Electronic Supplementary Material (ESI) for Polymer Chemistry
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Poly(4-Dodecylstyrene) as a Phase-Selectively Soluble Polymer Support in Homogeneous Catalysis

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Supporting Information

Phase Selective Solubility of Copolymers 5 and 6. Copolymers **5** (M_n = 32000 Da, PDI = 2.22, with the loading of the dansyl groups = 0.32 mmol/g) and **6** (M_n= 22000 Da, PDI = 2.86, with the loading of dansyl groups = 0.46 mmol/g) were each dissolved in 10 mL of heptane (10mL) and their solutions were diluted by 1000-fold and the fluorescence (λ_{EX} = 355 nm, λ_{EM} = 500 nm) of the resulting solutions were measured. These heptane solutions were then used to prepare a calibration curve that was use to determine the concentration of dansyl fluorophore-labeled **5** or **6** in acetonitrile phases from original polymer containing heptane solutions that had were 1.4 mN and 1.3 mN. Four consecutive washings of polymer containing heptane phase with acetonitrile phase were performed for each of the poly(4-alkylstyrene) copolymers. Fluorescence spectra of acetonitrile solutions of polymers **5** and **6** are shown in Figure 1.

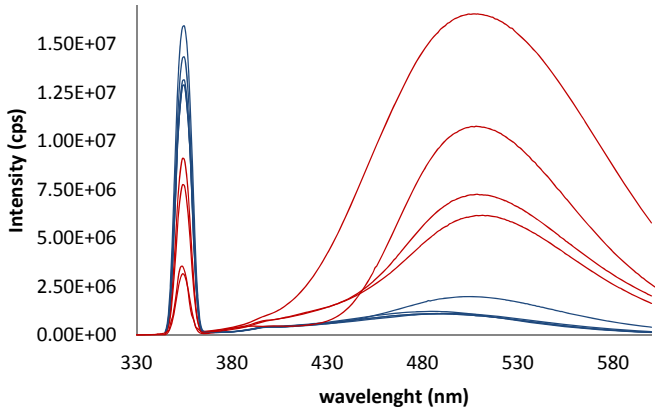

Figure 1. Fluorescence spectra of acetonitrile solutions for poly(4-dodecylstyrene) copolymer **5** blue and for poly(4-tert-butylstyrene) copolymer **6** red.

