Electronic Supplementary Material (ESI) for Journal of Materials Chemistry B.

Photopolymerizable and moisture-curable polyurethanes for dental adhesive applications to increase restoration durability

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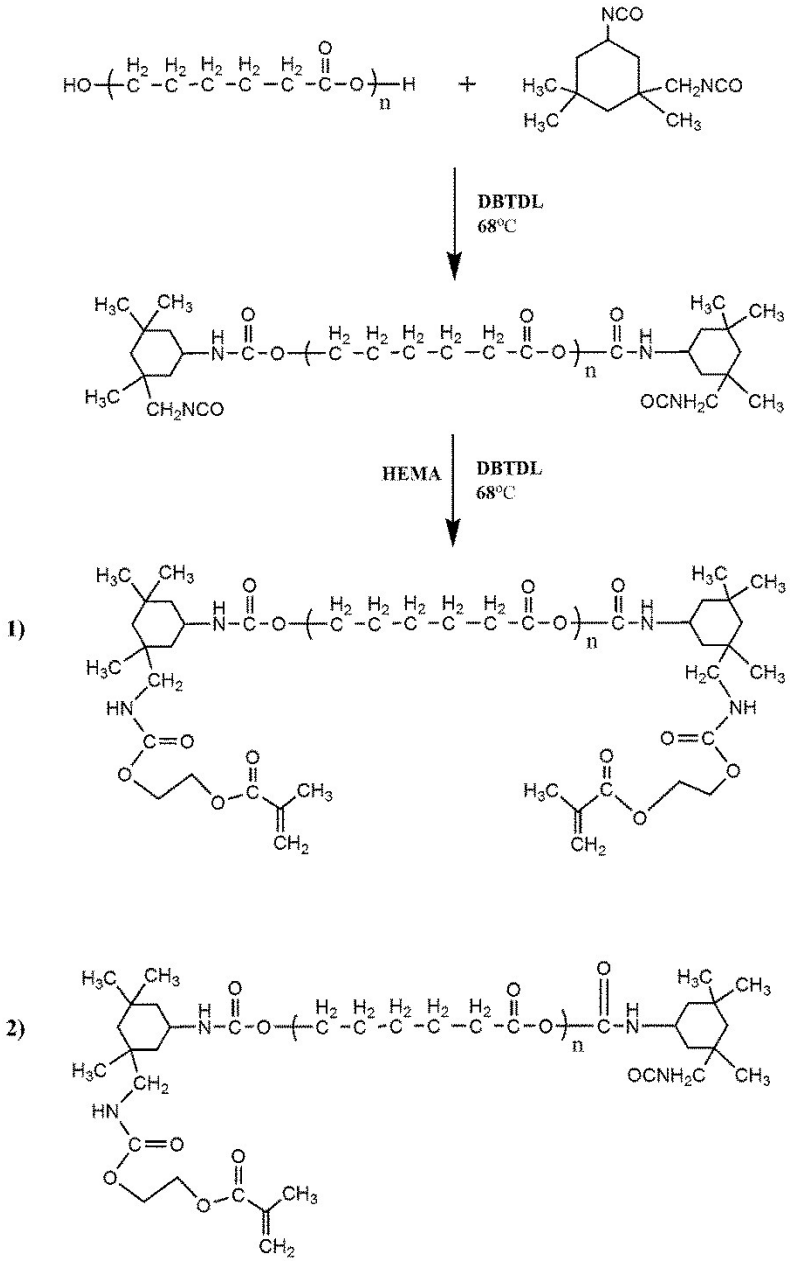
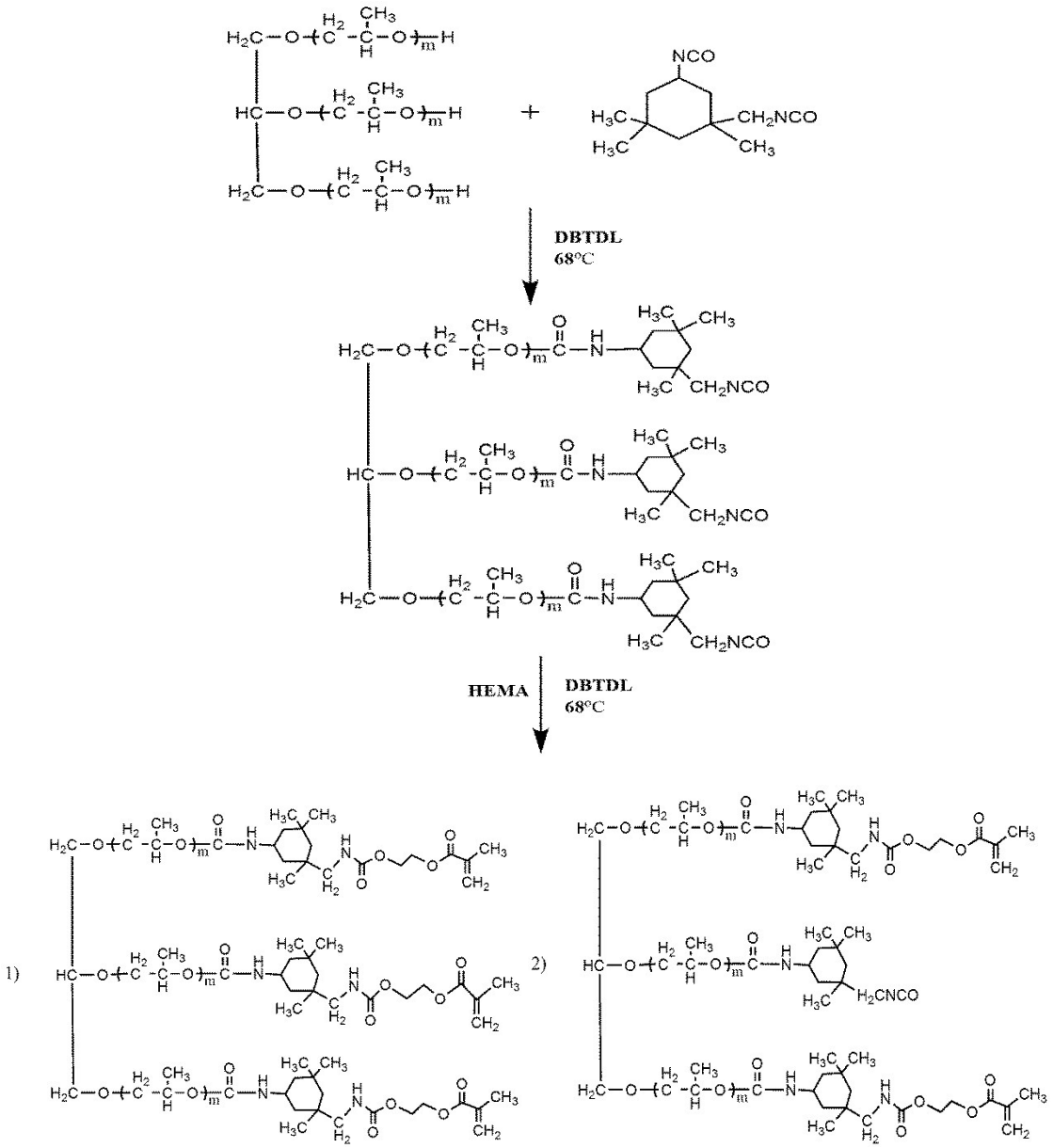
Figure 1s. The synthesis of the NCO/C=C-PU

