Electronic Supplementary Material (ESI) for RSC Advances

Supporting Information

Synthesis of Bis(cyclic carbonate) and Propylene Carbonate via a One-pot Coupling Reaction of CO_2, Bisepoxide and Propylene Oxide

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1. **FT-IR spectra of the various bis(cyclic carbonate)s.**
2. **^{1}H NMR spectra of the various bis(cyclic carbonate)s.**
3. **^{1}H NMR spectrum of the produced PC during the one-pot mixed coupling reaction.**
4. **Photo of the produced bis(cyclic carbonate)s.**
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6. **^{1}H NMR spectra of the the various polyurethanes derived from the polyadditions of different bis(cyclic carbonate)s with 1,6-hexamethylenediamine.**
7. **GPC of the produced various polyurethanes.**

1. FT-IR spectra of the various bis(cyclic carbonate)s.

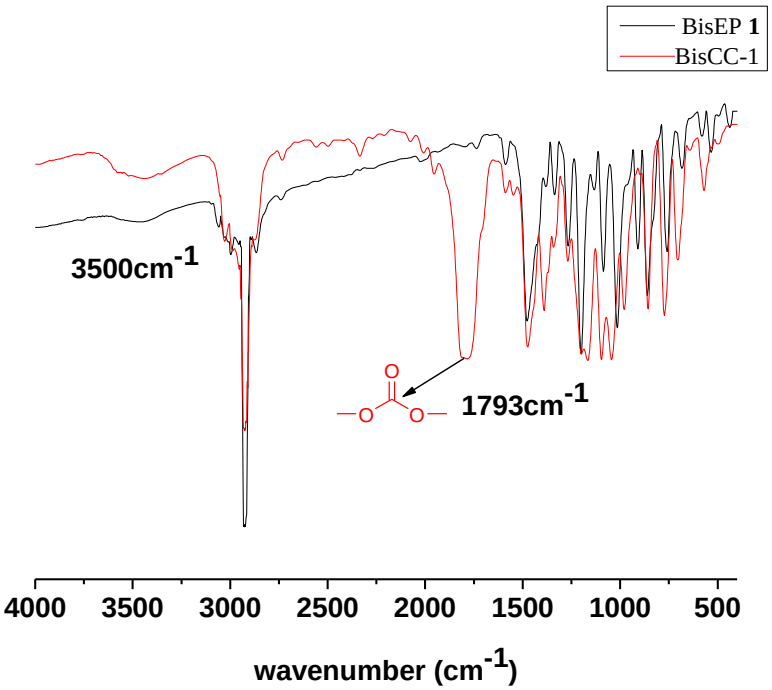

Figure S1. FT-IR spectra of the 4,4-bis(2,3-epoxypropoxy)-3,3,5,5-tetramethylbiphenyl (BisEP **1**) and BisCC-1.

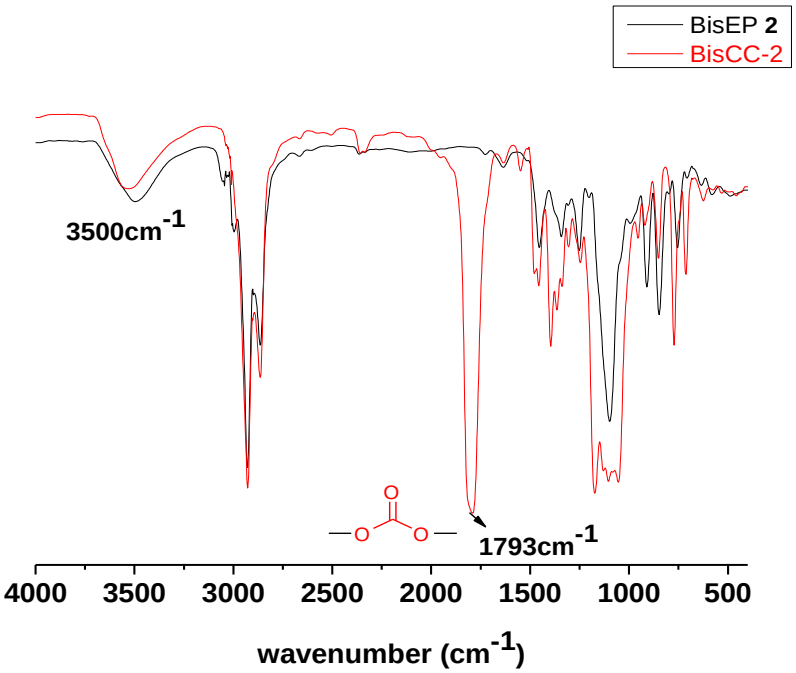

Figure S2. FT-IR spectra of the cyclohexanediol diglycidyl ether (BisEP **2**) and BisCC-2.