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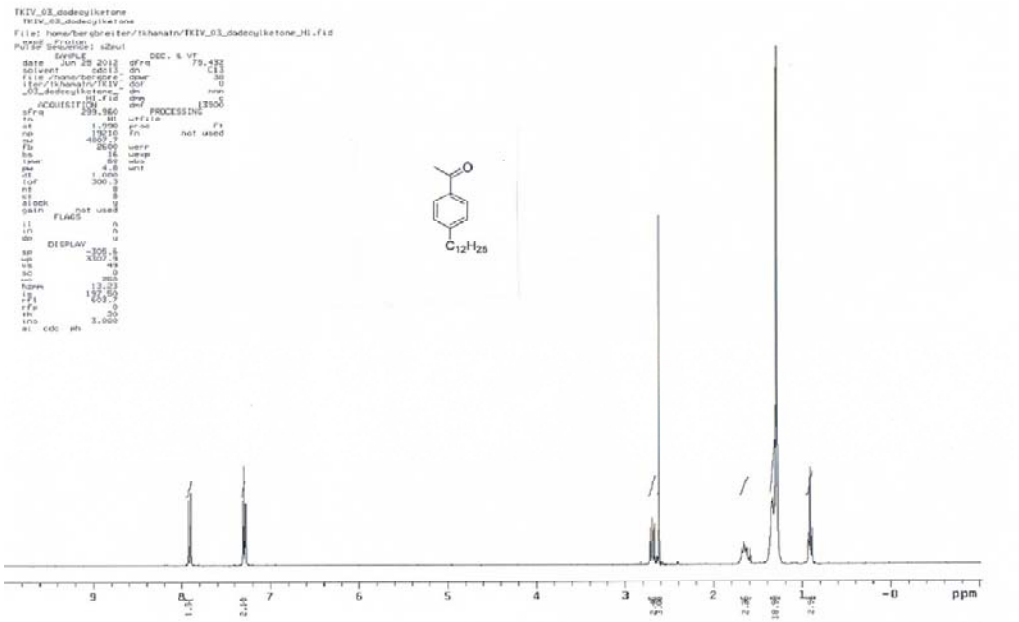
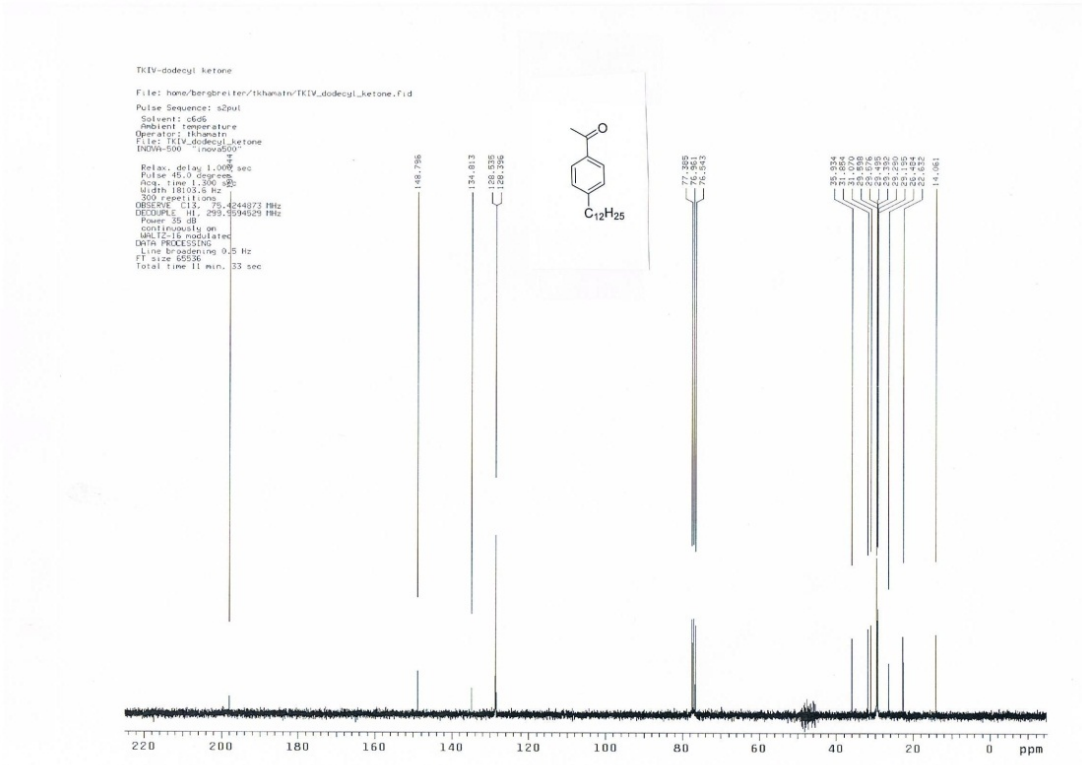
^{1}H NMR Spectrum of 4-Dodecylacetophenone



