Supporting Information for Manuscript Entitled:

Dynamics of Topological Network formed by Movable Crosslinks: Effect of Sliding Motion on Dielectric and Viscoelastic Relaxation Behavior

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Content

1. Rheological and dielectric spectra of PEA-Ac*β*CD(*x*)

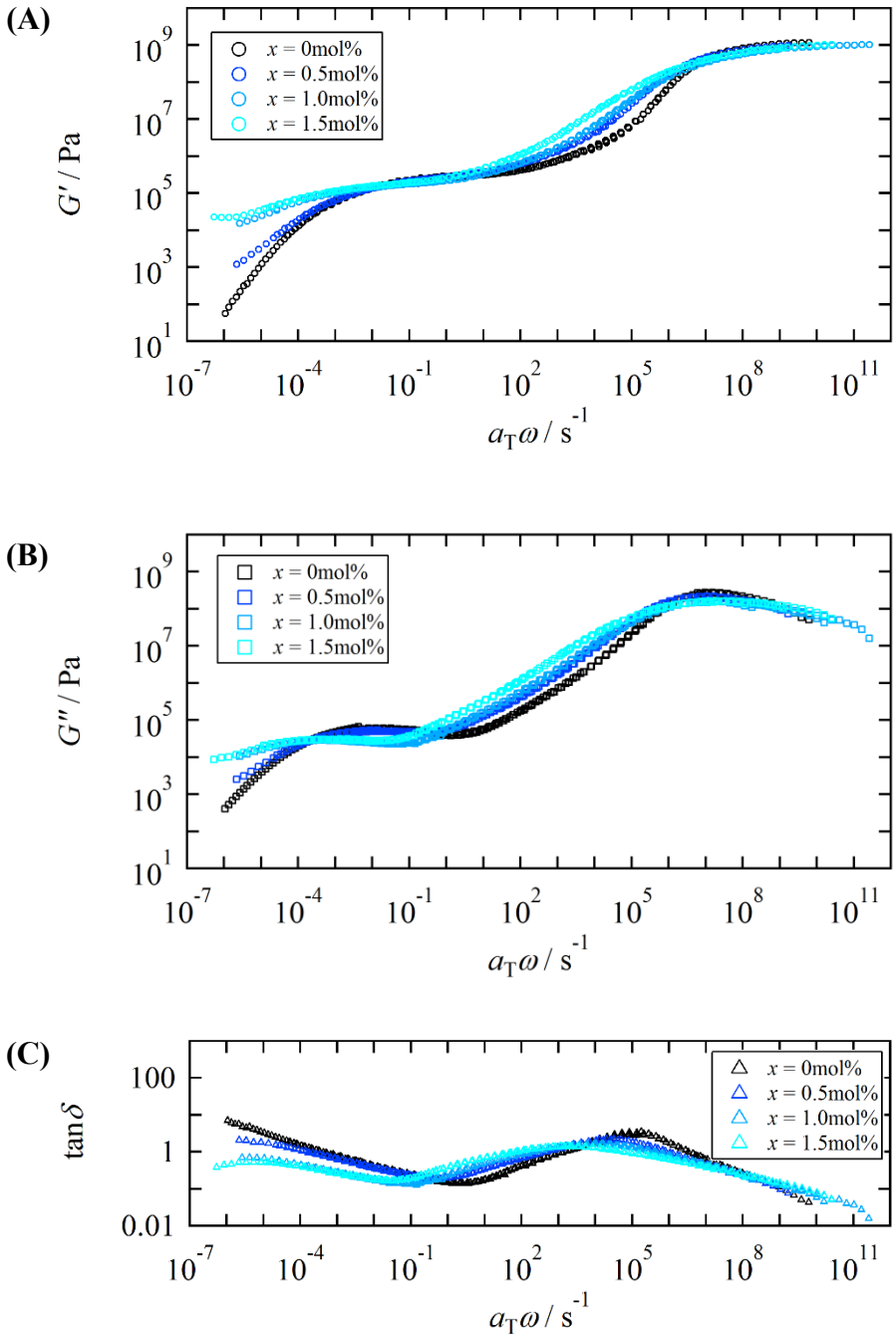

Figure S1. Composite curves of PEA-Ac*β*CD(*x*) at $T_r = T_g + 50$ °C. Circle, square, and triangle represent (A) storage modulus, (B) loss modulus, and (C) loss tangent, respectively.