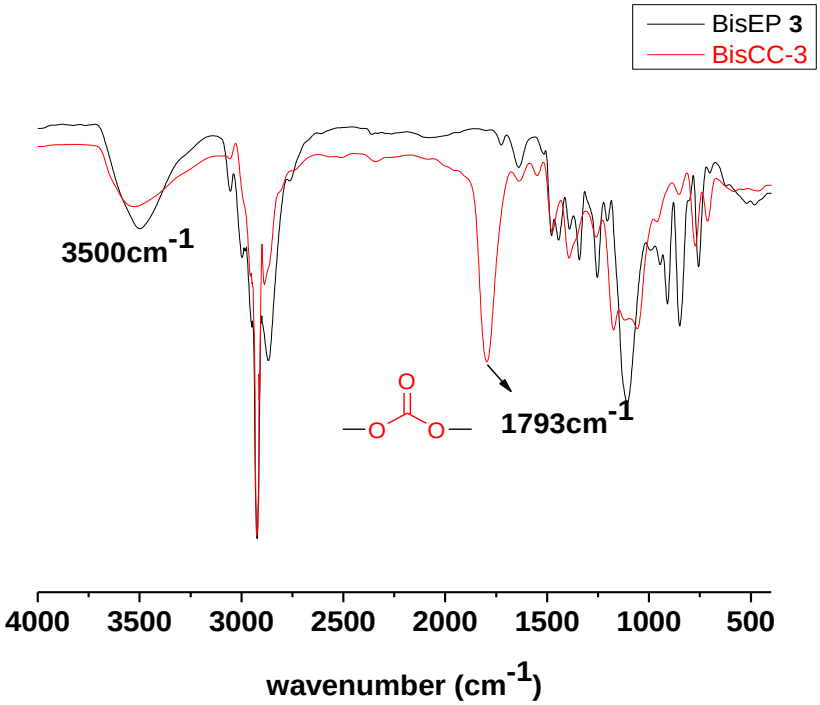

Figure S3. FT-IR spectra of the butanediol diglycidyl ether (BisEP **3**) and BisCC-3.

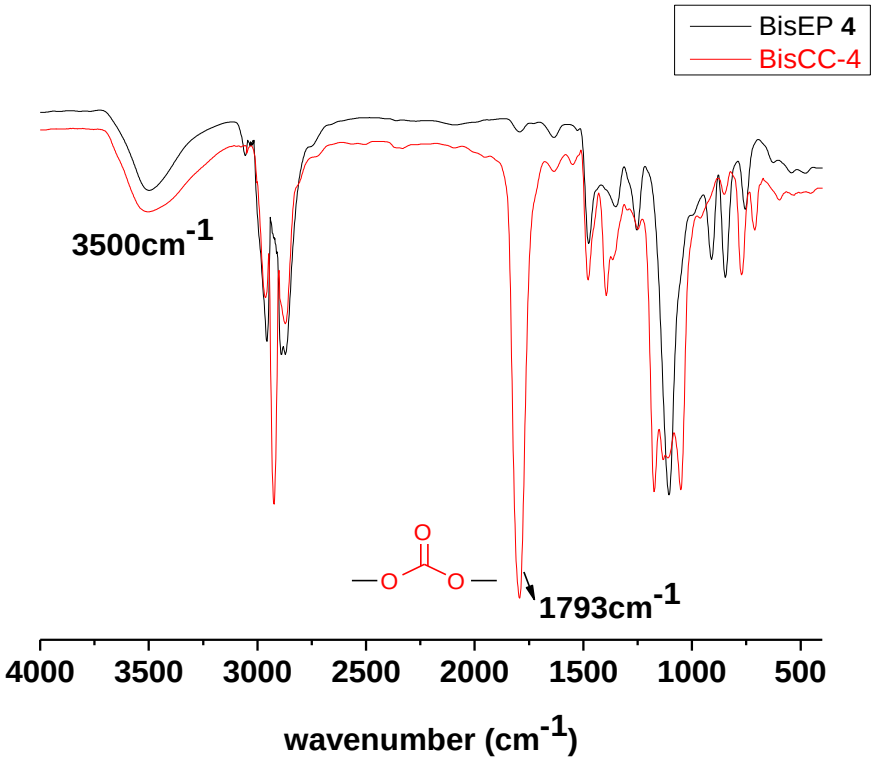

Figure S4. FT-IR spectra of the neopentyl glycol diglycidyl ether (BisEP **4**) and BisCC-4.

2. ^{1}H NMR spectra of the various bis(cyclic carbonate)s.

