

Supplementary Materials

Fluorescence Correlation Spectroscopy Analysis of Effect of Molecular Crowding on Self-Assembly of β -Annulus Peptide into Artificial Viral Capsid

Risako Kobayashi,^a Hiroshi Inaba,^{ab} and Kazunori Matsuura *^{ab}

^a Department of Chemistry and Biotechnology, Graduate School of Engineering, Tottori University, Koyama-Minami 4-101, Tottori 680-8552, Japan

^b Centre for Research on Green Sustainable Chemistry, Tottori University, Koyama-Minami 4-101, Tottori 680-8552, Japan

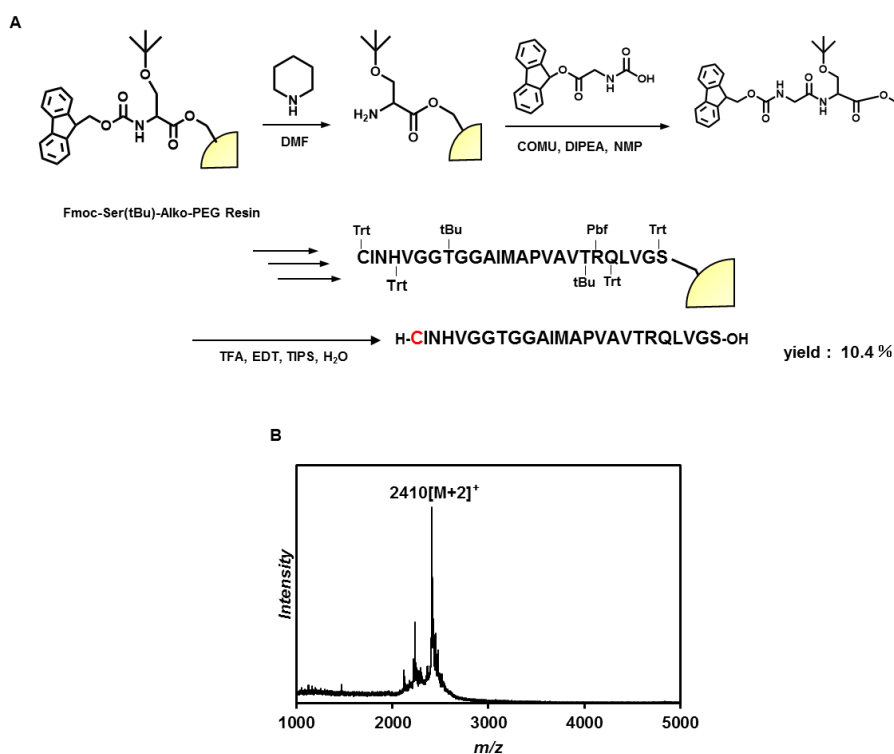


Figure S1. Synthesis of Cys- β -annulus peptide by solid-phase Fmoc-chemistry (A) and MALDI-TOF-MS (B).