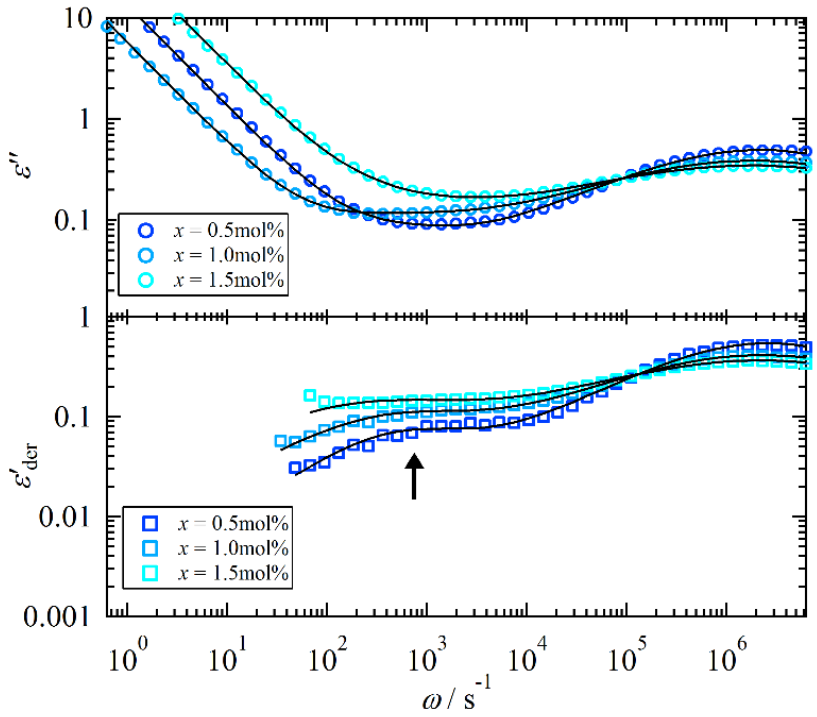

Figure S2. Frequency dependence of dielectric loss ε'' and derivative of permittivity ε'_{der} for PEA-AcβCD(x) of x_{ini} = 1.0 mol % at T_g + 50°C. Black lines represent the fitting results derived from Havriliak-Negami functions. Black arrows represent the new relaxation peak derived from the movable crosslink.

2. Molar concentration and temperature dependences of the relaxation strength for the slow mode in PEA-AcγCD(x) and PEA-AcβCD(x)

