Electronic Supplementary Material

Design of an n-type, low glass transition temperature radical polymer

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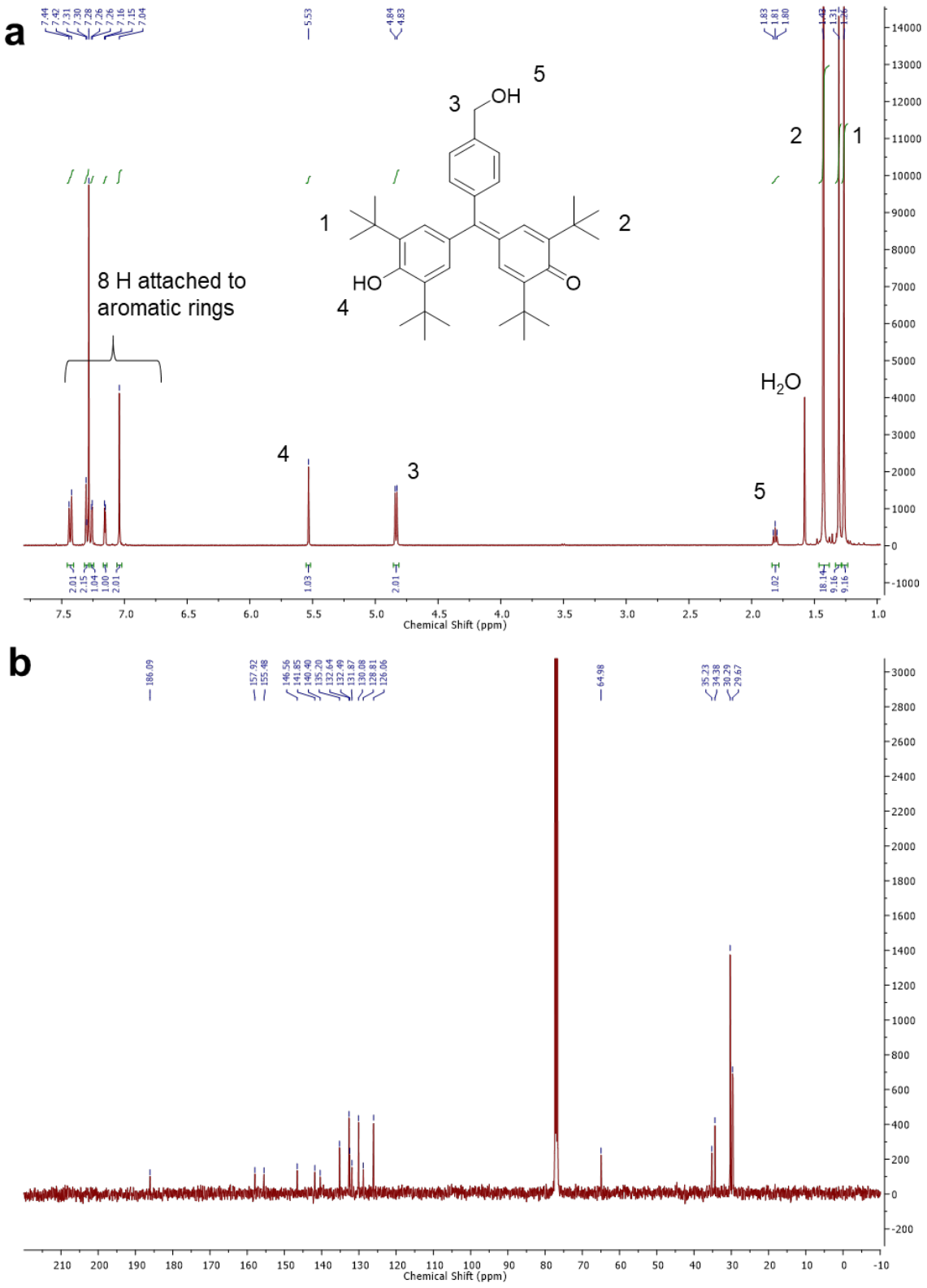

Figure S1. (a) ^{1}H NMR and (b) ^{13}C NMR spectra of 2,6-di-tert-butyl-4-((3,5-di-tert-butyl-4-hydroxyphenyl)(4-(hydroxymethyl) phenyl)methylene)cyclohexa-2,5-dien-1-one (**5**).