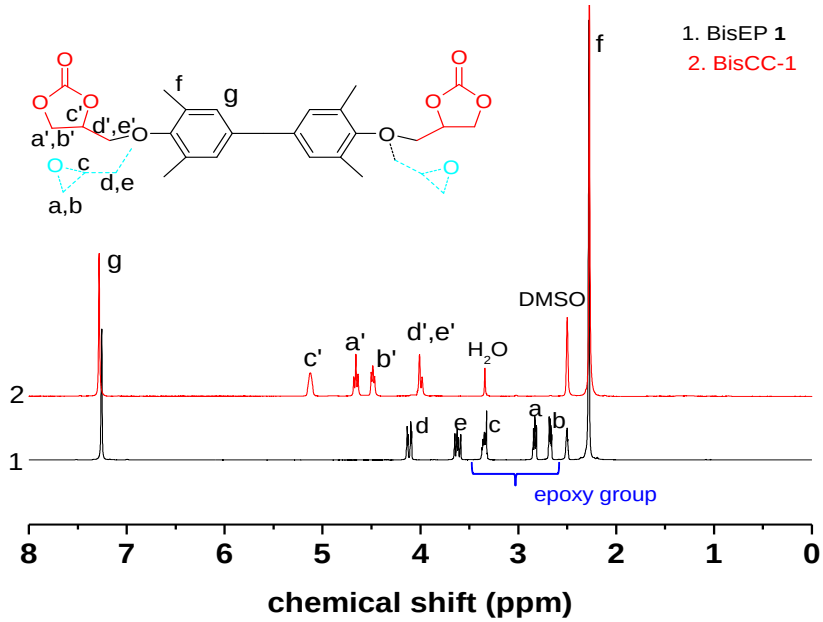

Figure S5. ^{1}H NMR spectra of the BisCC-1 (line 2) and 4,4-bis(2,3-epoxypropoxy)-3,3,5,5-tetramethylbiphenyl (BisEP **1**, line 1).

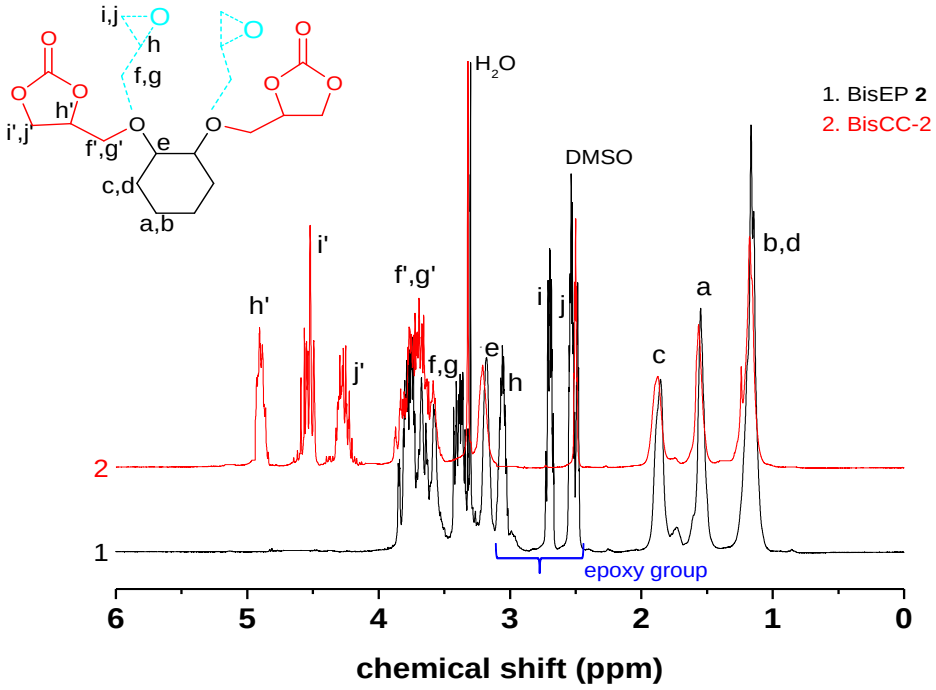

Figure S6. ^{1}H NMR spectra of the BisCC-2 (line 2) and cyclohexanediol diglycidyl ether (BisEP **2**, line 1).

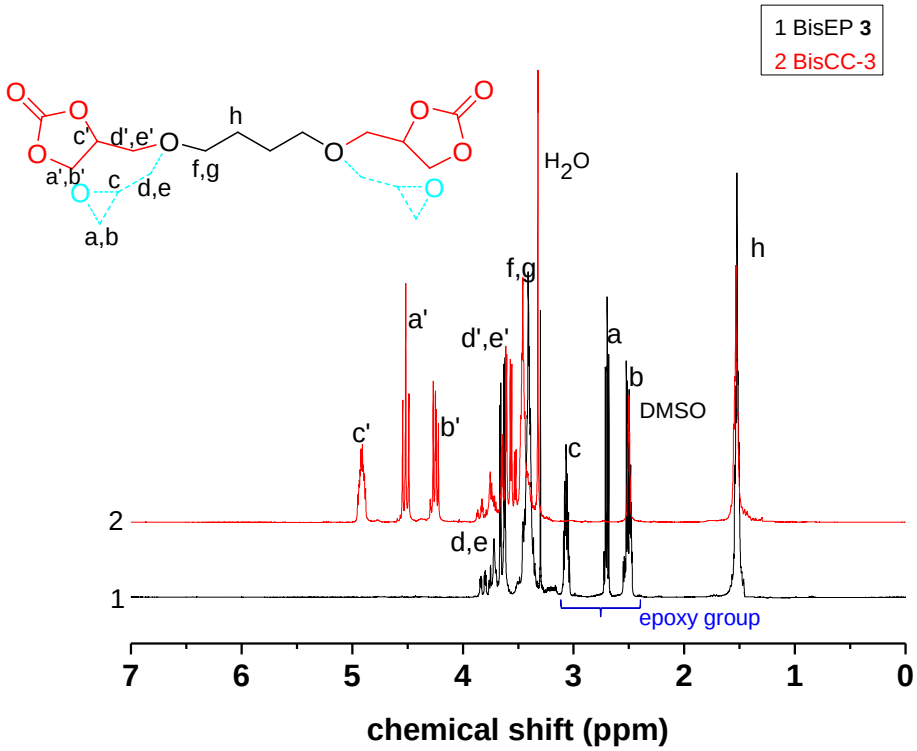

Figure S7. [1]H NMR spectra of the butanediol diglycidyl ether (BisEP **3**, line 1) and BisCC-3 (line 2).

