600e-6	1.54403	-
2.4000e-6	-	1.04117
2.6000e-6	-	1.74164
2.8000e-6	-	1.69065
3.0000e-6	-	1.38902
3.2000e-6	-	1.56766
3.2000e-6	1.51584	-
3.6000e-6	-	1.46591
4.0000e-6	-	1.53821
4.4000e-6	-	1.32430
4.5300e-6	1.47951	-
4.8000e-6	-	1.54552
5.2000e-6	-	1.56482
5.6000e-6	-	1.14965
6.0000e-6	-	1.14312
6.4000e-6	-	1.48633
6.4000e-6	1.43438	-
7.2000e-6	-	1.31504
8.0000e-6	-	1.13577
8.8000e-6	-	1.38404
9.0500e-6	1.38113	-
9.6000e-6	-	1.59000
1.0400e-5	-	1.43187
1.1200e-5	-	1.05341
1.2000e-5	-	1.24785
1.2800e-5	-	1.33292
1.4400e-5	-	1.38064
1.6000e-5	-	1.21874
1.7600e-5	-	1.23399
1.8100e-5	1.26386	-
1.9200e-5	-	1.14356
2.0800e-5	-	1.17981
2.2400e-5	-	1.23364
2.4000e-5	-	1.18190
2.5600e-5	-	1.13878
2.5600e-5	1.21147	-
2.8800e-5	-	1.16949
3.2000e-5	-	1.16188
3.5200e-5	-	1.14047
3.6200e-5	1.17026	-
3.8400e-5	-	1.17327
4.1600e-5	-	1.13658
4.4800e-5	-	1.22569
4.8000e-5	-	1.12737
5.1200e-5	-	1.21165
5.1200e-5	1.14048	-
5.7600e-5	-	1.09339
6.4000e-5	-	1.13442
7.0400e-5	-	1.05979
7.6800e-5	-	1.11912
8.3200e-5	-	1.02547
8.9600e-5	-	1.04896
9.6000e-5	-	1.07105
1.0200e-4	-	1.01786
1.0200e-4	1.09832	-
1.1500e-4	-	1.07120
1.2800e-4	-	1.06742
1.4100e-4	-	1.03842
1.5400e-4	-	0.98899
1.6600e-4	-	1.07937
1.7900e-4	-	1.05367
1.9200e-4	-	1.03685
2.0500e-4	1.06221	-
2.0500e-4	-	1.07174
2.3000e-4	-	1.05661
2.5600e-4	-	1.02255
2.8200e-4	-	1.01891
3.0700e-4	-	1.04339
3.3300e-4	-	1.04643
3.5800e-4	-	1.04499
3.8400e-4	-	1.03525
4.1000e-4	1.03391	-
4.1000e-4	-	0.98968
4.6100e-4	-	1.03833
5.1200e-4	-	1.04023
5.6300e-4	-	1.02787
6.1400e-4	-	1.00062
6.6600e-4	-	0.99930
7.1700e-4	-	1.01780
7.6800e-4	-	1.01029
8.1900e-4	-	1.01519
8.1900e-4	1.01536	-
9.2200e-4	-	0.99297
1.0200e-3	-	1.02165
1.1300e-3	-	0.99620
1.2300e-3	-	1.00684
1.3300e-3	-	1.01249
1.4300e-3	-	1.01717
1.5400e-3	-	1.00808
1.6400e-3	1.00467	-

1.6400e-3	-	1.01103
1.8400e-3	-	1.01013
2.0500e-3	-	1.01431
2.2500e-3	-	1.00151
2.4600e-3	-	1.00447
2.6600e-3	-	1.00641
2.8700e-3	-	1.00186
3.0700e-3	-	1.00107
3.2800e-3	0.99907	-
3.2800e-3	-	1.00212
3.6900e-3	-	0.99602
4.1000e-3	-	1.00429
4.5100e-3	-	1.01063
4.9200e-3	-	0.99583
5.3200e-3	-	1.00174
5.7300e-3	-	0.99818
6.1400e-3	-	0.99854
6.5500e-3	-	0.99913
6.5500e-3	0.99634	-
7.3700e-3	-	1.00175
8.1900e-3	-	1.00098
9.0100e-3	-	0.99894
9.8300e-3	-	1.00392
0.01065	-	0.99945
0.01147	-	1.00119
0.01229	-	0.99743
0.01311	0.99511	-
0.01311	-	0.99883
0.01475	-	1.00370
0.01638	-	0.99764
0.01802	-	1.00216
0.01966	-	1.00081
0.02130	-	1.00048
0.02294	-	0.99449
0.02458	-	0.99964
0.02621	0.99458	-
0.02621	-	0.99601
0.02949	-	1.00131
0.03277	-	1.00110
0.03604	-	0.99797
0.03932	-	0.99811
0.04260	-	0.99887
0.04588	-	1.00119
0.04915	-	0.99745
0.05243	0.99436	-
0.05243	-	0.99973
0.05898	-	0.99786
0.06554	-	0.99906
0.07209	-	0.99840
0.07864	-	1.00129
0.08520	-	0.99904
0.09175	-	0.99900
0.09830	-	0.99924
0.10486	0.99427	-
0.10486	-	0.99809
0.11796	-	0.99879
0.13107	-	0.99964
0.14418	-	0.99924
0.15729	-	0.99970
0.17039	-	1.00004
0.18350	-	1.00018
0.19661	-	0.99894
0.20971	0.99423	-
0.20972	-	1.00015
0.23593	-	1.00054
0.26214	-	0.99903
0.28836	-	0.99971
0.31457	-	0.99845
0.34079	-	0.99960
0.36700	-	0.99966
0.39322	-	0.99950
0.41943	0.99421	-
0.41943	-	0.99925
0.47186	-	0.99885
0.52429	-	0.99851
0.57672	-	0.99823
0.62915	-	0.99866
0.68157	-	0.99839
0.73400	-	0.99879
0.78643	-	0.99854
0.83886	0.99421	-
0.83886	-	0.99877
0.94372	-	0.99902
1.04858	-	0.99886
1.15343	-	0.99767
1.25829	-	0.99894
1.36315	-	0.99954
1.46901	-	1.00027
1.57286	-	0.99975
1.67771	0.99420	-
1.67772	-	1.00171
1.88744	-	1.01248
2.09715	-	1.01154
2.30687	-	1.01227
2.51658	-	1.01108
2.72630	-	1.01280
2.93601	-	1.01205
3.14573	-	1.01024
3.35543	0.99420	-
3.35544	-	1.00775