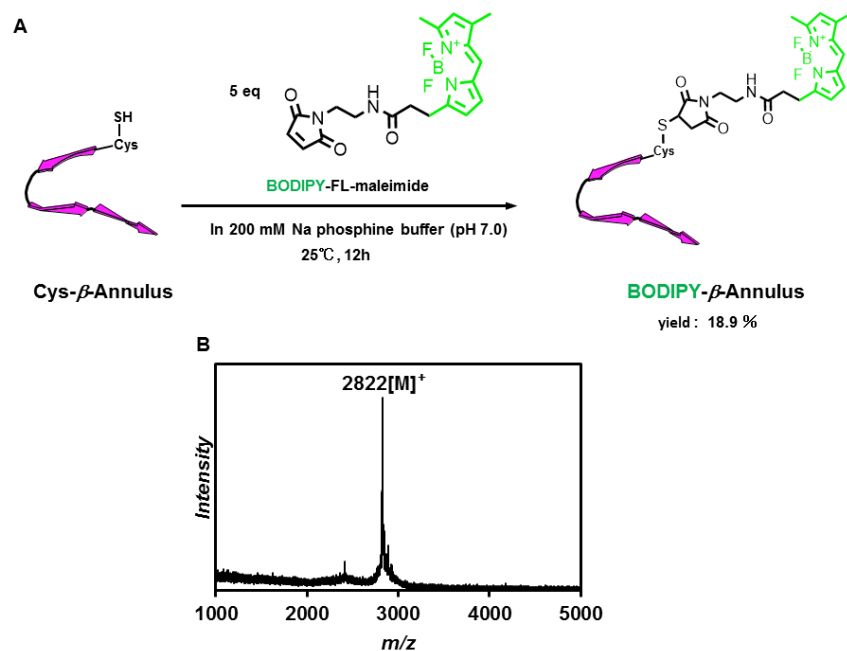


Figure S2. Synthesis of BODIPY- β -annulus peptide (A) and MALDI-TOF-MS (B).

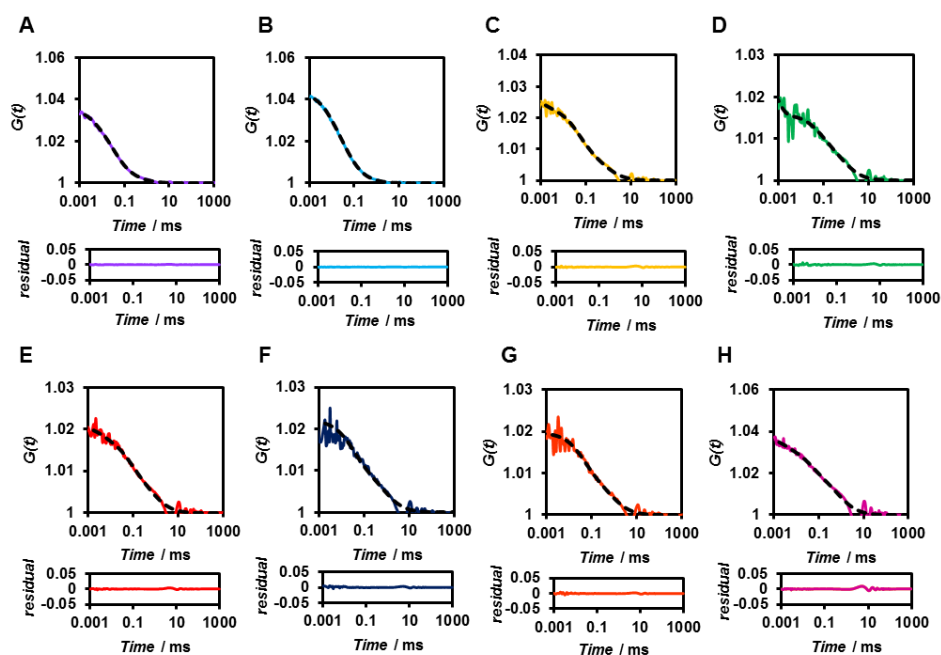


Figure S3. Measured (solid) and fitted (dot) autocorrelation curves for 0.1 μM BODIPY- β -annulus (A) and mixture of 0.1 μM BODIPY- β -annulus and 10 (B), 25 (C), 50 (D), 75 (E), 100 (F), 150 (G), 200 μM (H) β -annulus peptide measured by fluorescence correlation spectroscopy in 10mM Tris-HCl buffer (pH 7.0). The lower graph shows residual plot.

Table S1. Viscosity of solution in the presence of PEG.