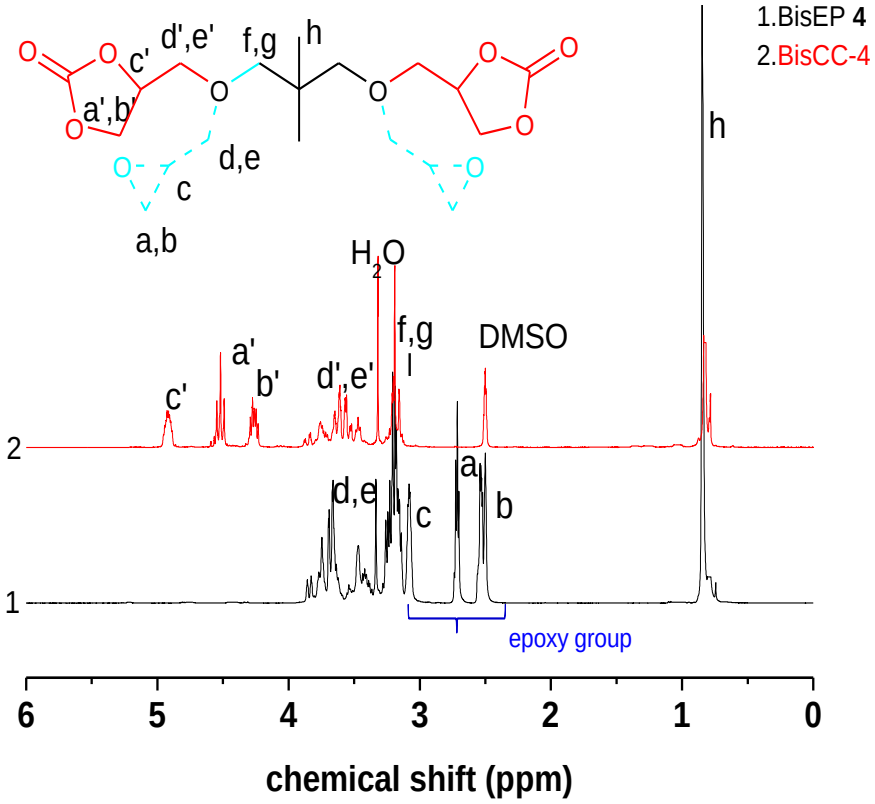

Figure S8. [1]H NMR spectra of the neopentyl glycol diglycidyl ether (BisEP **4**, line 1) and BisCC-4 (line 2).

3. Photo of the produced bis(cyclic carbonate)s.

Figure S9. Photo of the bis(cyclic carbonate)s. 1: BisAC, 2: BisCC-1, 3: BisCC-2, 4:BisCC-4, 5: BisCC-4.

4. ^{1}H NMR spectrum of the produced PC during the one-pot mixed coupling reaction of bisepoxide, PO and CO_2.

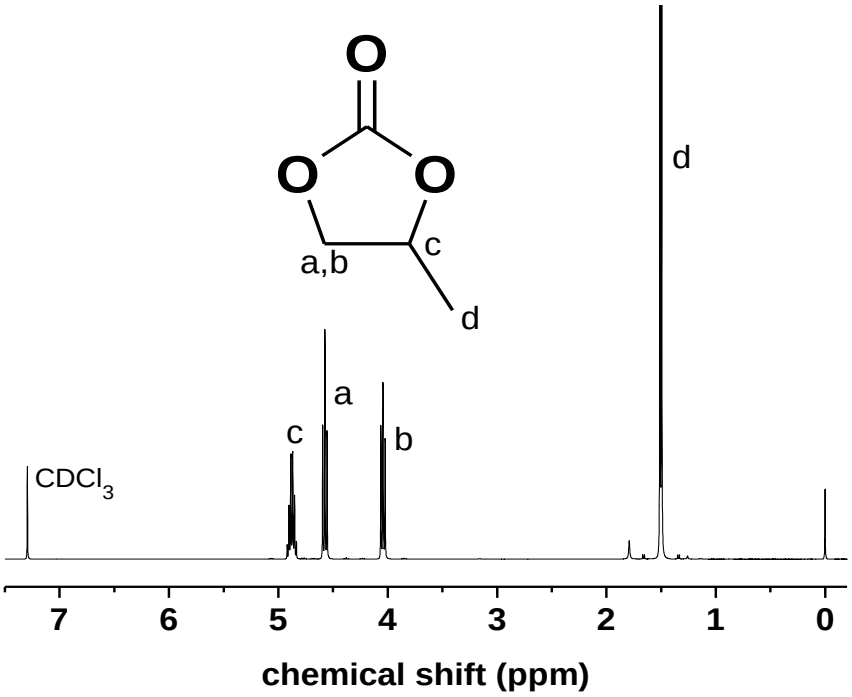

Figure S10. ^{1}H NMR spectrum of the produced PC during the one-pot mixed coupling reaction of bisepoxides, PO and CO_2.

