Electronic Supplementary Material (ESI) for Polymer Chemistry.

Impact of Hydrogen Bonding Interaction Energy on Polymerization Kinetics of Polymerizable Deep Eutectic Solvents Monomers

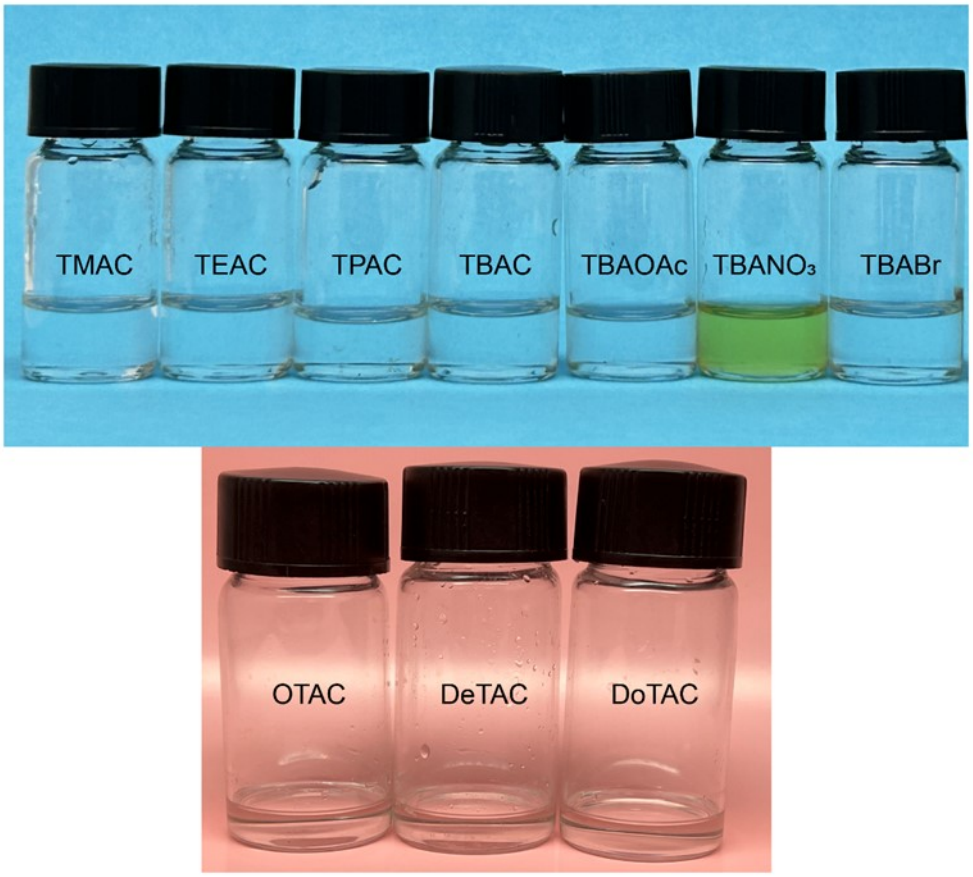


Fig.S1 Optical photographs of PDES monomers formed by AA and different hydrogen bond donors at a molar ratio of 3:1/4:1