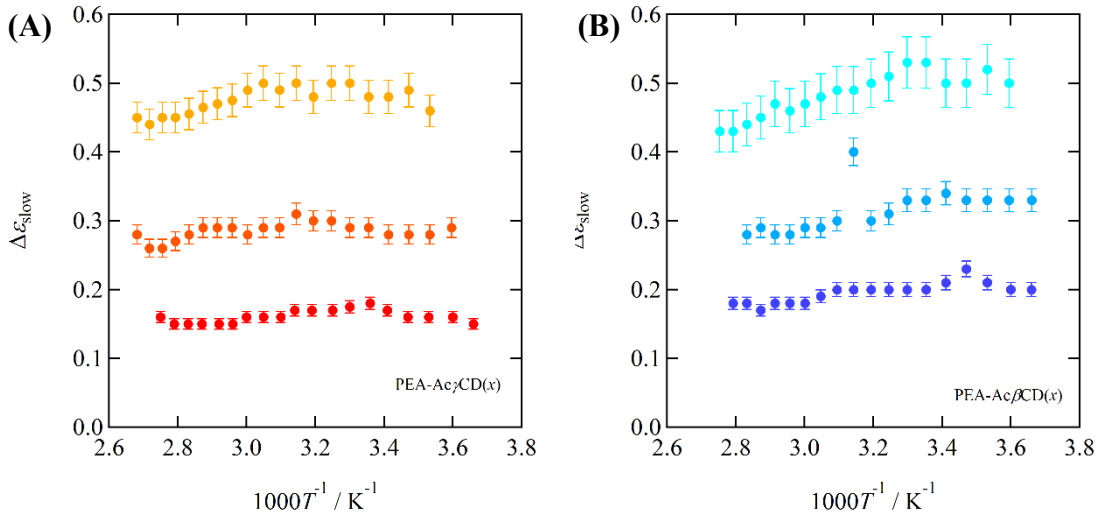

Figure S3. Temperature dependence of relaxation strength of the slow mode for (A) PEA-AcγCD(x) and (B) PEA-AcβCD(x).

3. Arrhenius fittings of PEA-AcγCD(x) and PEA-AcβCD(x)

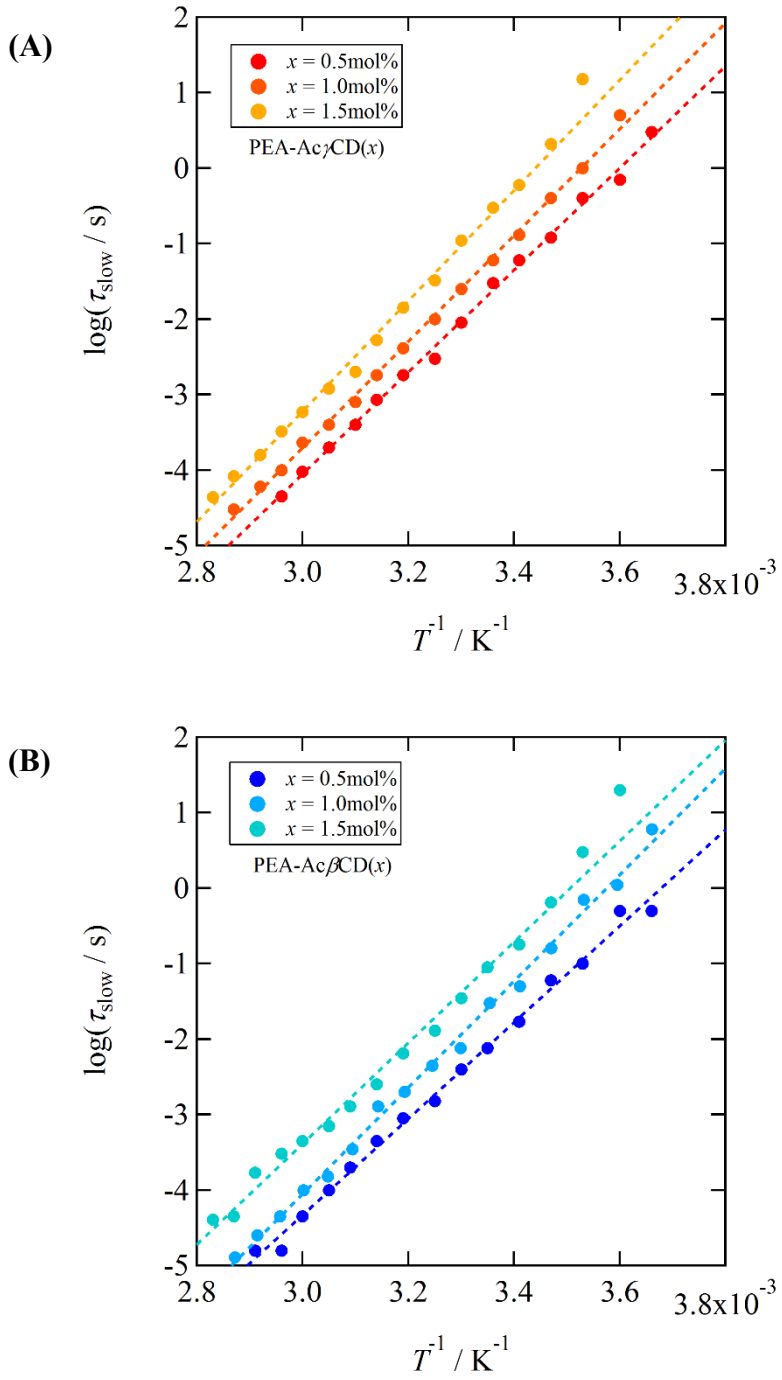

Figure S4. Arrhenius fittings of the slow mode of (A) PEA-AcγCD(x) and (B) PEA-AcβCD(x).