5. FT-IR spectra of the various polyurethane derived from the polyaddition of different bis(cyclic carbonate)s and 1,6-hexamethylenediamine.

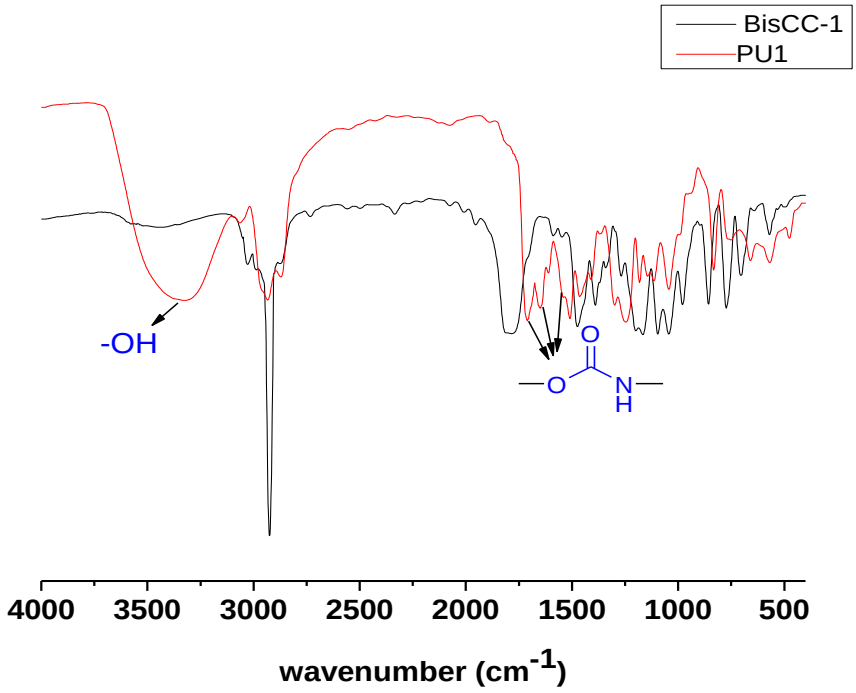

Figure S11. FT-IR spectra of the PU1 derived from BisCC-1 and 1,6-hexamethylenediamine.

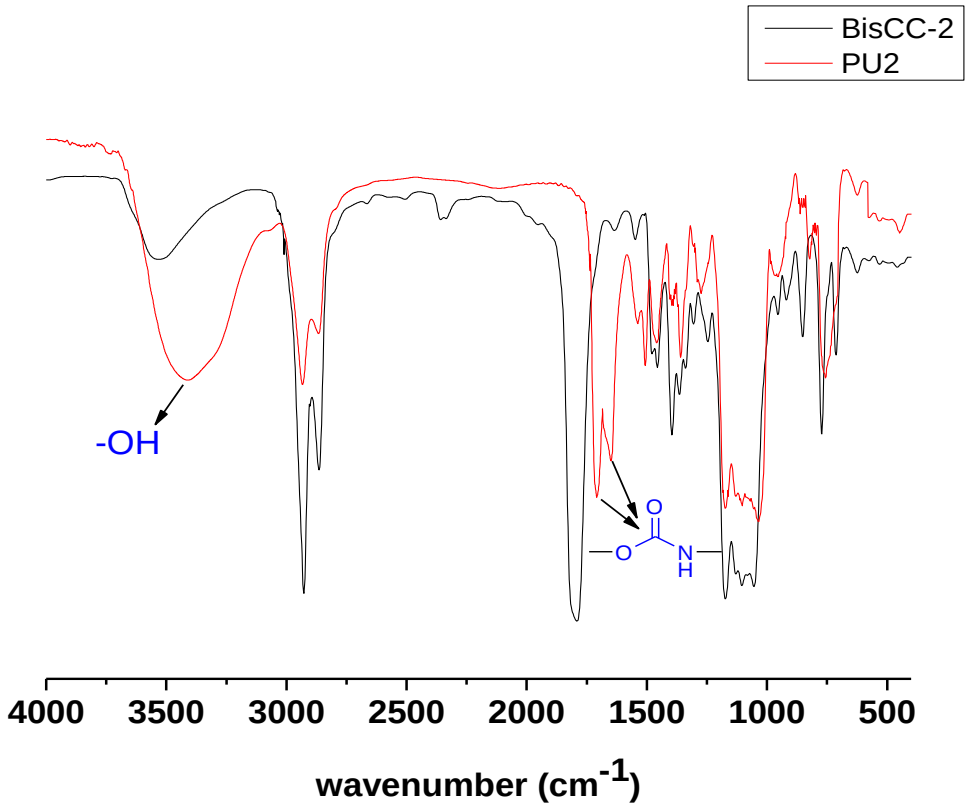

Figure S12. FT-IR spectra of the PU2 derived from BisCC-2 and 1,6-hexamethylenediamine.

