Supporting information

Synthesis and Characterization of Thermoresponsive Hydrogels Based on N-Isopropylacrylamide Crosslinked with 4,4'-Dihydroxybiphenyl Diacrylate

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ABSTRACT:
A novel crosslinker [4,4'-dihydroxybiphenyl diacrylate (44BDA)] was developed, and a series of temperature responsive hydrogels were synthesized through free radical polymerization of N-isopropylacrylamide (NIPAAm) with 44BDA. The temperature responsive behavior of the resulting gels was characterized by swelling studies, and the lower critical solution temperature (LCST) of the hydrogels was characterized through differential scanning calorimetry (DSC). Increased content of 44BDA led to a decreased swelling ratio and shifted the LCST to lower temperatures. These novel hydrogels also displayed resiliency through multiple swelling-deswelling cycles, with their temperature responsiveness being reversible. The successful synthesis of NIPAAm-based hydrogels crosslinked with 44BDA has led to a new class of temperature responsive hydrogel system with a variety of potential applications.

Keywords: Temperature responsive, hydrogel, crosslinking density, LCST, NIPAAm

Supporting Information Paragraph

- Supporting information shows the LC-TOF spectrum of a 4,4'-dihydroxybiphenyl partial acrylation study
- TEA:AC:4,4'-dihydroxybiphenyl was 2:2:1 instead of 3:3:1 in the full acrylation synthesis

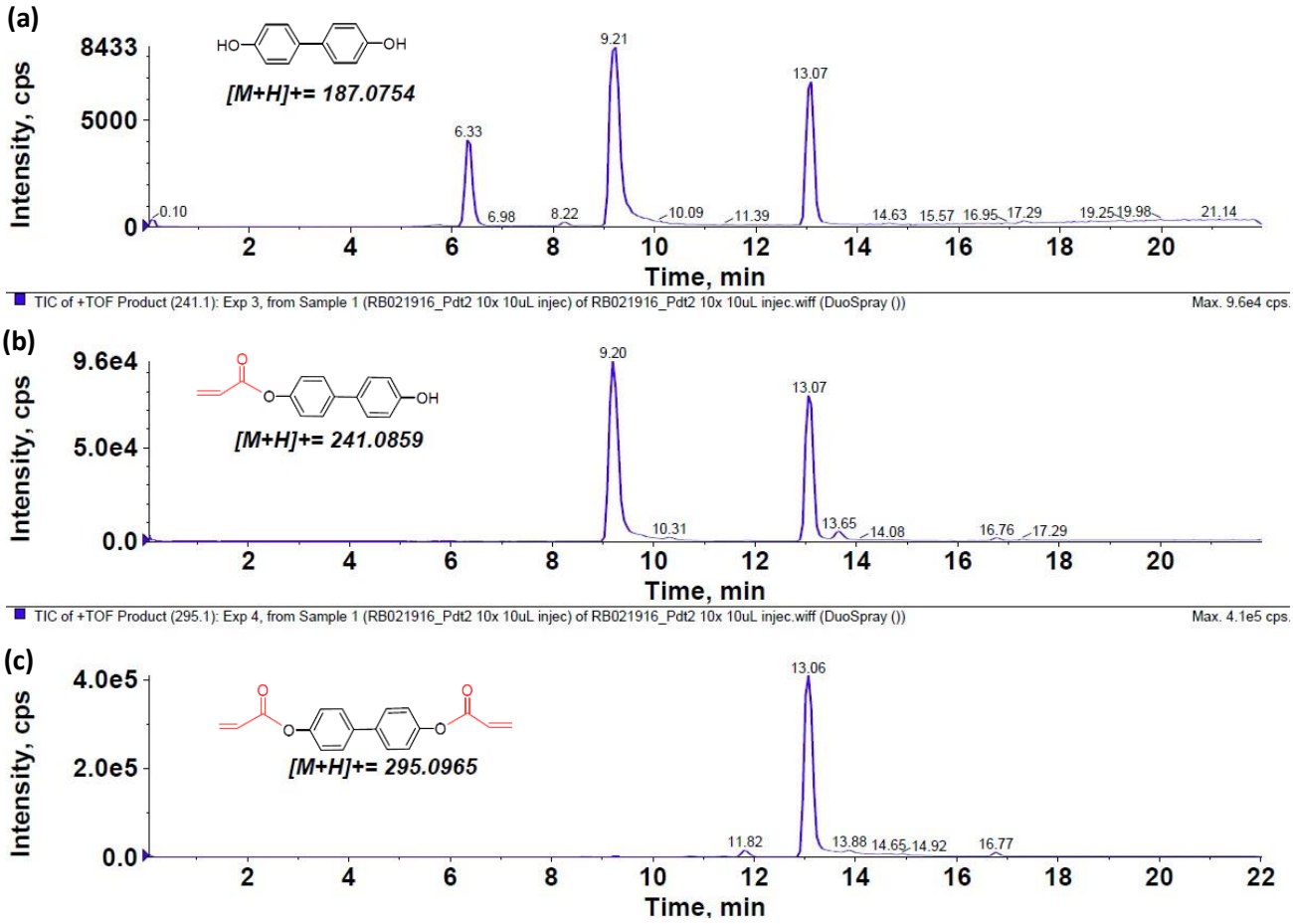

Figure S1. LC-TOF spectroscopy of 44BMA partial acrylation (**a)** 4,4'-dihydroxybiphenyl **(b)** monoacrylate and **(c)** diacrylate. The figure shows extracted ion chromatograms for the indicated species. 4,4'-dihydroxybiphenyl and its monoacrylate and diacrylate reaction products are separable by reverse phase HPLC with retention times of ~6, 9, and 13 minutes, respectively. Detection of the lower mass species at retention times corresponding to the monoacrylate and diacrylate species is presumably due to ion source fragmentation of the parent ions.