Electronic supplementary information for:

Design and synthesis of bio-inspired polyurethane coatings with high performance

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Figure S1: A) ATR-FTIR spectrum between 4000 to 450 cm-1 and B) 13C-NMR spectrum of functionalized catechol.



Figure S2: DSC thermogram of pristine PCL-2000 with molecular weight of 2037 g/mol.

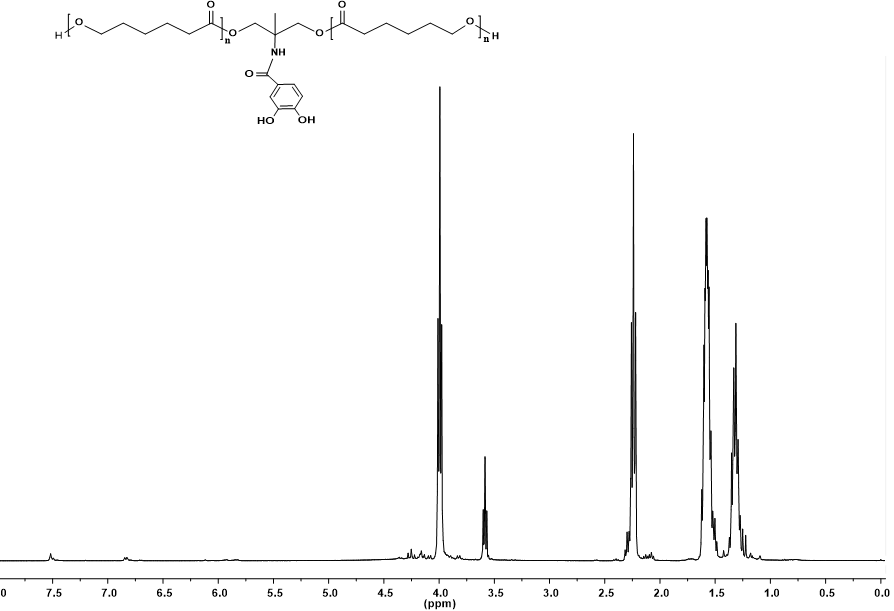


Figure S3: 1H-NMR spectrum of Poly(-caprolactone) bearing catecholic moieties (PCL-Cat).



Figure S4: a) 1H-NMR spectrum of functionalized segmented polyurethane (PU-Cat-SS 20) with catechol units within soft-segment. B) Comparison between ATR-FTIR spectra of PU-Cat-HS 20 and PU-Cat-SS 20.





Figure S5: 1H-NMR (A) and 13C-NMR (B) spectra of orthoformate protected Protocatechuic acid.





Figure S6: 1H-NMR (A) and 13C-NMR (B) spectra of protected catechol-diol in deuterated DMSO.

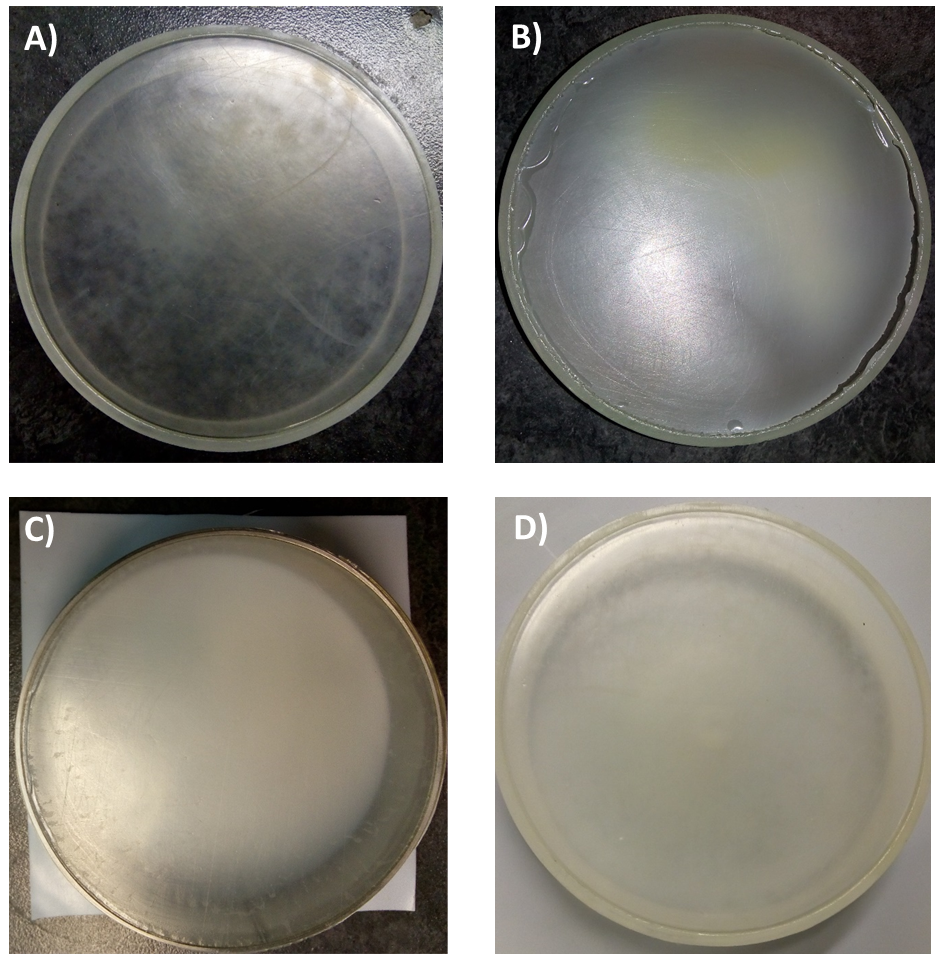


Figure S7: Pictures of studied polyurethanes. A) Pristine PU, B) PU-Cat-HS 20, C) PU-Cat-SS 20, D) PU-Catprot-HS 20

**Table S1:** Thermal degradation of polyurethanes with **Cat-Fun** as chain extender

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Sample** | **Td1 (ºC)** | **Weight loss (%)** | **Td2 (ºC)** | **Weight loss (%)** | **Residue  (%)** |
| **PU-Cat-HS 20** | 230 | 5.4 | 374 | 92.8 | 1.8 |
| **PU-Cat-HS 30** | 207 | 11.5 | 360 | 87.0 | 1.5 |
| **PU-Cat-HS 40** | 210 | 22.1 | 368 | 76.2 | 1.7 |