Table S1. Fitting parameters used in the Arrhenius equation in equation (4).

	x / mol%	log (τ_0 / s)	E_a / kJ mol^{-1}
PEA-AcγCD(x)	0.5	-24.3	129
	1.0	-24.8	135
	1.5	-25.2	140
PEA-AcβCD(x)	0.5	-23.5	122
	1.0	-25.2	135
	1.5	-23.4	128

4. Dielectric results of PEA/γCD monomer and PBA/βCD monomer mixture

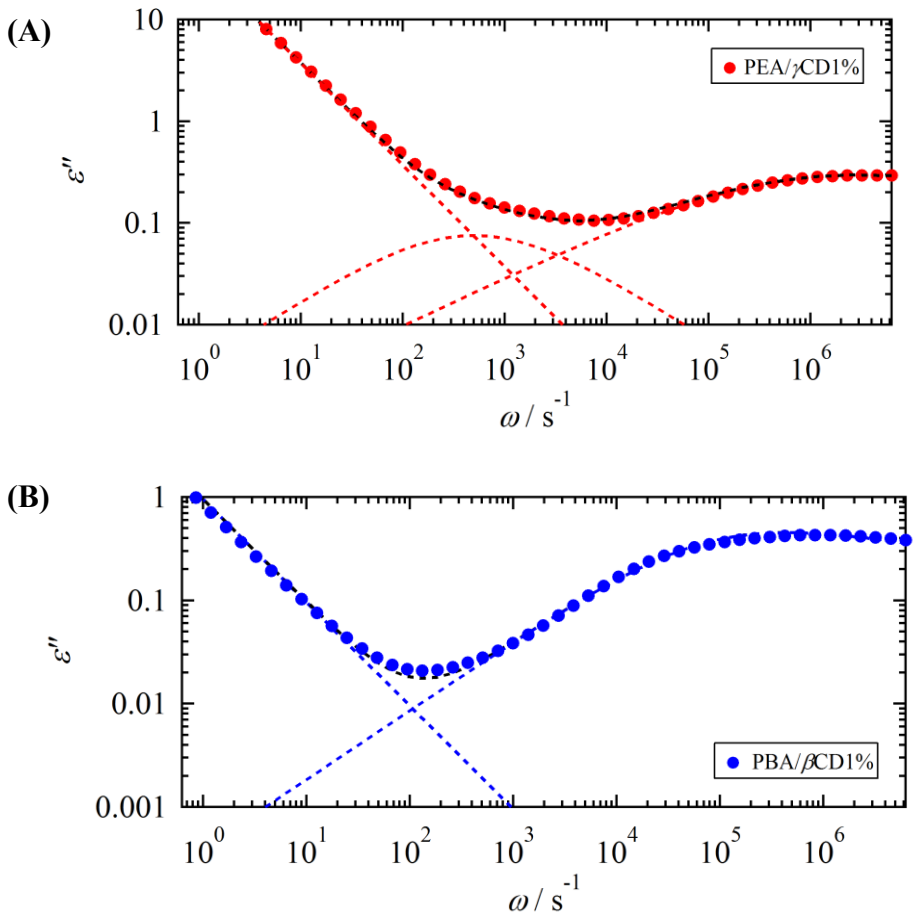

Figure S5. Frequency dependence of dielectric loss ε'' for (A) PEA / AcγCD monomer mixture and (B) PBA / AcβCD monomer mixture with the molar concentration of the AcγCD monomer or AcβCD monomer to be 1.0mol% at T = 313K. The dashed lines represent the fitting results with eq 1.