Solvent	Diffusion time of Alexa 488 / ms	Viscosity / mPa*s
10 mM Tris-HCl buffer(pH 7.0)	0.0335	0.893
5 wt% PEG ₂₀₀₀	0.0514	1.34
10 wt% PEG ₂₀₀₀	0.0726	1.89
15 wt% PEG ₂₀₀₀	0.143	3.73
20 wt% PEG ₂₀₀₀	0.163	4.25

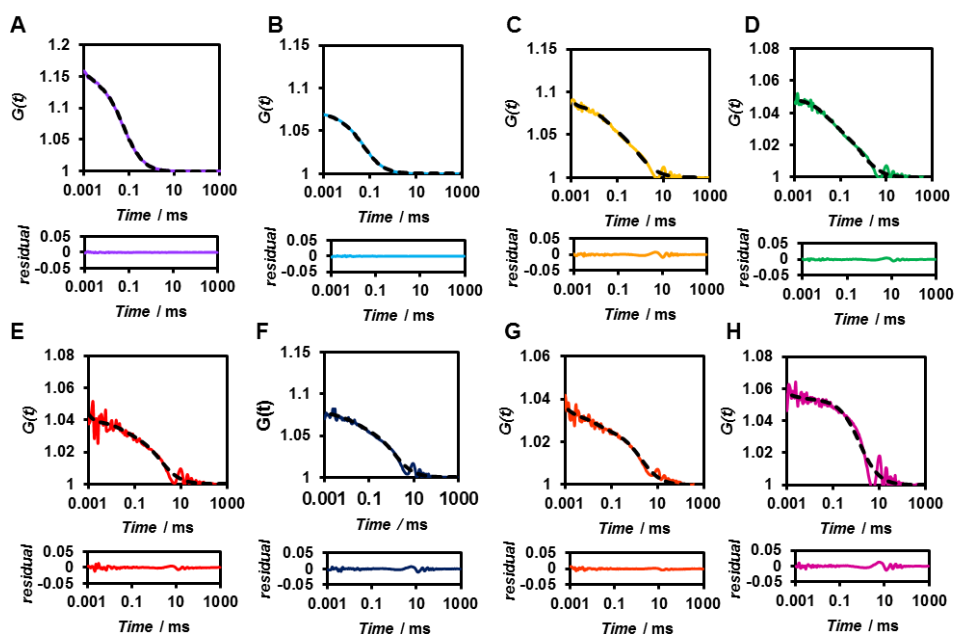


Figure S4. Measured (solid) and fitted (dot) autocorrelation curves for 0.1 μ M BODIPY- β -annulus (A) and mixture of 0.1 μ M BODIPY- β -annulus and 10 (B), 25 (C), 50 (D), 75 (E), 100 (F), 150 (G), 200 μ M (H) β -annulus peptide in 5 wt% PEG₂₀₀₀ solution measured by fluorescence correlation spectroscopy. The lower graph shows residual plot.

