Open vessel free radical photopolymerization of double network gels for biomaterial applications using glucose oxidase

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Supporting information

$^1$H NMR

Proton Nuclear Magnetic Resonance Spectroscopy ($^1$H NMR): A 400-MHz Avance Bruker spectrometer instrument was used to acquire the $^1$HNMR spectra of the photopolymers in D2O. $^1$H NMR samples for kinetics were taken at the 0 min time point and 1, 2, 5, 10, 20, 40, 50, 60, 70 and 90 min time points. Figure 1 and 2 shows PAAm and PAMPS at full conversions using 1 wt % and 0.1 wt % PI, respectively. Conversion was calculated using trioxane as a reference peak. The area under the monomer peaks were calculated relative to the area under trioxane which was set to 1. This was done for both 0 min and 90 min time points, as well as all time point in between for the kinetics study. Final conversions for each were calculated as:

Equation 1: 

\[
\frac{(M_m - M_p)}{M_m} \times 100\% = PC\%
\]

Where Mm is the area under the monomer peak at time 0 and Mp is the area under the monomer peak at the specific polymer time point.
Figure 1 – $^1$H NMR spectra of PAAm showing full conversion with in the presence of GOX, using 1 wt % PI
Figure 2 – $^1$H NMR spectra of PAMPS showing full conversion with in the presence of GOX, using 0.5 wt % PI