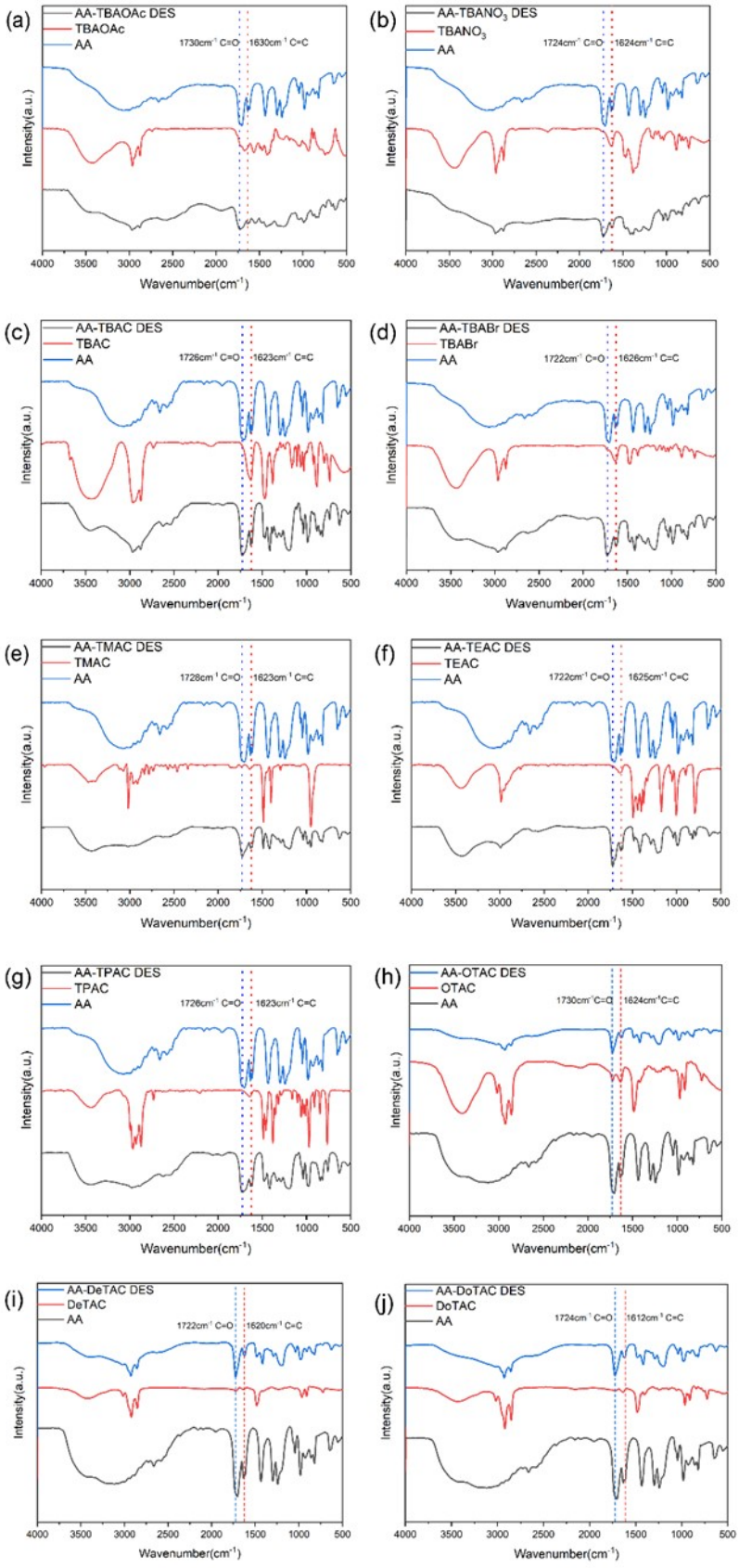


Fig. S2 Fourier transform infrared transform spectra of DES formed by AA and different hydrogen bond acceptors and its components

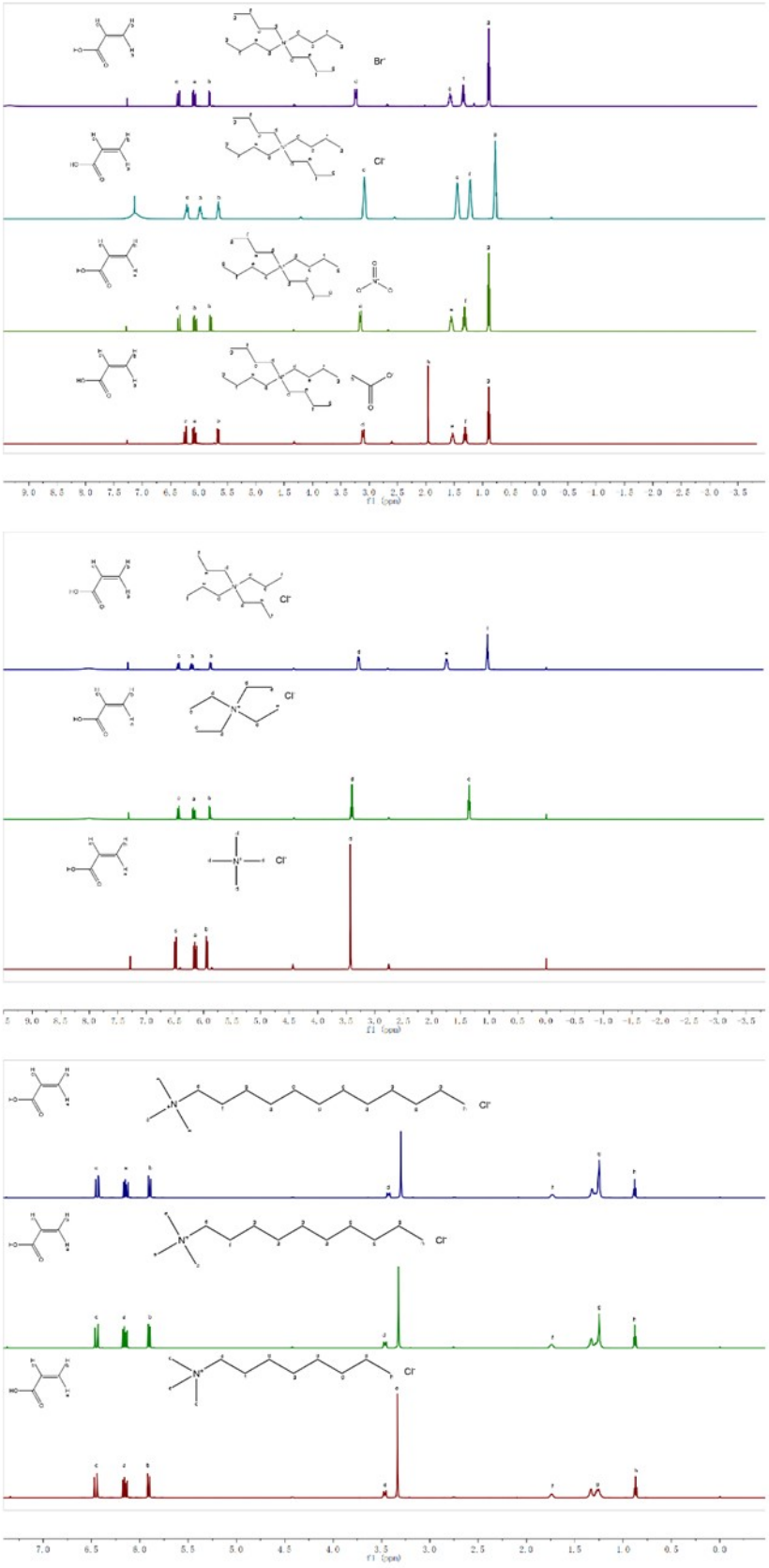


Fig. S3 ^{1}H NMR spectra of DES formed by AA and different hydrogen bond acceptors