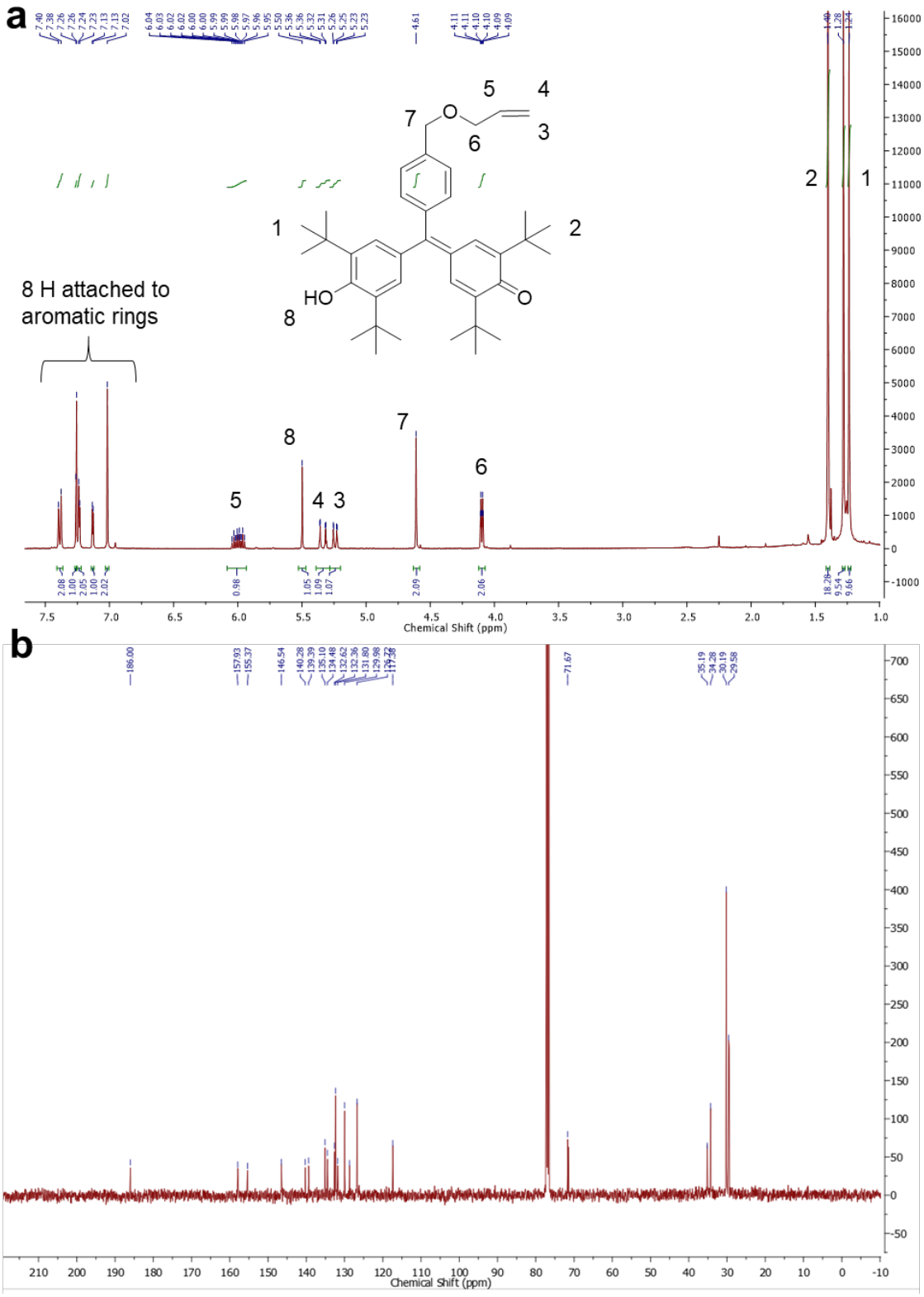

Figure S2. (a) ^{1}H NMR and (b) ^{13}C NMR spectra of 4-((4-((allyloxy)methyl)phenyl)(3,5-di-tert-butyl-4-hydroxyphenyl)methylene)-2,6-di-tert-butylcyclohexa-2,5-dien-1-one (**6**).