^{13}C NMR Spectrum of 4-Dodecylacetophenone



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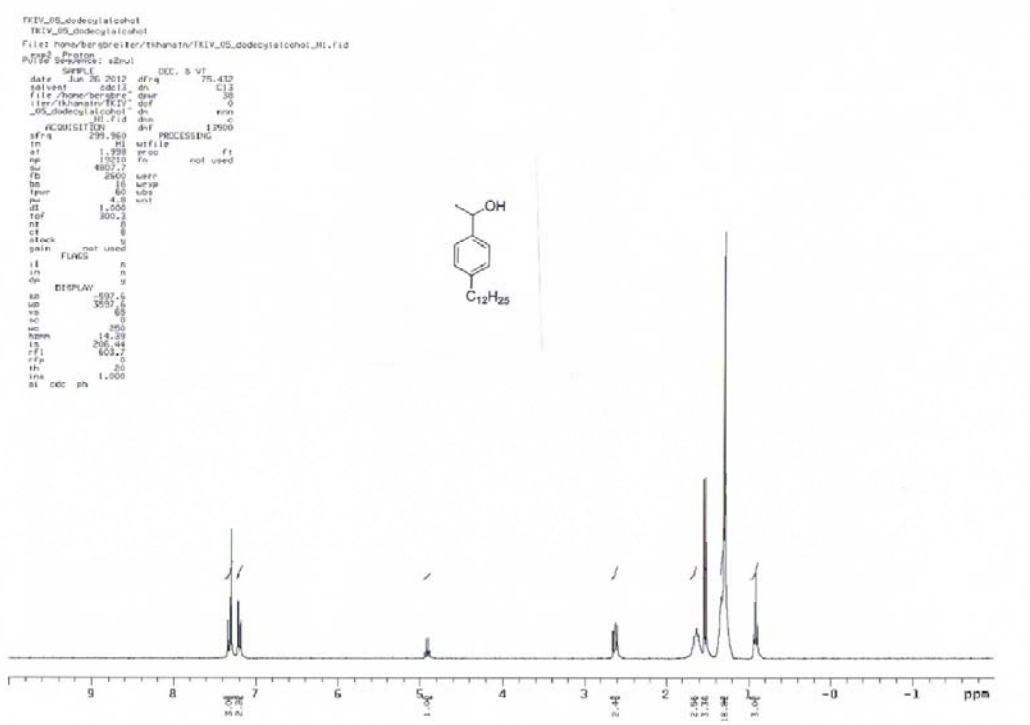
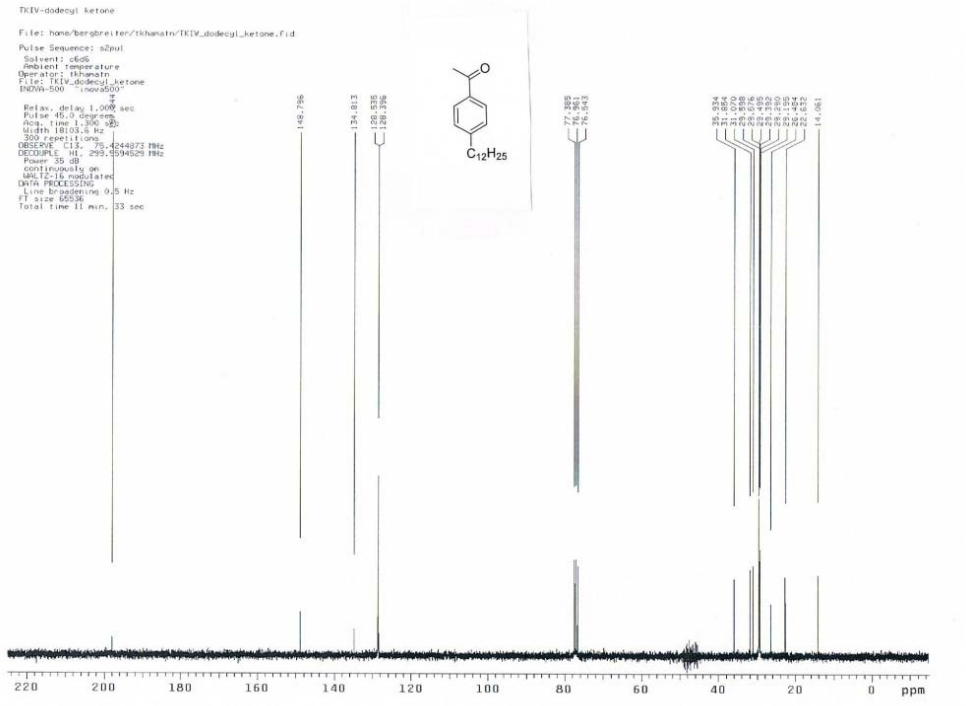
^{1}H NMR of (4-n-dodecylphenyl)ethanol