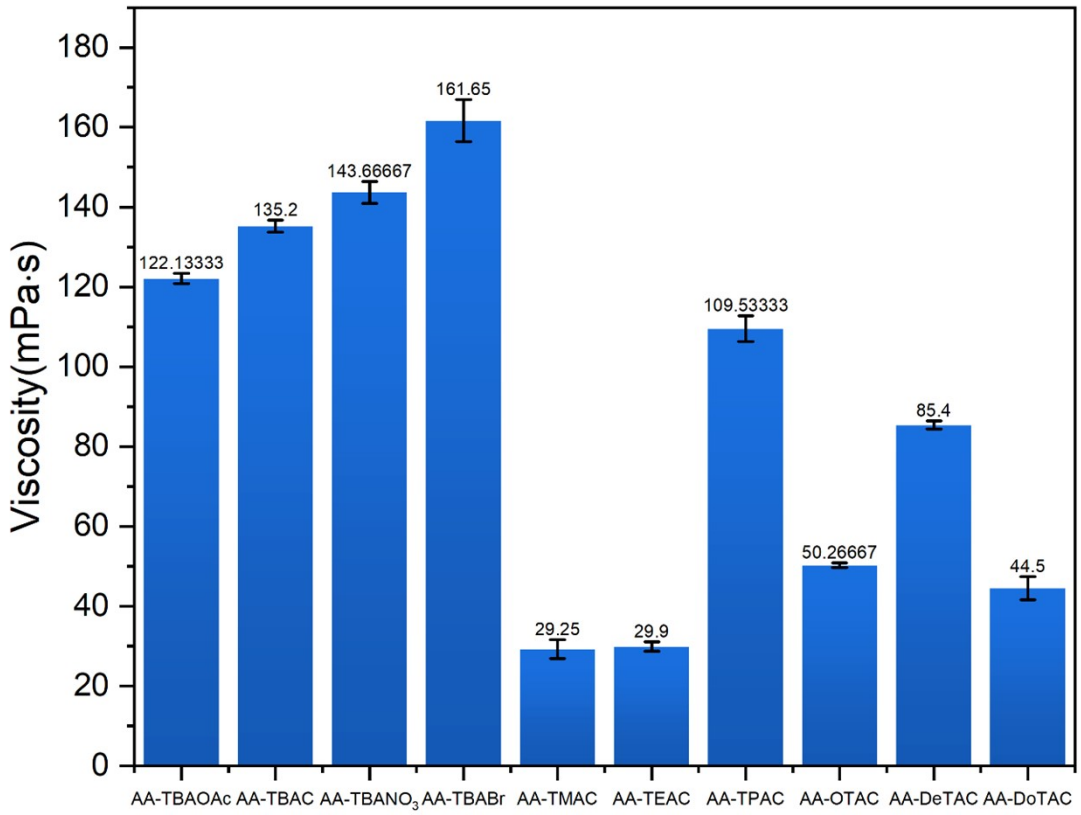


Fig. S4 Bar chart of initial viscosities for various PDES monomers.

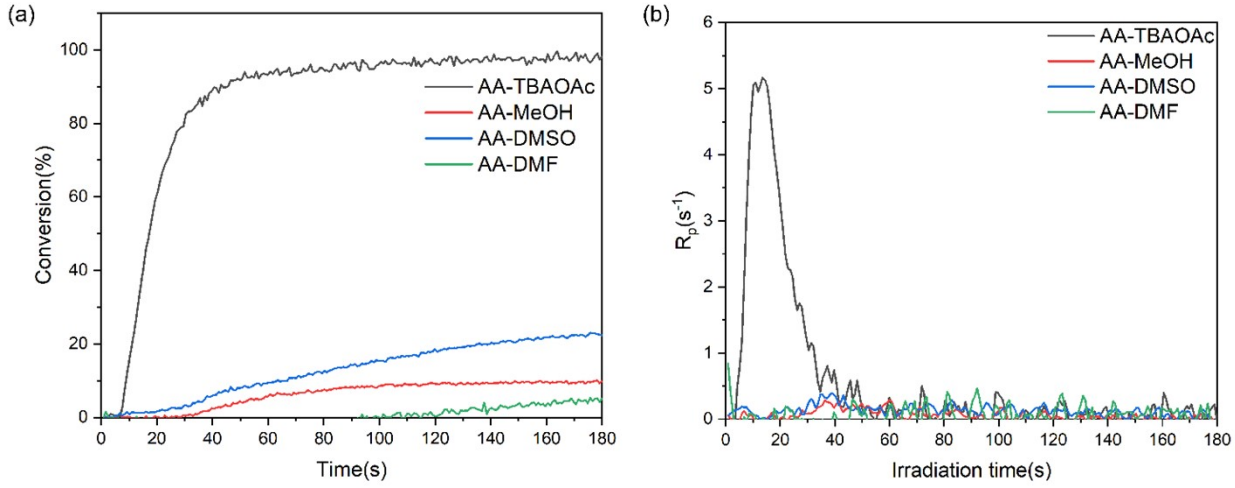


Fig S5 The real-time conversion of C=C double bonds (a) and the real-time polymerization rate (b) of monomers in inert solvents compared to PDES monomers during photopolymerization.

