

Electronic Supplementary Information (ESI) for *Physical Chemistry Chemical Physics*

Synthesis and Characterization of Bicontinuous Cubic Poly(3,4-ethylene dioxythiophene) Gyroid (PEDOT GYR) Gels

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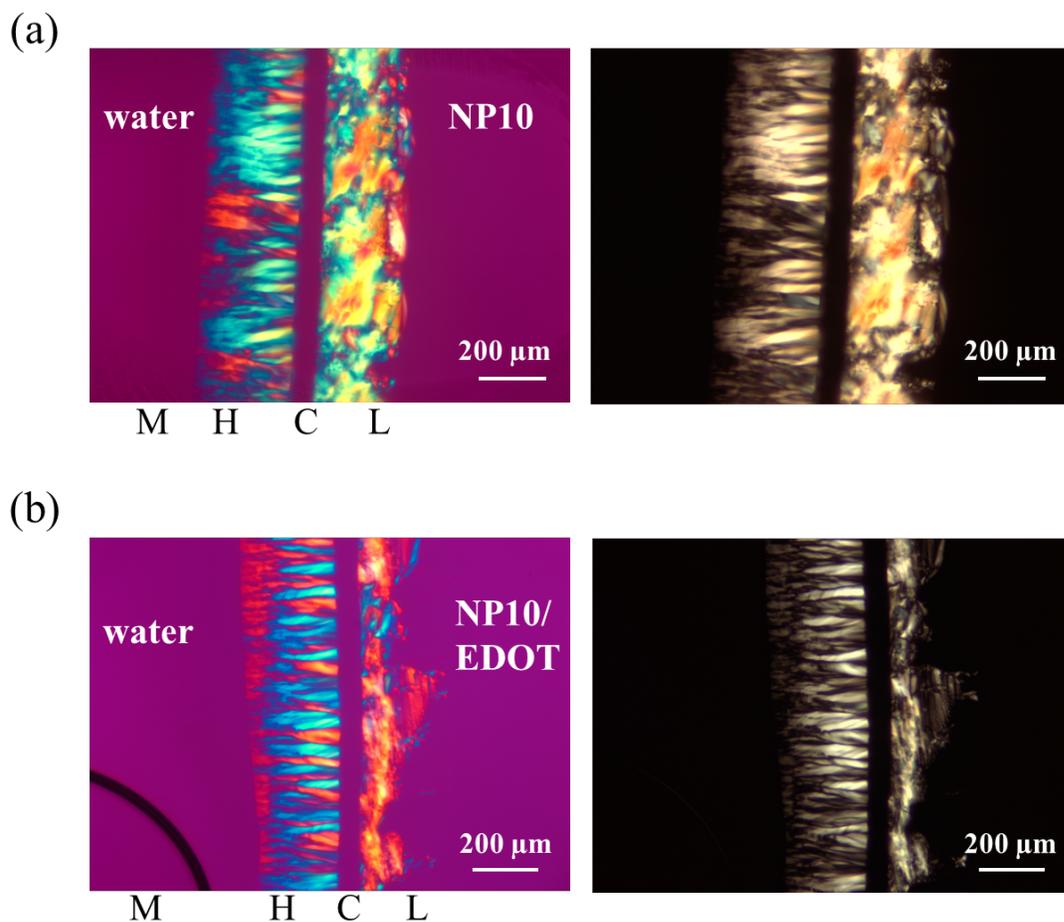
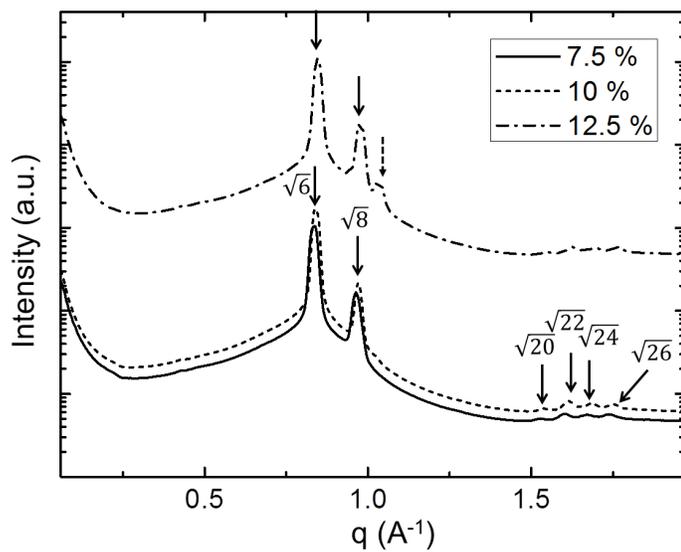


