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Supplemental Information

How Do Gyrating Beads Accelerate Amyloid Fibrillization?

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How do gyrating beads accelerate amyloid fibrillization?

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Supporting Material

Supporting Figures:

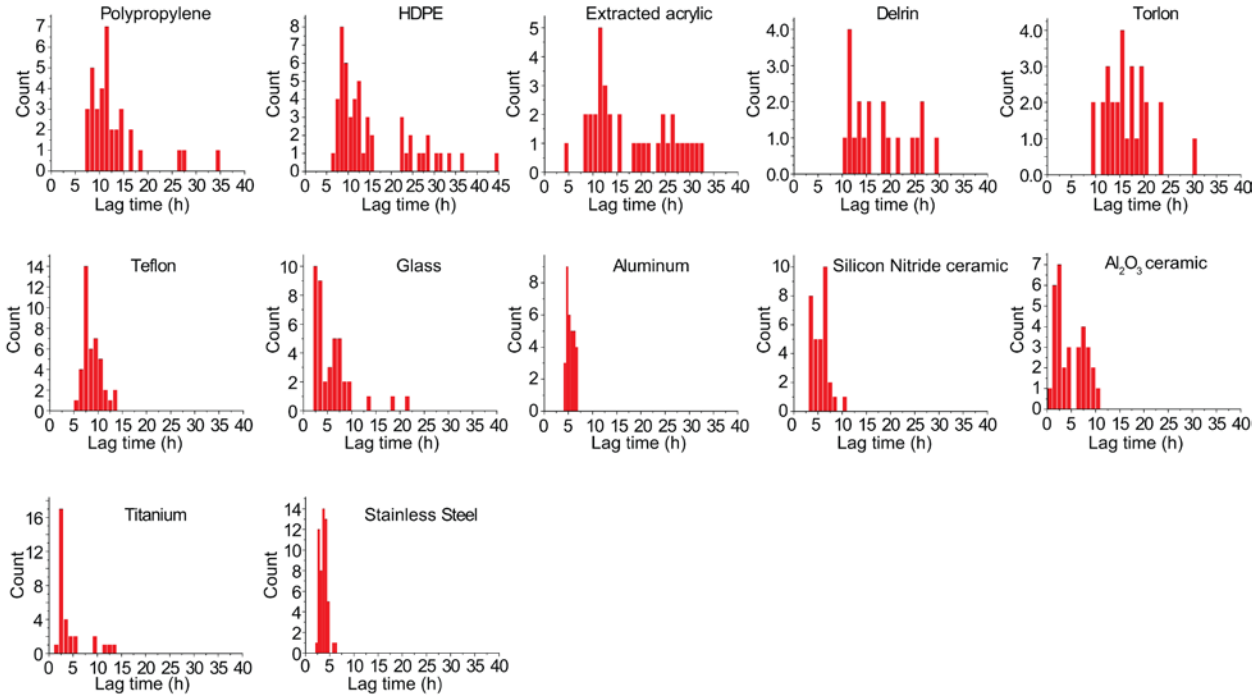

FIGURE S1. Histograms of lag time of D90A apo-SOD1 aggregation in the presence of different bead types.