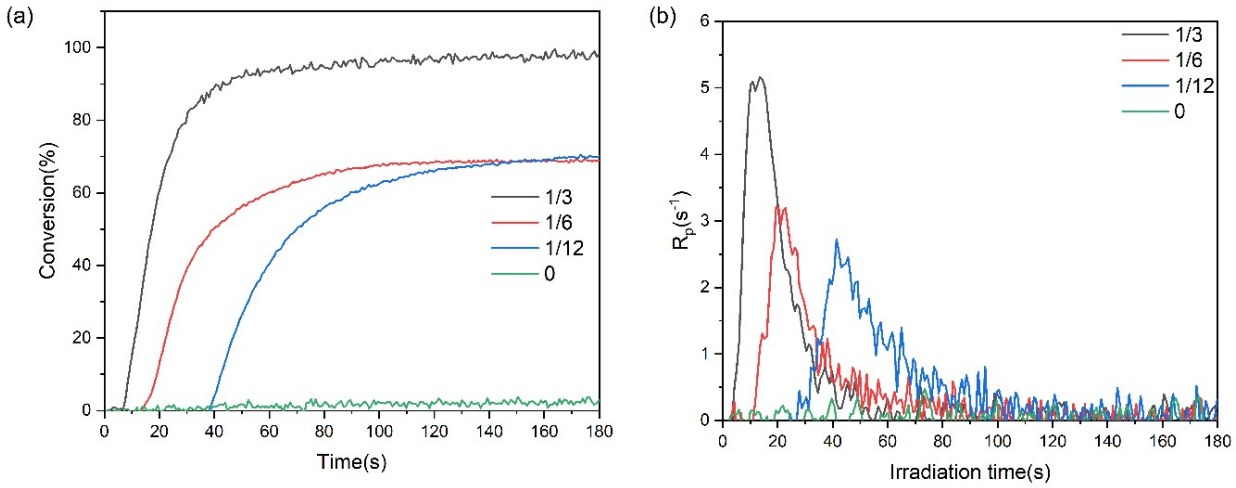


Fig.S6 The real-time conversion of C=C double bonds (a) and the polymerization rate (b) at various concentrations of quaternary ammonium salts.

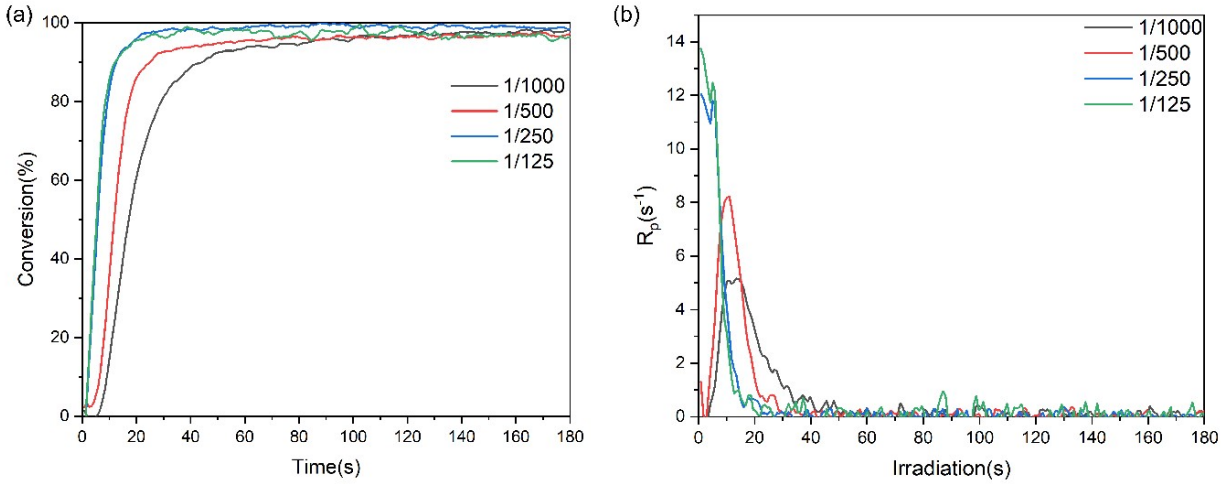


Fig. S7 The real-time conversion of C=C double bonds (a) and the polymer-ization rate (b) of AA-TBAOAc-type PDES monomers at different initiator concentrations within the same deep eutectic system.