Figure S1. Diffusion couple between water and NP-10 surfactant (a) before and (b) after adding EDOT monomer. The concentration of NP10 (water) increases (decreases) systematically from left to right in these images. M:micelles, H: hexagonal phase, C: bicontinuous cubic (GYR) phase, L: lamellar phase. (Left: cross polarized optical micrograph with full wave red filter, right: cross polarized micrograph)



EDOT w/w %	Lattice constant a ($Ia\bar{3}d$)
7.5 wt%	17.5 nm
10 wt%	18.1 nm
12.5 wt%	18.6 nm

Figure S2. SAXS patterns of EDOT gels in an ordered NP-10 surfactant mesophase with different EDOT monomer contents.

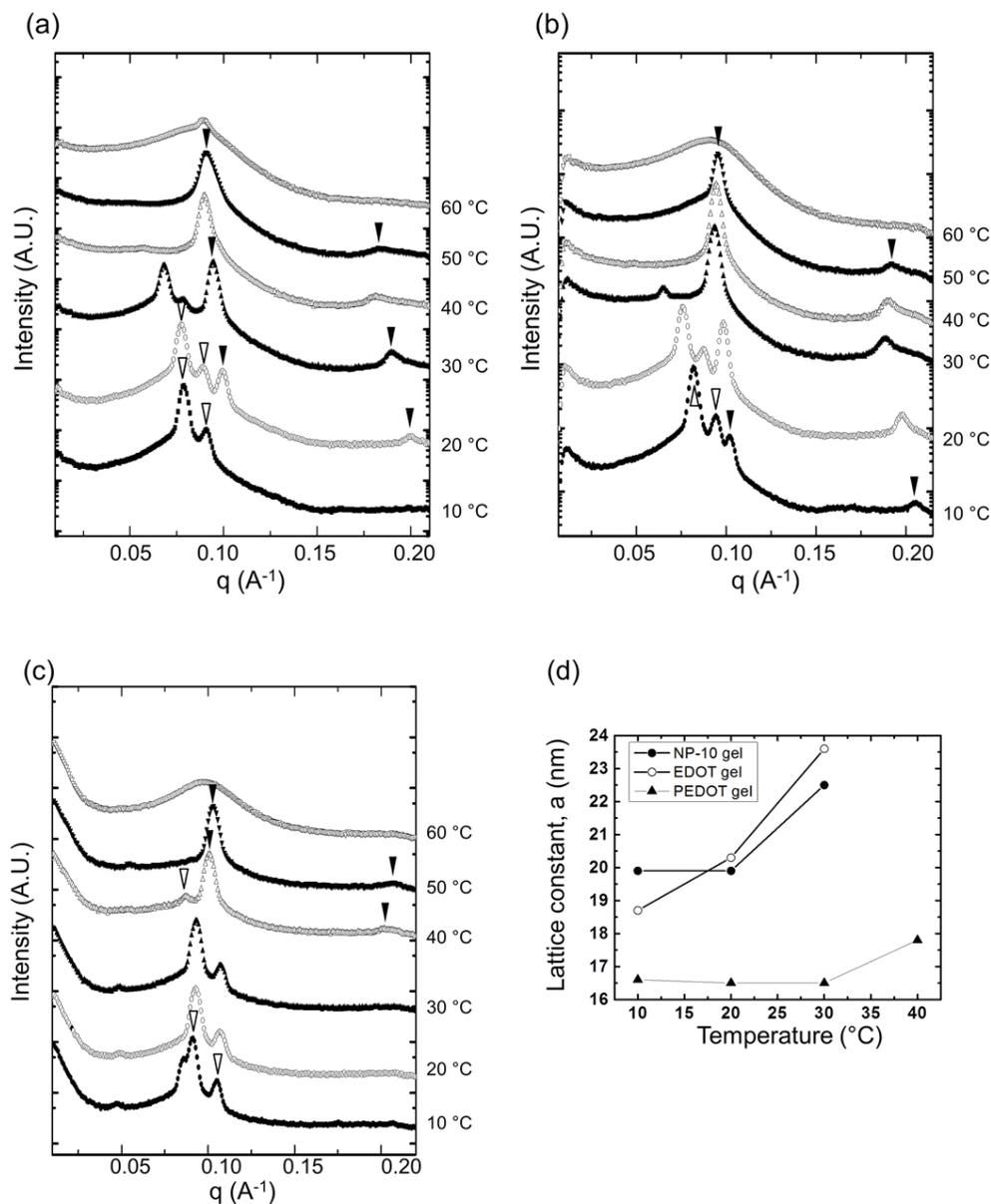


Figure S3. In-house SAXS patterns as a function of temperature for (a) NP-10/water/octane gel, (b) NP-10/water/octane gels with the addition of 10 wt% EDOT monomer, and (c) NP-10/water/octane gels with the addition of 10 wt% EDOT monomer after polymerization (PEDOT gels). The inverted triangles denote bicontinuous GYR Bragg peaks ($\sqrt{6}q^*$, $\sqrt{8}q^*$) and the filled triangles indicate lamellar peaks (1:2). The scattering profiles are vertically offset for clarity. (d) Shows the change of GYR lattice parameter (a) as a function of the temperature of each sample.