^{13}C NMR of (4-n-dodecylphenyl)ethanol



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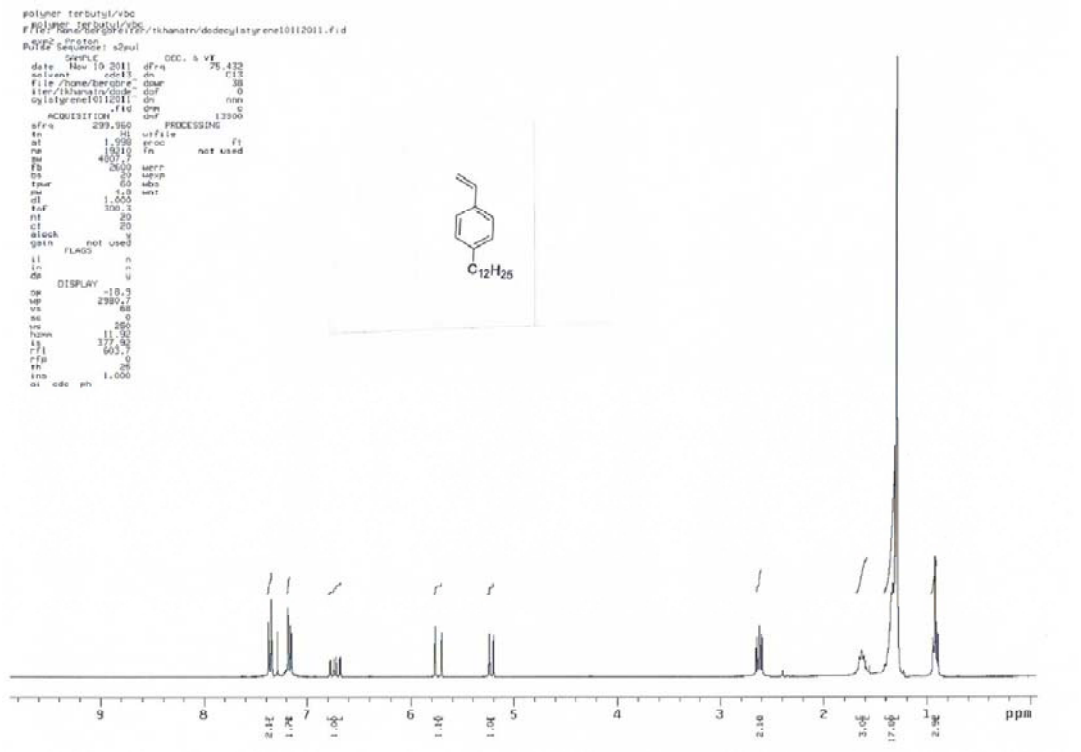
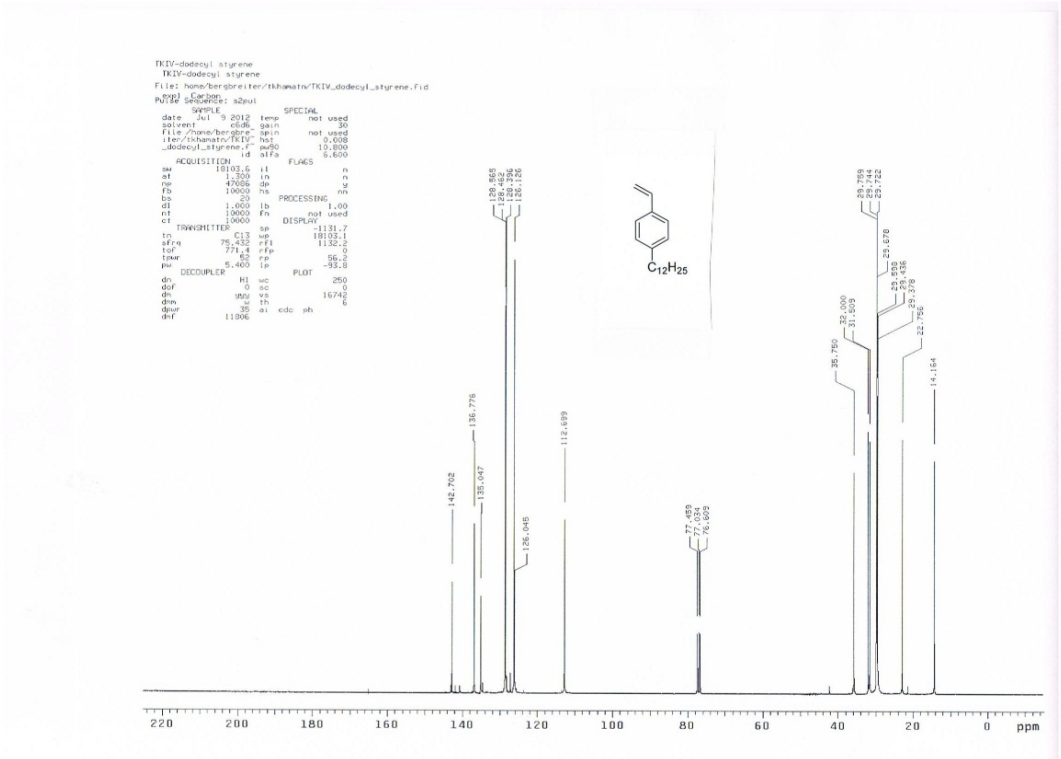
^{1}H NMR of 4-n-dodecylstyrene 2a.