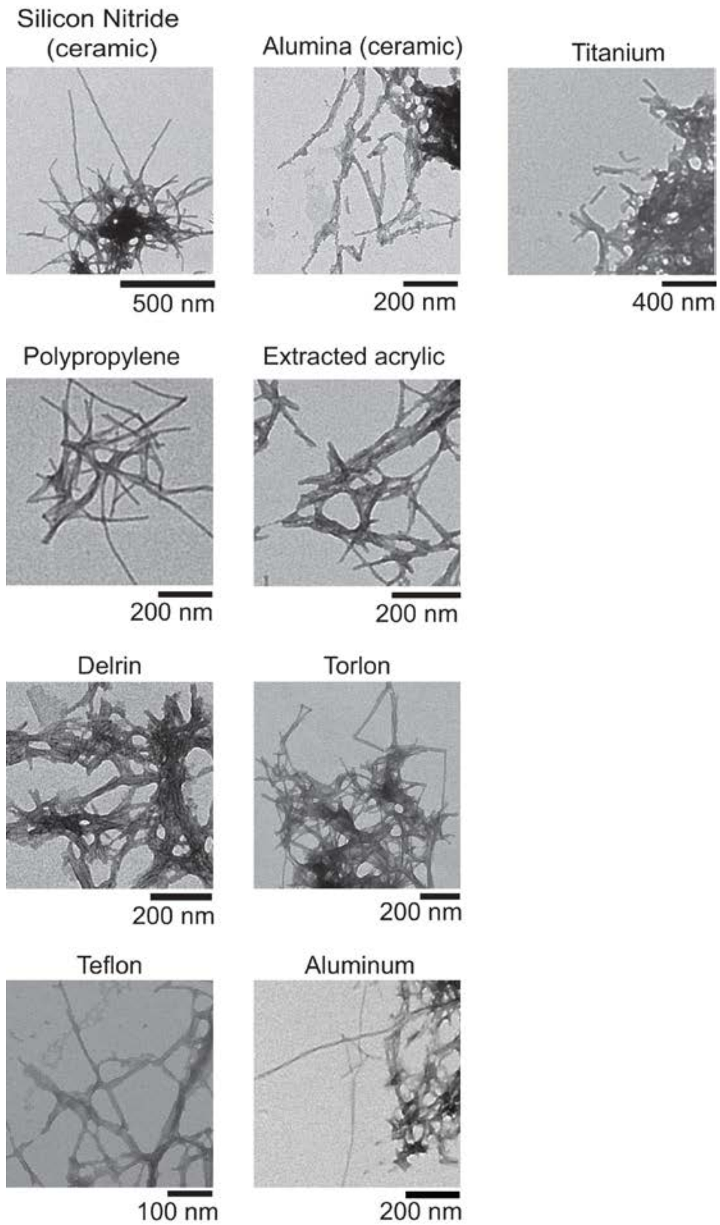

FIGURE S2. Transmission electron micrographs of D90A apo-SOD1 aggregates in the presence of different beads. TEM micrographs of apo-SOD1 fibrils in the presence of HDPE, glass, and steel beads are shown in the Fig. 8A of the main text.

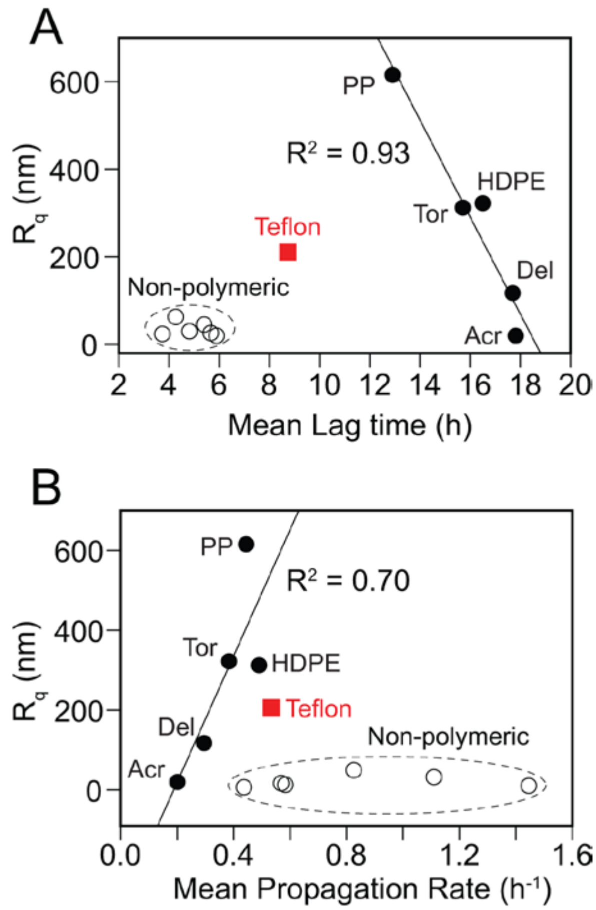

FIGURE S3. Correlation plots of bead surface roughness vs. **(A)** lag time, and **(B)** propagation rate of apo-SOD1 aggregation. Teflon was an outlier in this correlation and was excluded from fits in both plots.

Table S1. Physicomechanical properties of all studied beads in this paper. Values for E^*, r, r', p_g, and p_{cent} are calculated according to formalism described in the main text (Equations 2-6).

Bead	E_1(GPa)	v_1	E^*(GPa)[a]	r(μm)	r'(μm)	p_g(kPa)	p_{cent}(kPa)
Polypropylene	1.2	0.45	1.07	69.5	137.2	—	29.9
HDPE	0.8	0.43	0.77	77.6	153.1	—	24.1
Extracted acrylic	2.5	0.40	1.65	66.2	130.6	3.6	43.9
Polyoxymethylene (Delrin)	2.8	0.35	1.71	67.4	133.0	6.9	46.4
Polyamide-imide (Torlon)	6.6	0.41	2.53	59.9	118.2	9.4	60.7
PTFE (Teflon)	0.5	0.46	0.54	115.2	227.3	6.9	25.1
Borosilicate glass	70	0.22	3.53	64.3	126.9	25.3	91.1
Aluminum	69	0.33	3.54	67.4	132.9	30.6	95.6
Silicon nitride (ceramic)	310	0.27	3.66	69.8	137.7	36.4	102.7
Alumina (ceramic)	300	0.21	3.66	74.1	146.2	40.9	108.9
Titanium	112.5	0.32	3.59	77.6	153.1	43.9	112.0
Stainless steel	200	0.31	3.64	94.1	185.7	60.4	137.6

[a]Values for E^* are calculated from Equation (4) of the main text with E_2 = 3.2 GPa and v_2 = 0.34 for black polystyrene.