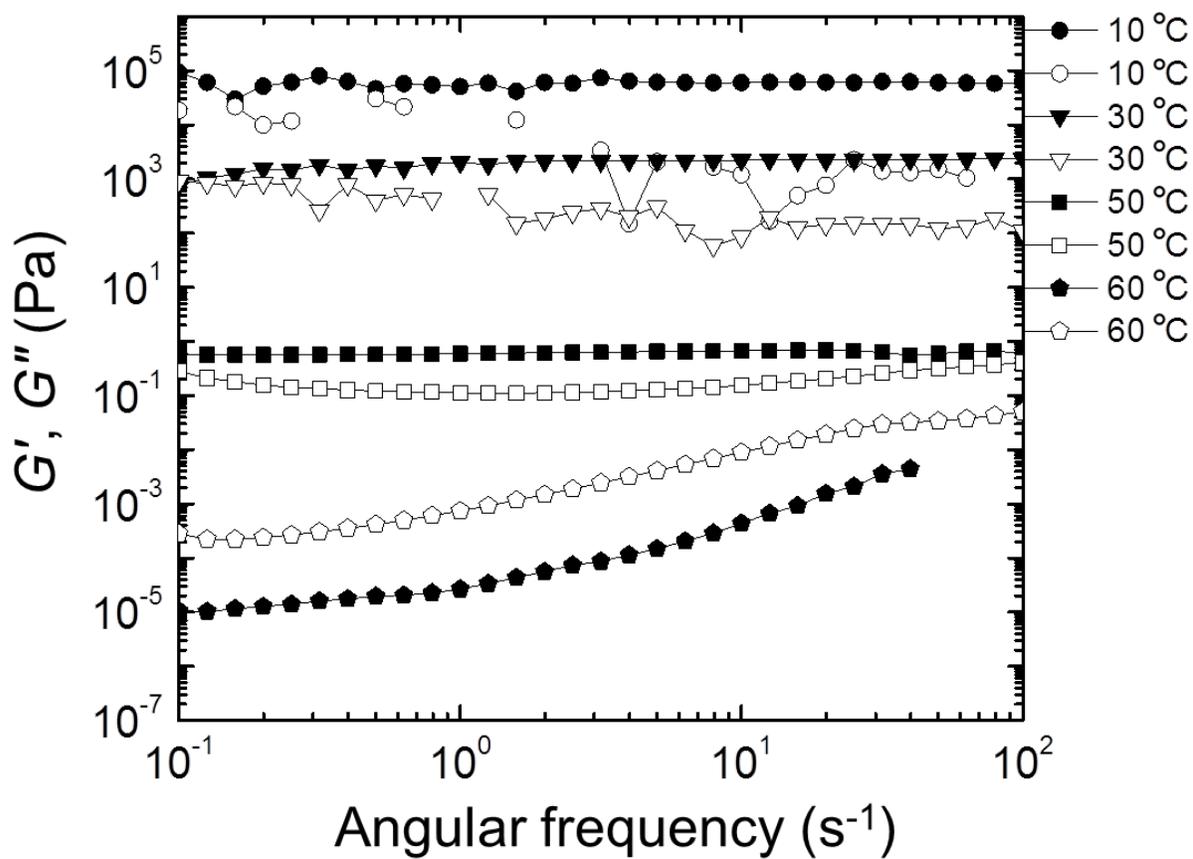


Figure S4. Storage modulus (G' , filled circles) and loss modulus (G'' , empty circles) as a function of frequency (ω) during heating sweep (from low to high frequency) of NP-10 gels.