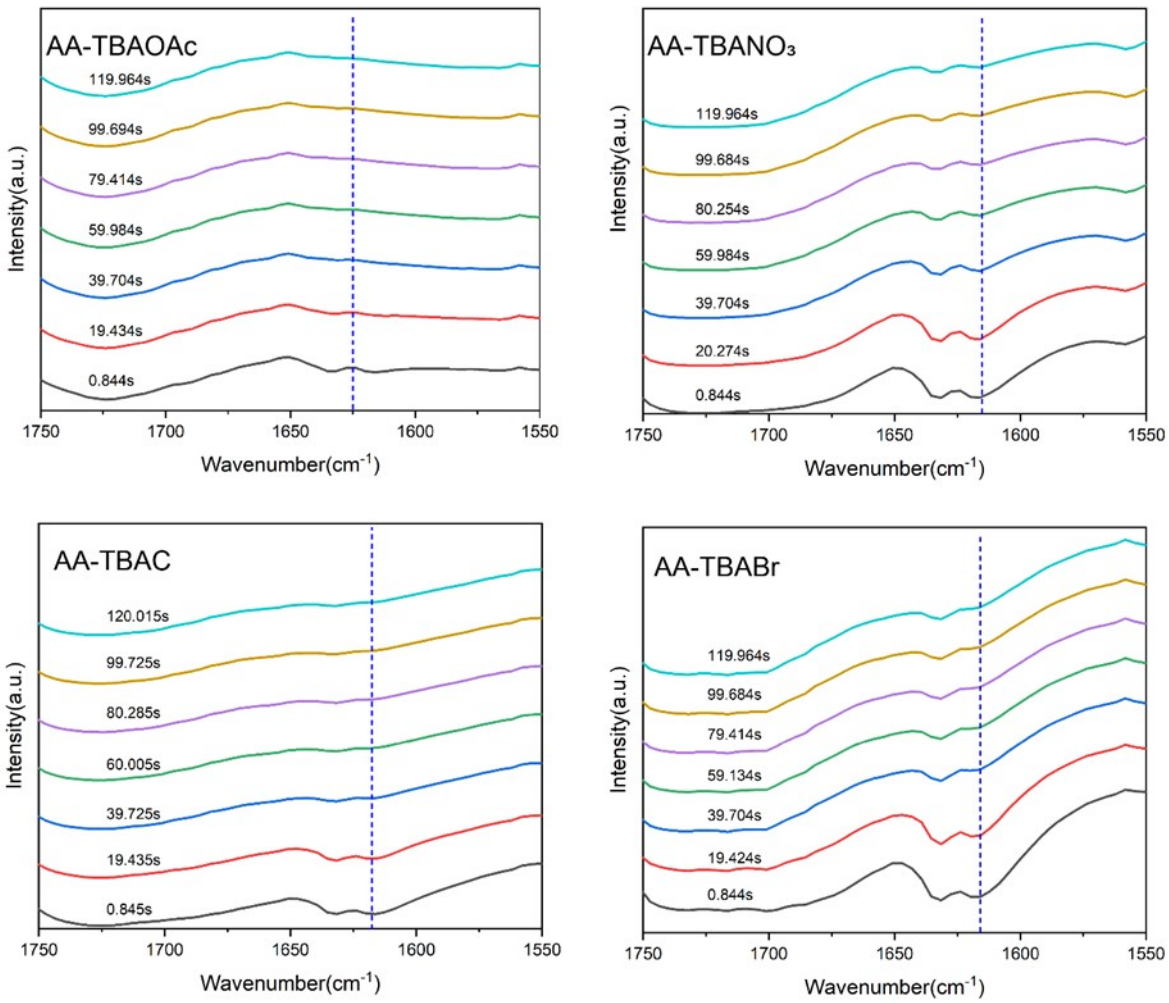


Fig. S8 Real-time infrared spectra of PDESs formed from AA and tetrabutyl quaternary ammonium salts composed of different anions

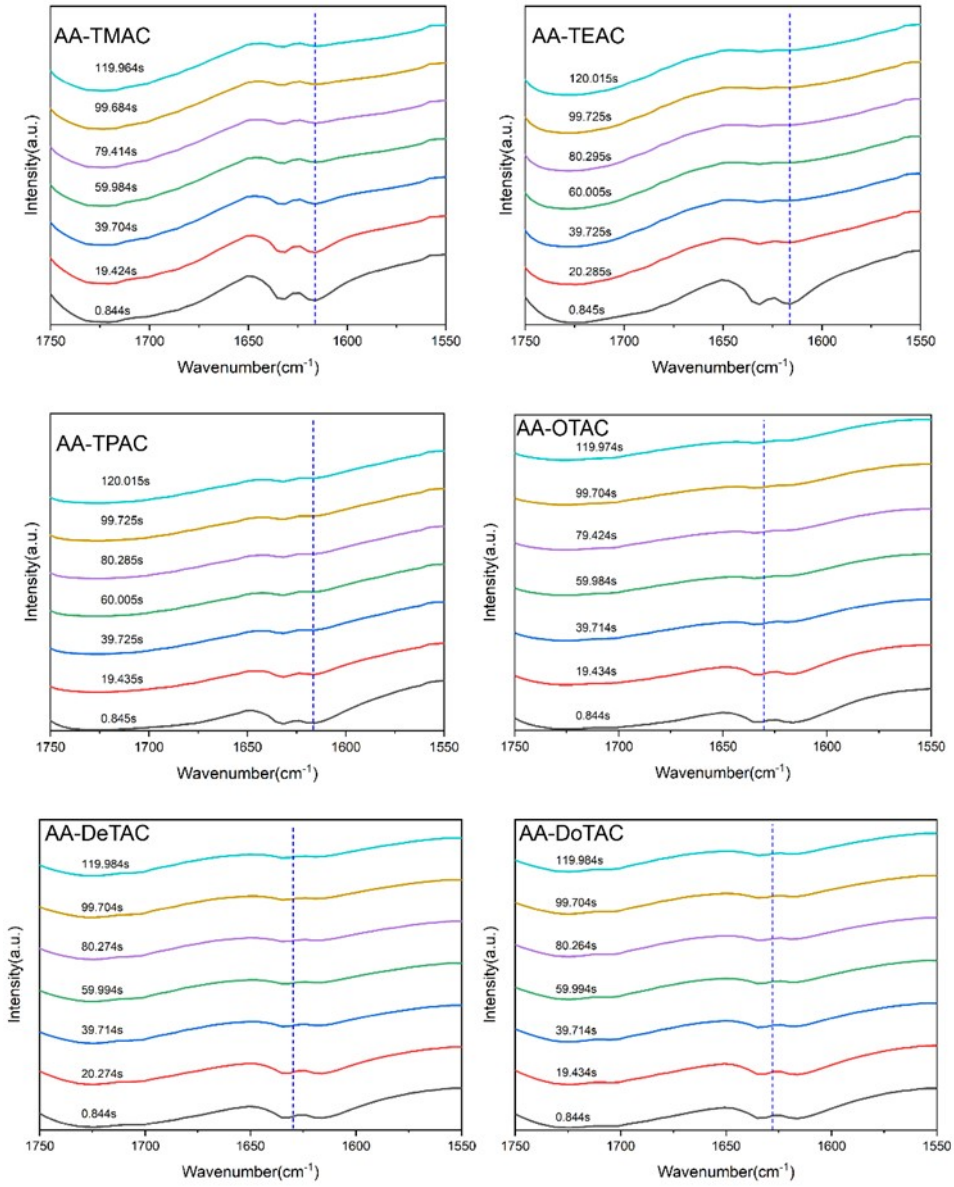


Fig. S9 Real-time infrared spectra of PDESs formed by AA and quaternary ammonium salts composed of different cations