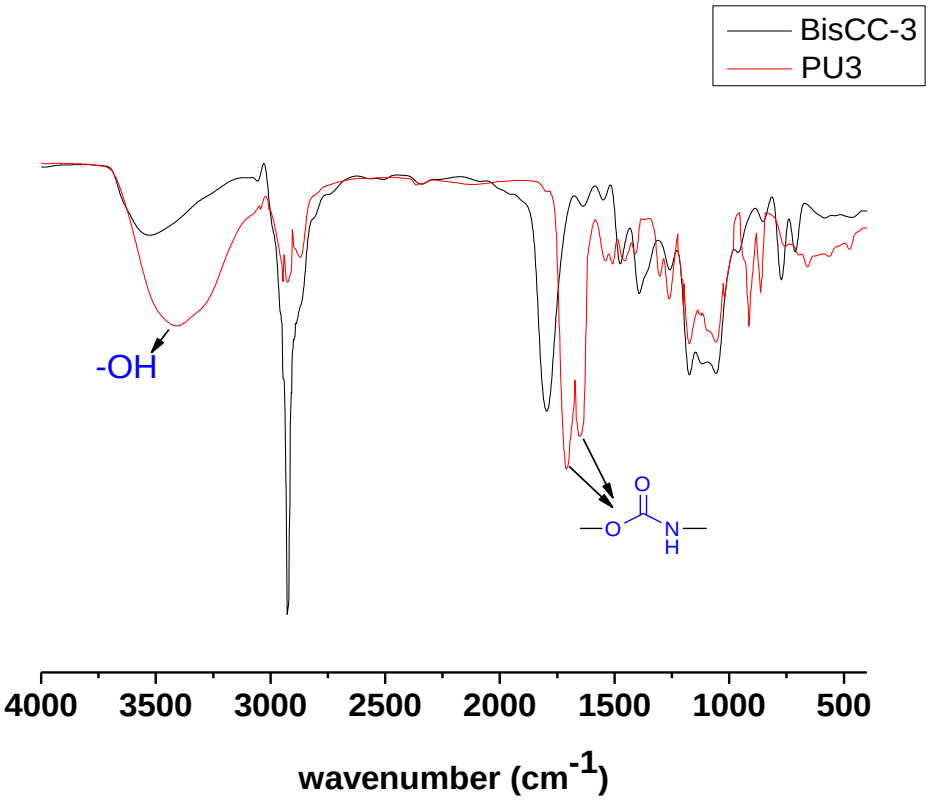

Figure S13. FT-IR spectra of the PU3 derived from BisCC-3 and 1,6-hexamethylenediamine.

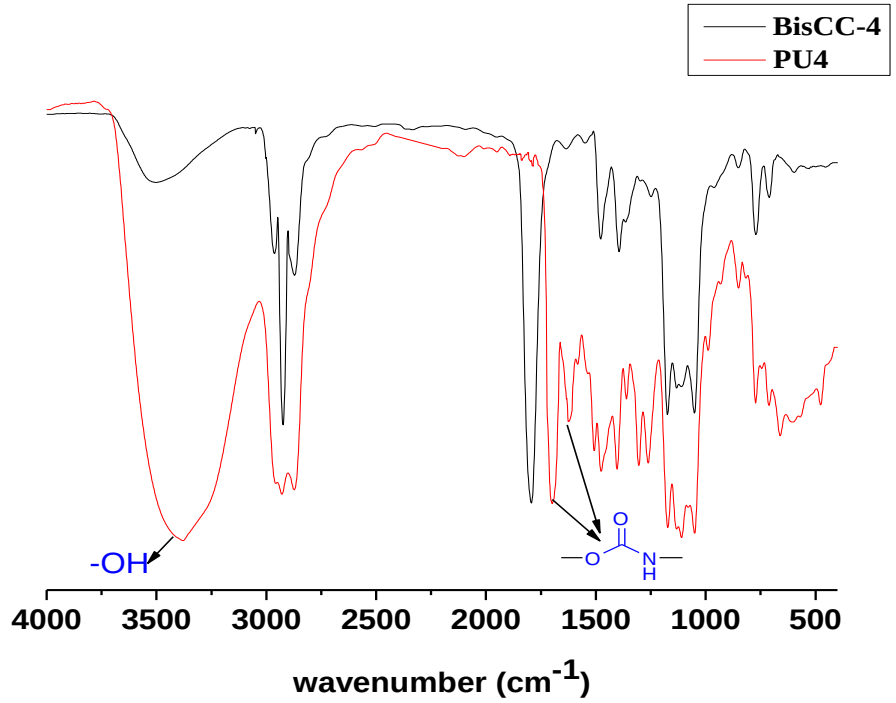

Figure S14. FT-IR spectra of the PU4 derived from BisCC-4 and 1,6-hexamethylenediamine.

6. ^{1}H NMR spectra of the various polyurethanes derived from the polyadditions of different bis(cyclic carbonate)s and 1,6-hexamethylenediamine.