1) Synthetic route of the obtained polyester polyurethane (PU-PCL) oligomer:



2) Synthetic route of the obtained polyether polyurethane (PU-PPO) oligomer:



3) Schematic representation of the crosslinking of PU adhesive：

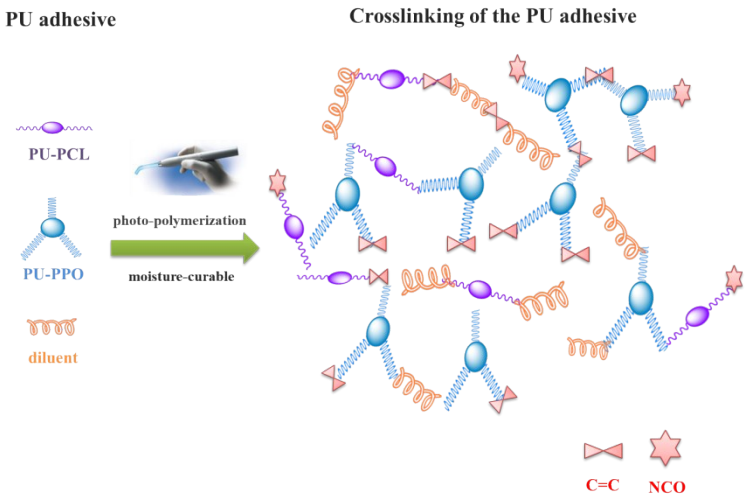
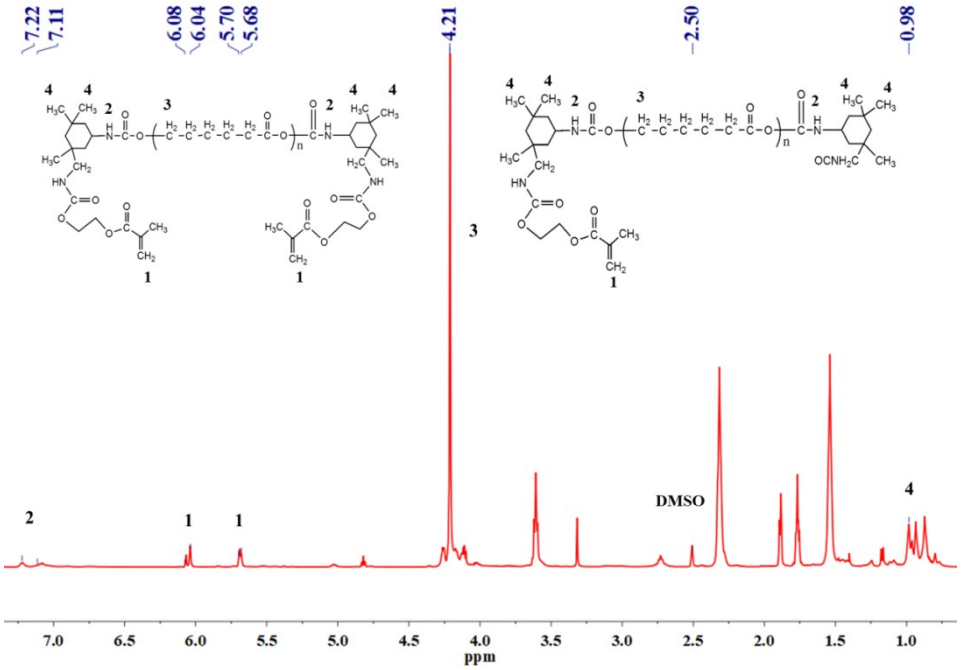
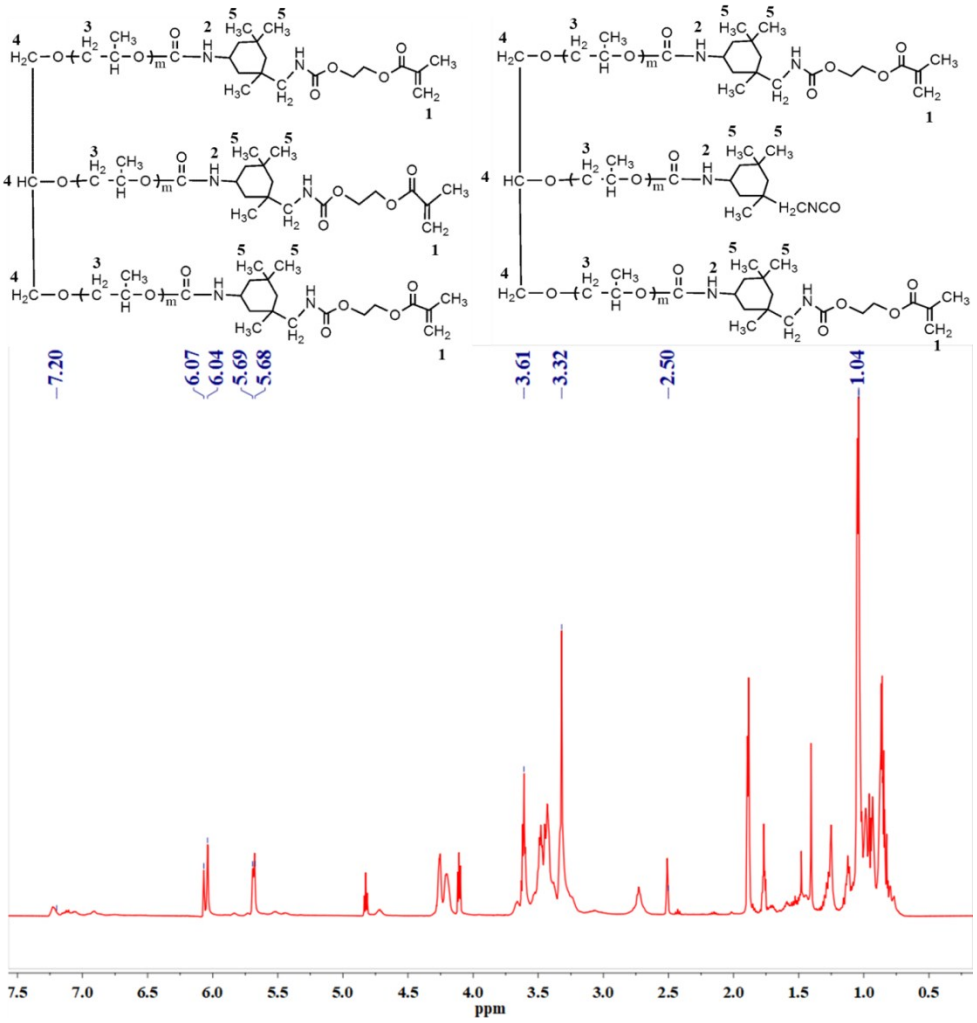