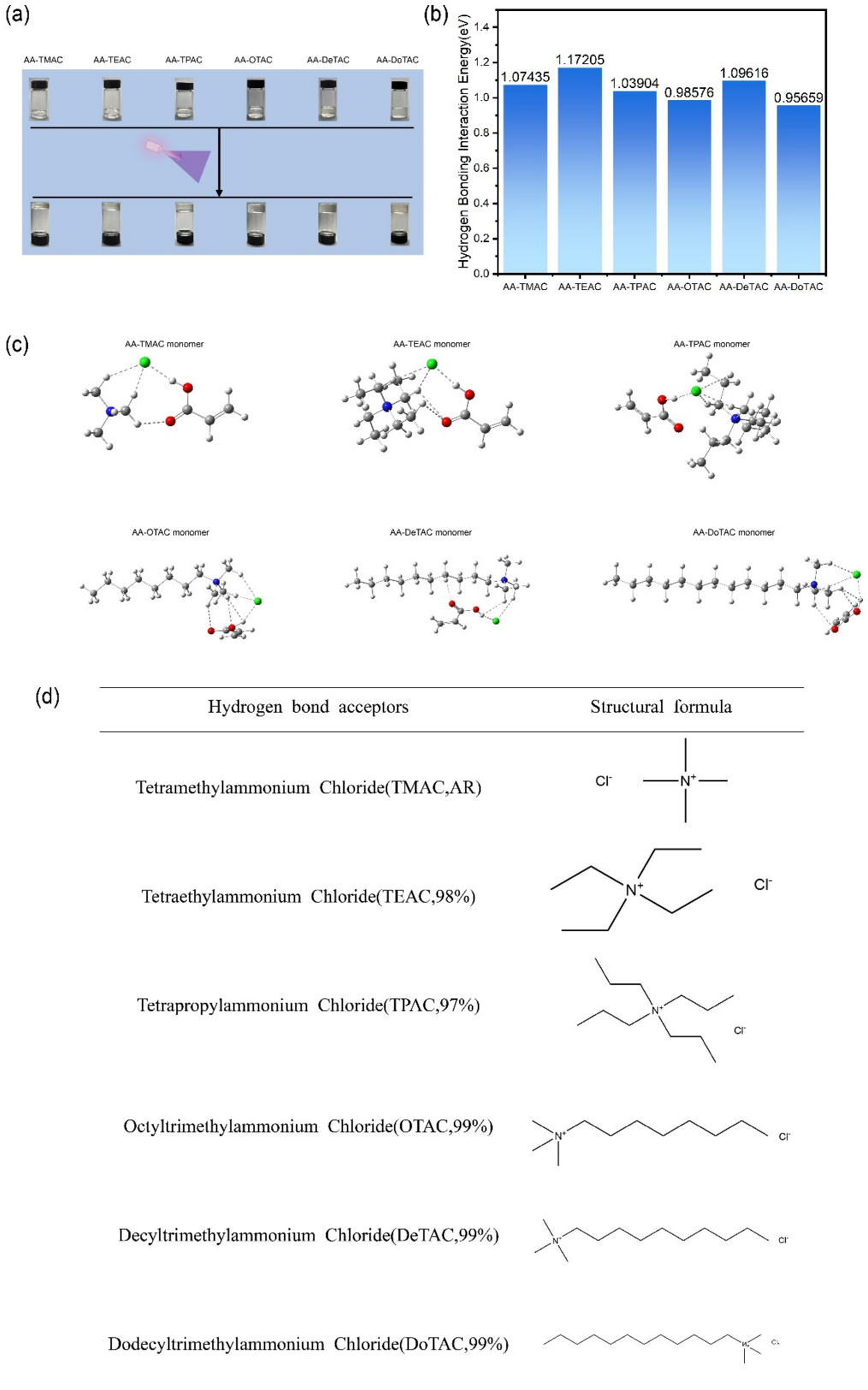
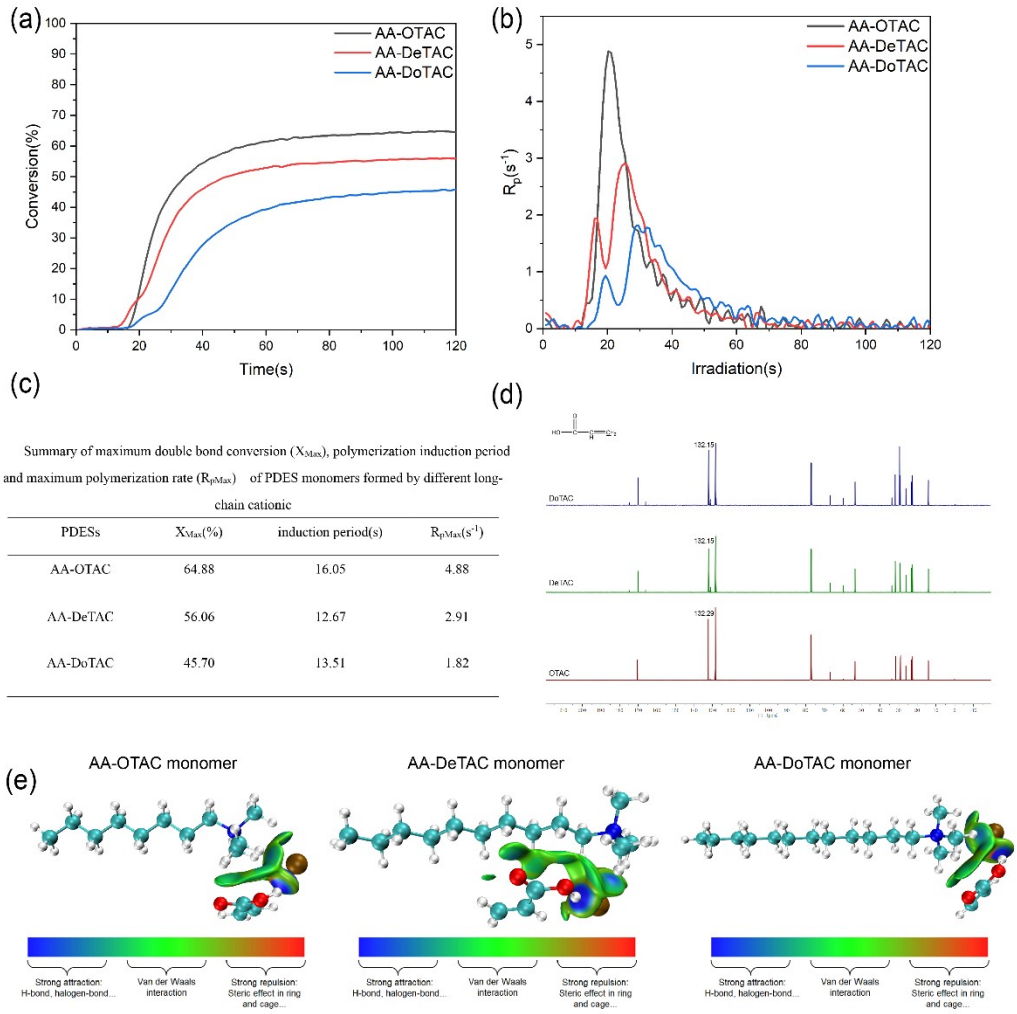