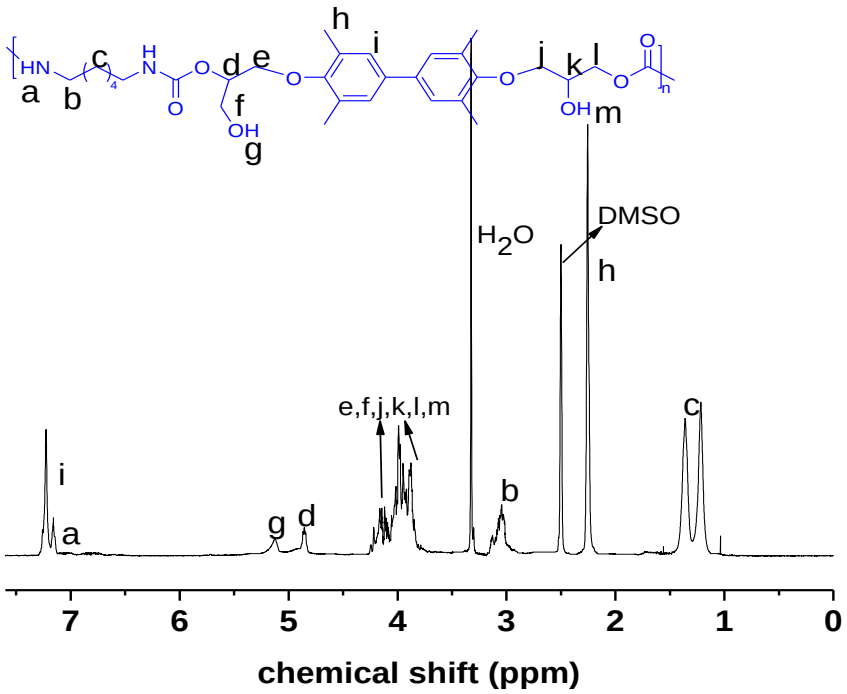

Figure S15. ^{1}H NMR spectra of the PU1 derived from BisCC-1 and 1,6-hexamethylenediamine.

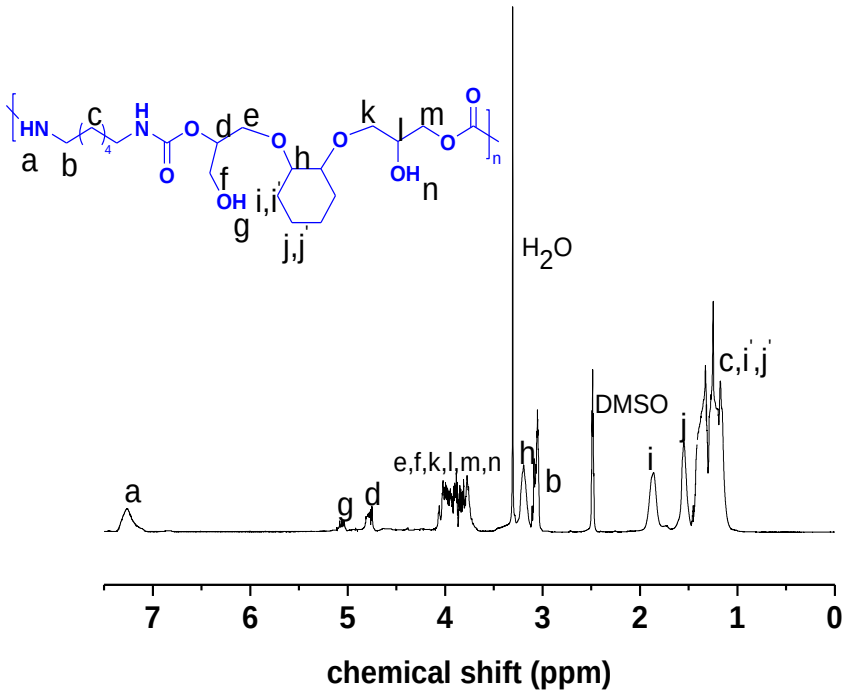

Figure S16. ^{1}H NMR spectra of the PU2 derived from BisCC-2 and 1,6-hexamethylenediamine.