Figure 2s. ^{1}H NMR spectrum of PUs

1) ^{1}H NMR spectrum of the obtained polyester polyurethane (PU-PCL) oligomer:



2) ^{1}H NMR spectrum of the obtained polyether polyurethane (PU-PPO) oligomer:



In the Fig. 2s-1, the peak at 5.68–6.08 ppm is attributed to the H of CH_2 from the HEMA, the peak at 4.21 ppm belongs to the H of CH_2 from the Polyester polyol, the peak at 7.11-7.21 ppm corresponds to the H of N-H from the IPDI of the main chain, and the peak at 0.98 ppm can be assigned to the H of CH_3 from the IPDI.

In the Fig. 2s-2, the peak at 5.68–6.07 ppm is attributed to the H of CH_2 from the HEMA, the peak at 3.32 ppm and 3.61 ppm belong to the H of CH_2 from the polyether polyol, the peak at 7.20 ppm corresponds to the H of N-H from the IPDI of the main chain, and the peak at 1.04 ppm can be assigned to the H of CH_3 from the IPDI. Therefore, both ^1H NMR spectrum and FTIR spectra confirms that PUs has been successfully synthesized.

Figure 3s. Diagram of tensile specimen.

W—width of narrow section(6±0.5 mm), L—length of narrow section(33±0.5 mm), D—distance between grips(65±5 mm), LO—length over all(115 mm, no max), WO—width over all(19 mm).

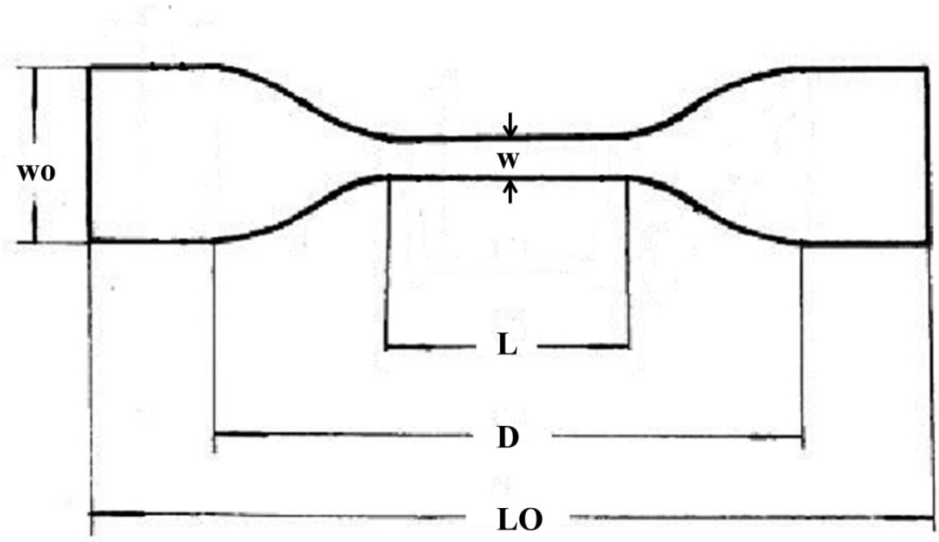


Figure 4s. Schematic representation of tooth specimen preparation for μ-TBS

Figure 5s. Microleakage in class V restorations specimen

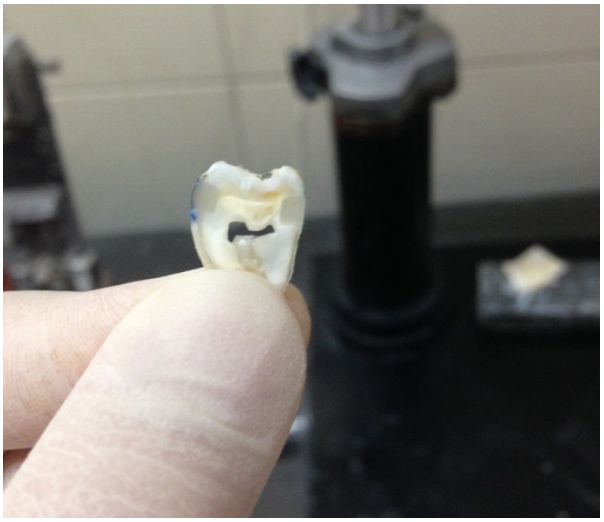


Figure 6s. Quantification numbers of live-to-dead cell staining using ImageJ software (after cell cultured for 24 h)