Fig. S10 Optical photographs of PDES monomers formed by different cationic quaternary ammonium salts before and after polymerization (a) Columnar statistics of hydrogen bonding interaction energies within PDES monomers (b) PDES monomers formed by hydrogen bonding of

AA with different cationic quaternary ammonium salts(c)Chemical structural formulae of hydrogen bonding acceptors (d)



Summary of maximum double bond conversion (X_{Max}), polymerization induction period and maximum polymerization rate (R_{pMax}) of PDES monomers formed by different long-chain cationic

PDESs	X_{Max}(%)	induction period(s)	$R_{pMax}(s^{-1})$
AA-OTAC	64.88	16.05	4.88
AA-DeTAC	56.06	12.67	2.91
AA-DoTAC	45.70	13.51	1.82

Fig. S11 Real-time conversion rates of double bonds (a), real-time polymerization rates (b), RT-FTIR parameters (c), ^{13}C-NMR spectra (d), and hydrogen-bonded adsorption configurations (e) of PDES monomers formed by AA with quaternary ammonium salts of different long-chain cationic (OTAC,DeTAC,DoTAC)

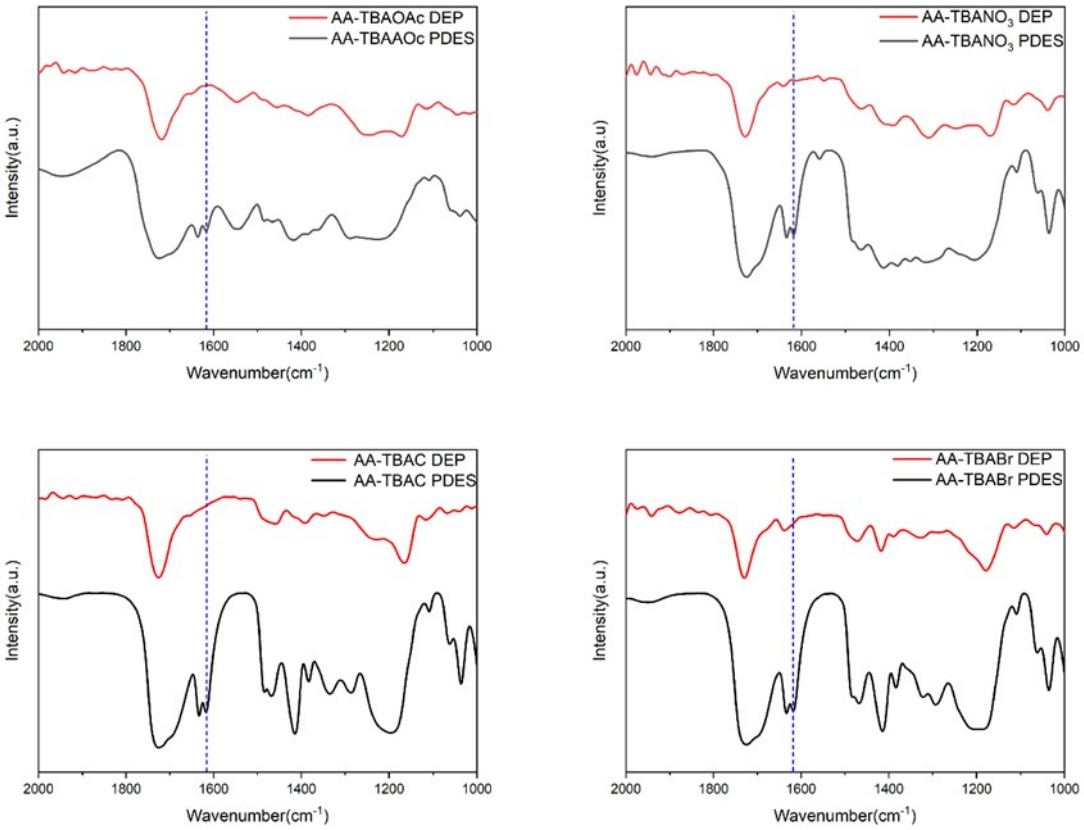


Fig. S12 Infrared spectra of different PDES systems before and after polymerization, the black line represents before polymerization, and the red line represents after polymerization

The infrared spectra of DEP films from different systems and PDES.