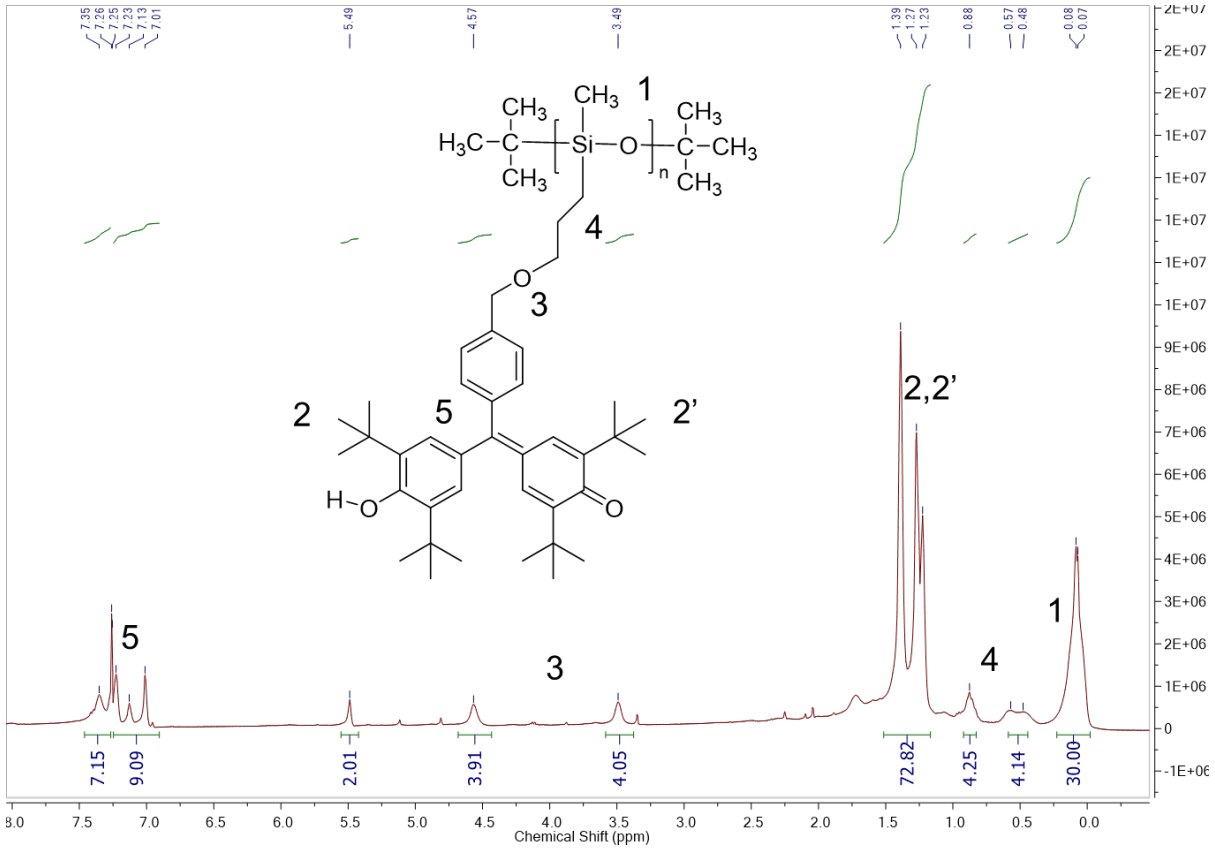

Figure S3. ^{1}H NMR spectrum of quenched PGMS (PGMS-H) in $CDCl_3$. PGMS was converted to PGMS-H by stirring with a 0.1 M HCl in methanol solution.

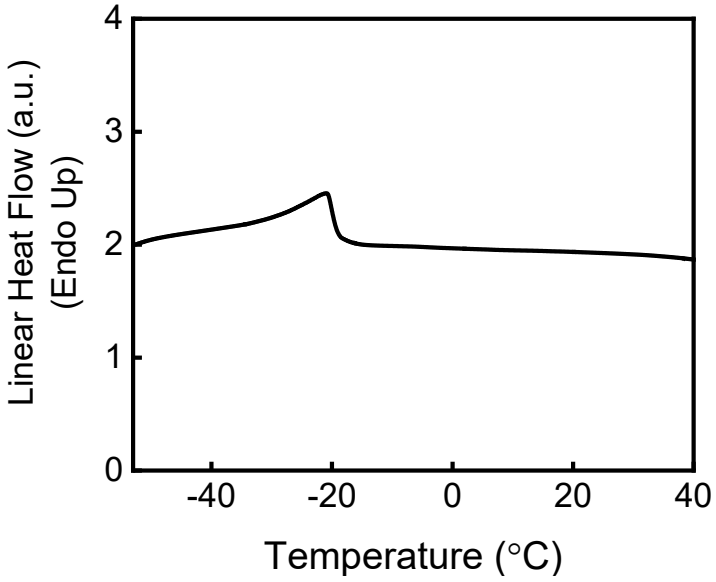

Figure S4. Second heating DSC trace of the PGMS-4 polymer. These data were acquired at a scan rate of 10 °C min^{-1}.