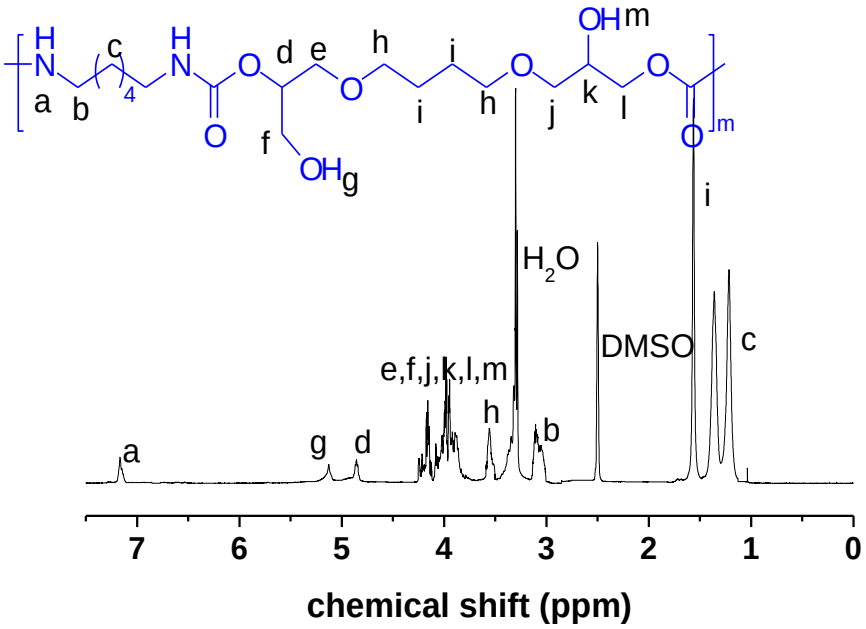

Figure S17. ^{1}HNMR spectra of the PU3 derived from BisCC-3 and 1,6-hexamethylenediamine.

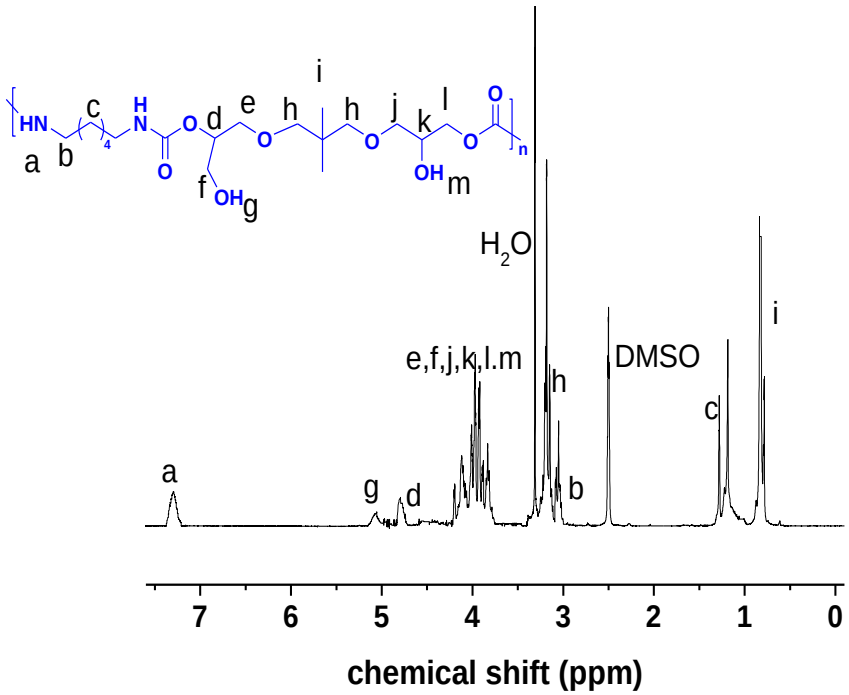

Figure S18. ^{1}H NMR spectra of the PU4 derived from BisCC-4 and 1,6-hexamethylenediamine.

7. GPC of the produced various polyurethanes.

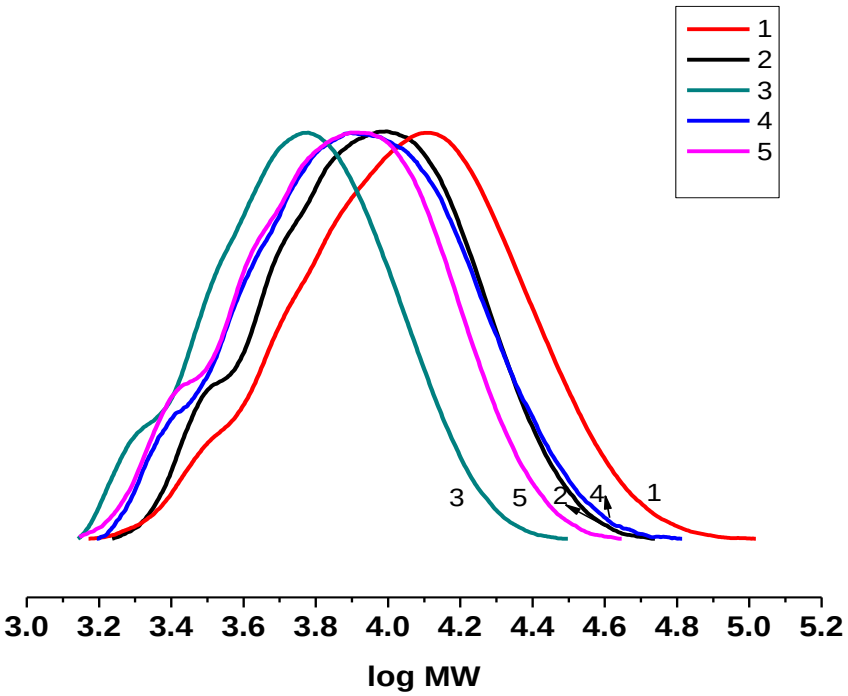

Figure S19. GPC curves of the produced PUs (line 1-5) derived from BisAC, BisCC-1, BisCC-2, BisCC-3 and BisCC-4 respectively.