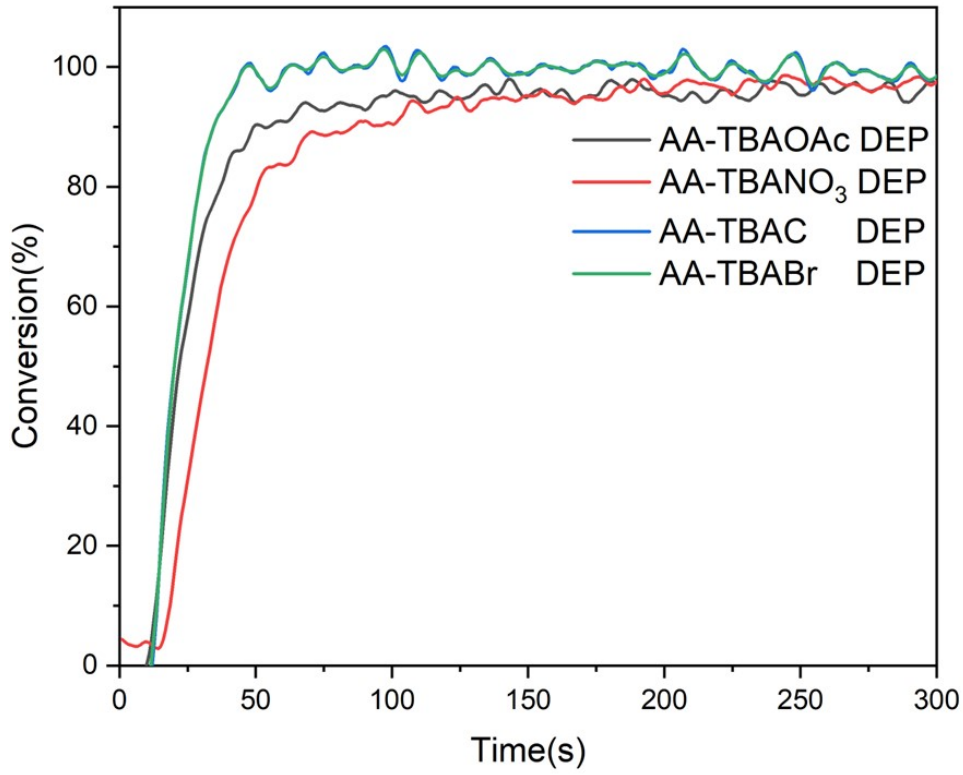


Fig. S13 The real-time conversion rate curve of C=C double bonds during the preparation of the

DEP film.

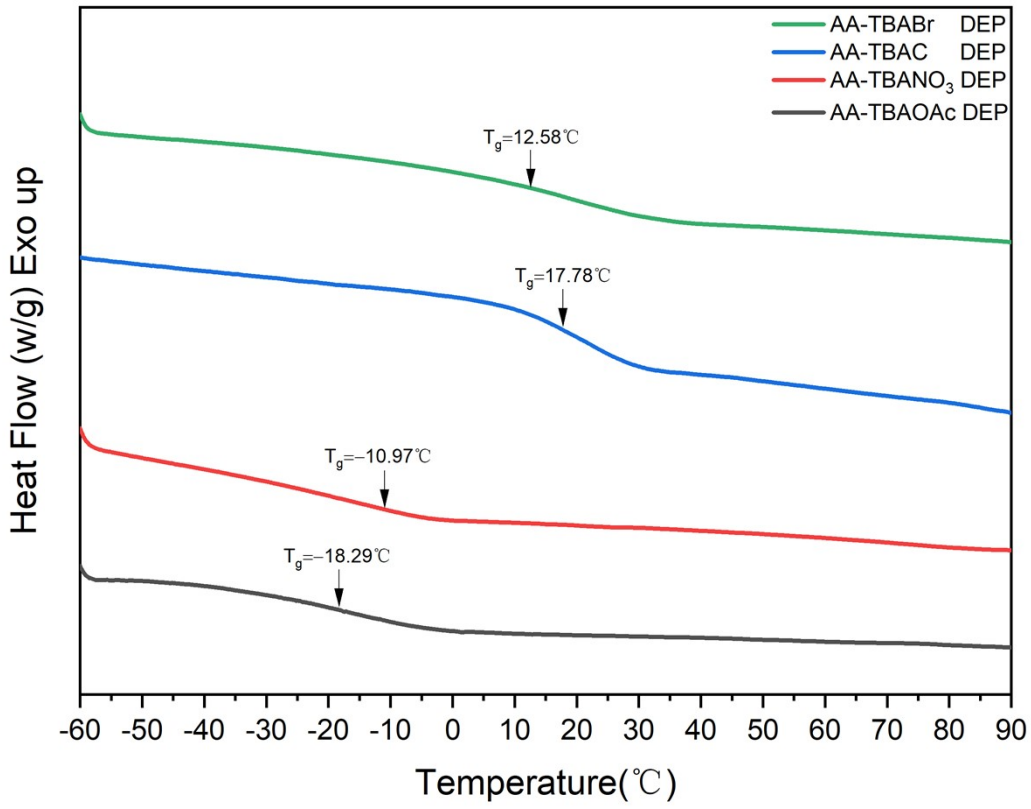


Fig. S14 Differential scanning calorimetry curves for different DEPs