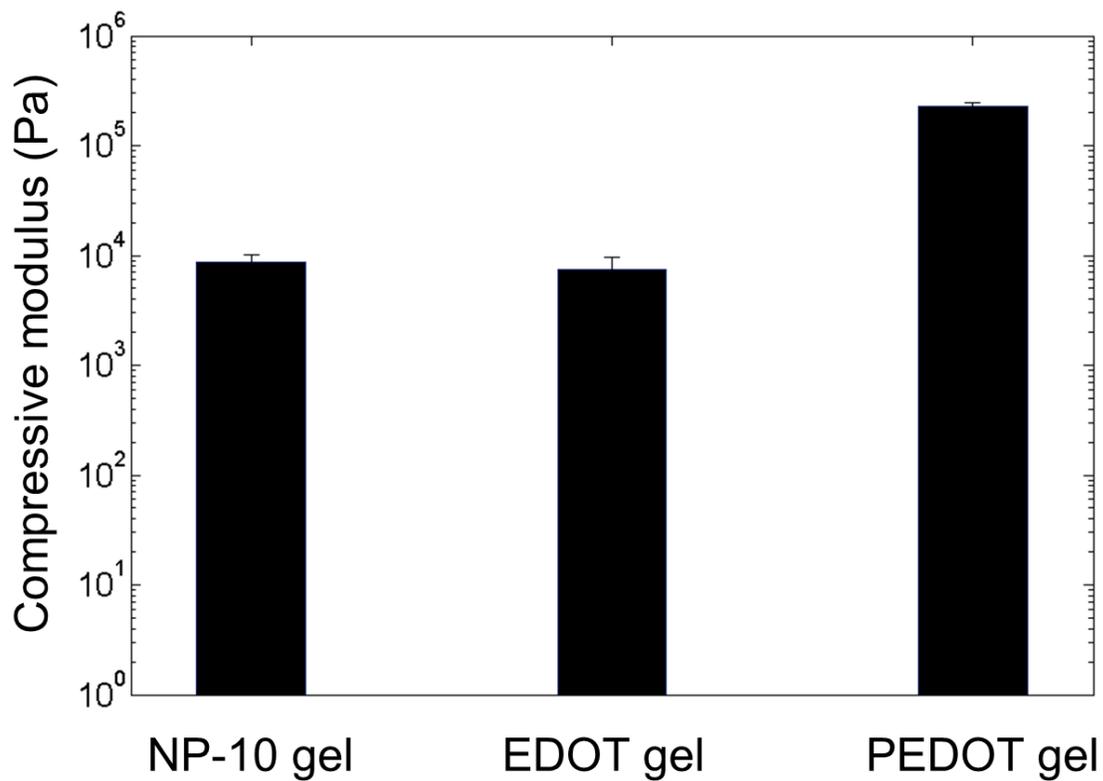


Figure S5. Compressive modulus of gels consisting of NP-10/water/octane, NP-10 gels with the addition of 10 wt% EDOT monomers, and PEDOT cubic phase after polymerization. Modulus was measured at room temperature.