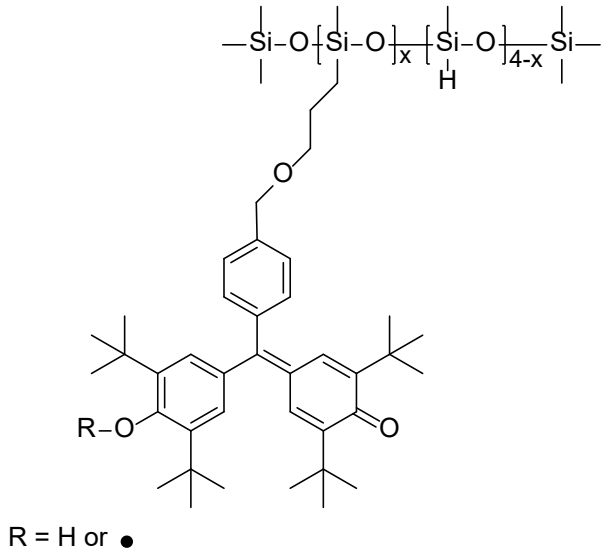

Figure S5. The molecular structure of PGMS-4. The radical content (r_{PGMS}) was calculated by using the following equation.

$$r_{PGMS} = f\,\frac{I_{PGMS}}{I_S} \times \frac{n_S}{n_{PGMS}} \times\ 100\% \qquad \text{(Equation S1)}$$

Here, I_{PGMS} and I_S are the EPR spectroscopy resonance intensity for PGMS and small galvinoxyl standard, respectively. Similarly, n_{PGMS} and n_s are the moles of PGMS and the small molecule standard that were loaded in the instrument. f ($f = x/4$ for PGMS-4) is the fraction of sites that have a galvinoxyl precursor unit present (i.e., the fraction of sites that have successfully undergone the coupling reaction to the polysiloxane backbone).

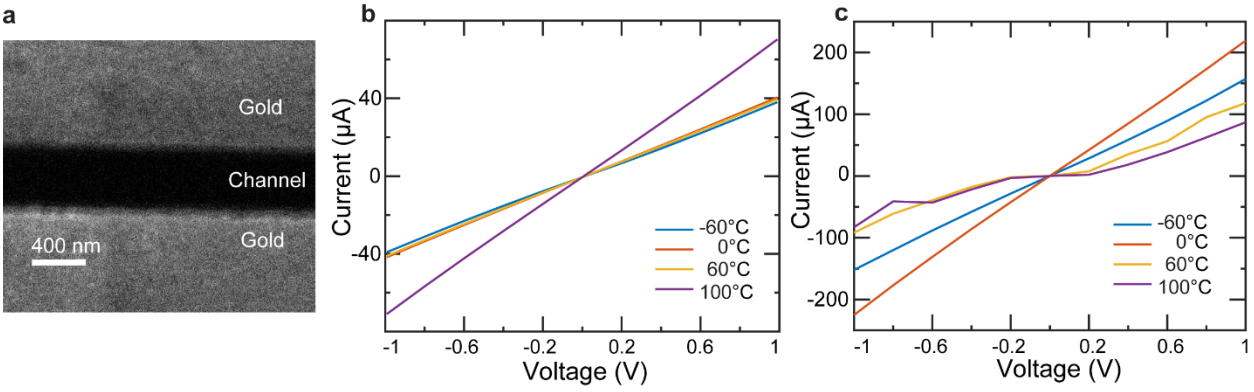

Figure S6. (a) A scanning electron microscopy (SEM) image of a device channel prior to coating the PGMS polymer. The image shows the two gold contacts and the insulating substrate on which the polymer was cast. Current-voltage (I-V) curves of (b) PGMS-4-13 and (c) PGMS-4-36 at different temperatures.