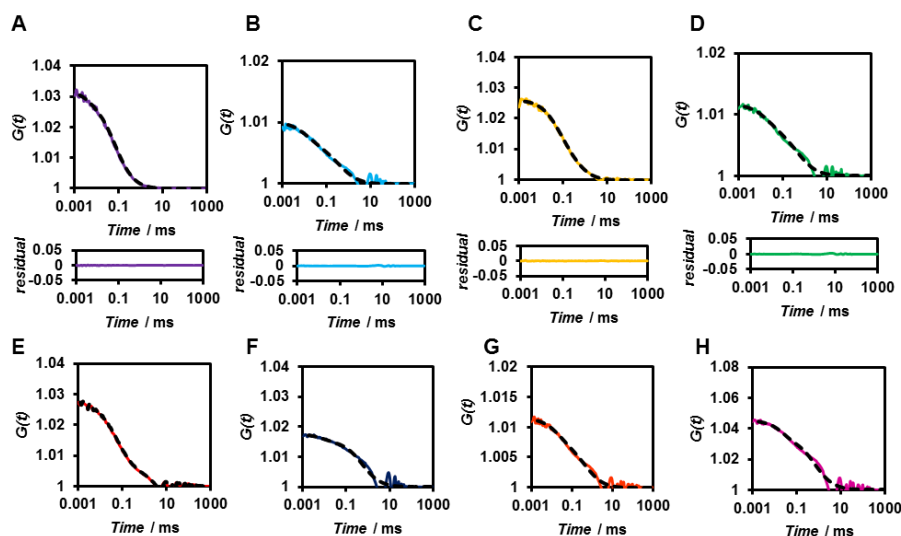


Figure S5. Measured (solid) and fitted (dot) autocorrelation curves for 0.1 μM BODIPY- β -annulus (A) and mixture of 0.1 μM BODIPY- β -annulus and 10 (B), 25 (C), 50 (D), 75 (E), 100 (F), 150 (G), 200 μM (H) β -annulus peptide in 10 wt% PEG₂₀₀₀ solution measured by fluorescence correlation spectroscopy. The lower graph shows residual plot.

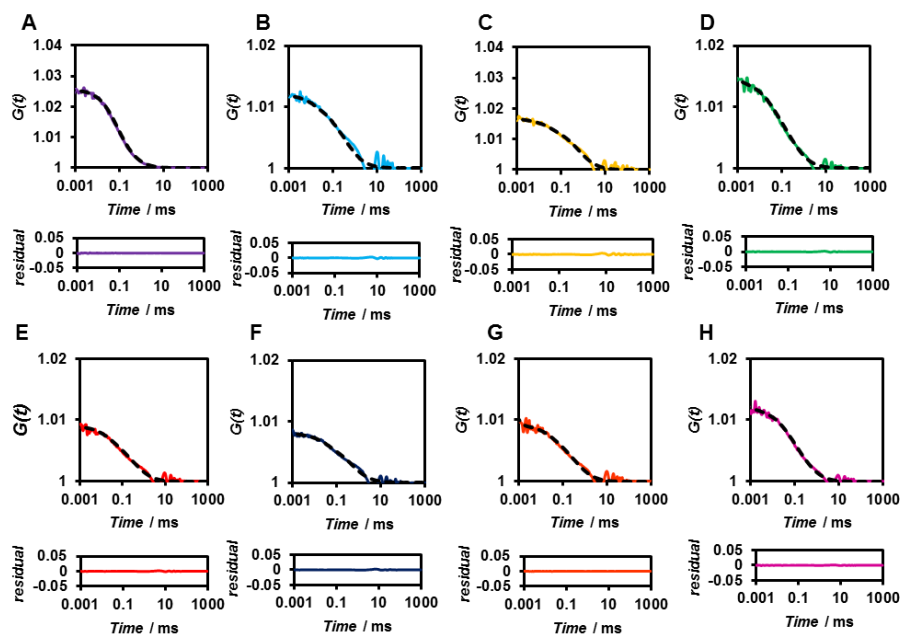


Figure S6. Measured (solid) and fitted (dot) autocorrelation curves for 0.1 μM BODIPY- β -annulus (A) and mixture of 0.1 μM BODIPY- β -annulus and 10 (B), 25 (C), 50 (D), 75 (E), 100 (F), 150 (G), 200 μM (H) β -annulus peptide in 15 wt% PEG₂₀₀₀ solution measured by fluorescence correlation spectroscopy. The lower graph shows residual plot.

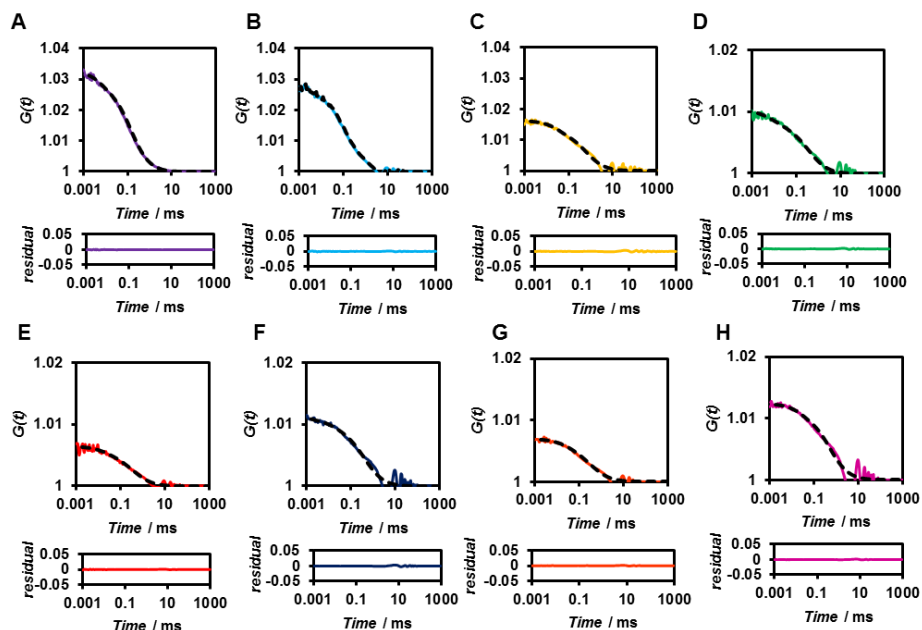


Figure S7. Measured (solid) and fitted (dot) autocorrelation curves for 0.1 μM BODIPY- β -annulus (A) and mixture of 0.1 μM BODIPY- β -annulus and 10 (B), 25 (C), 50 (D), 75 (E), 100 (F), 150 (G), 200 μM (H) β -annulus peptide in 20 wt% PEG₂₀₀₀ measured by fluorescence correlation spectroscopy. The lower graph shows residual plot.

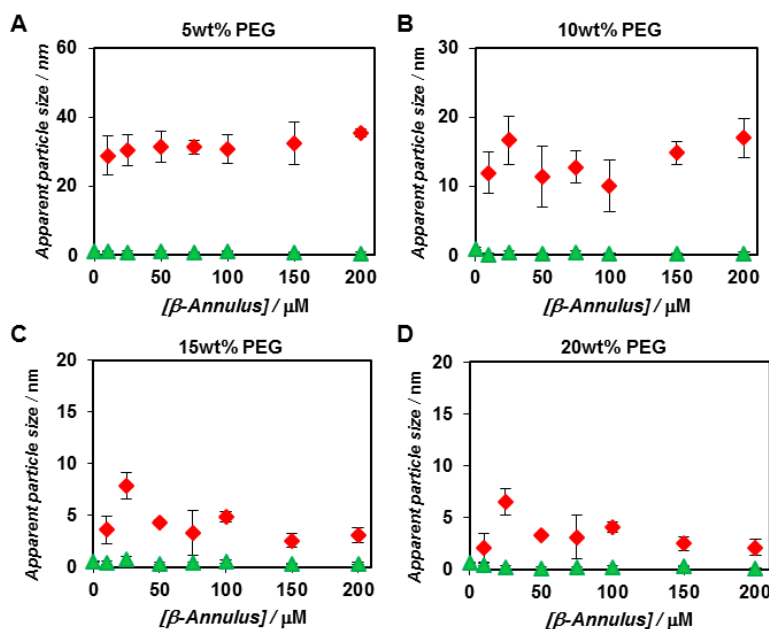


Figure S8. β -annulus peptides concentration dependence of the apparent diameter (A ~ D) and of the fast component (green) and the slow component (red) determined by FCS curve fitting ($N = 3$) at constant 0.1 μM BODIPY- β -annulus peptide under 5 wt% (A), 10wt% (B), 15wt% (C), 20wt% (D) PEG₂₀₀₀ at 25 $^{\circ}\text{C}$.

Table S2. Effect of PEG on BODIPY- β -annulus peptide.

	Diffusion time of 0.1 μ M BODIPY- β -annulus peptide / ms	Apparent diameter / nm
10 mM Tris-HCl buffer (pH 7.0)	0.0301	1.00
5 wt% PEG ₂₀₀₀	0.0431	1.12
10 wt% PEG ₂₀₀₀	0.0631	0.937
15 wt% PEG ₂₀₀₀	0.0776	0.541
20 wt% PEG ₂₀₀₀	0.107	0.643