^{13}C NMR of 4-n-dodecylstyrene 2a



S

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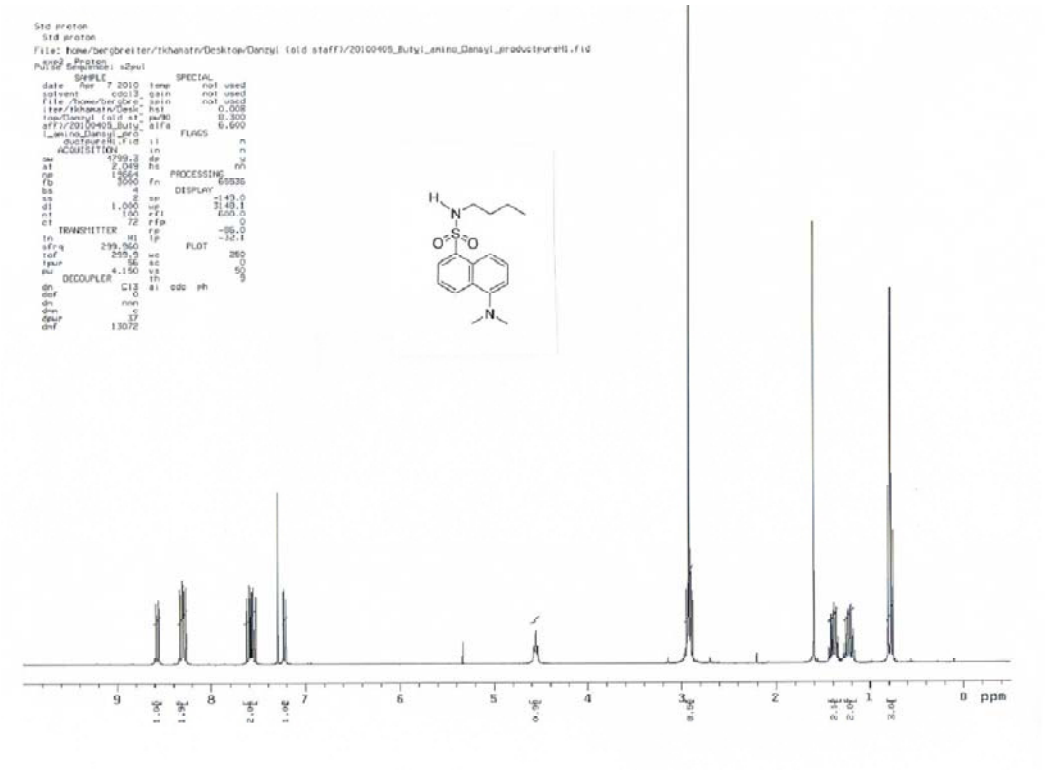
^{1}H NMR of N-*n*-butyl dansylsulfonamide



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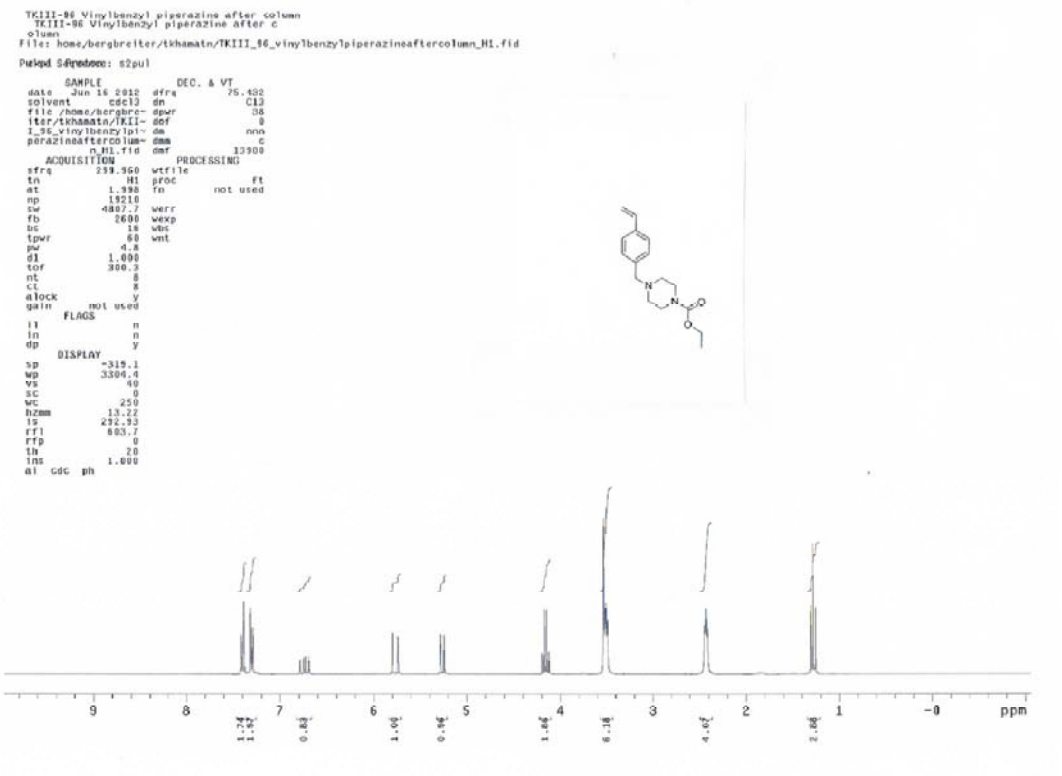
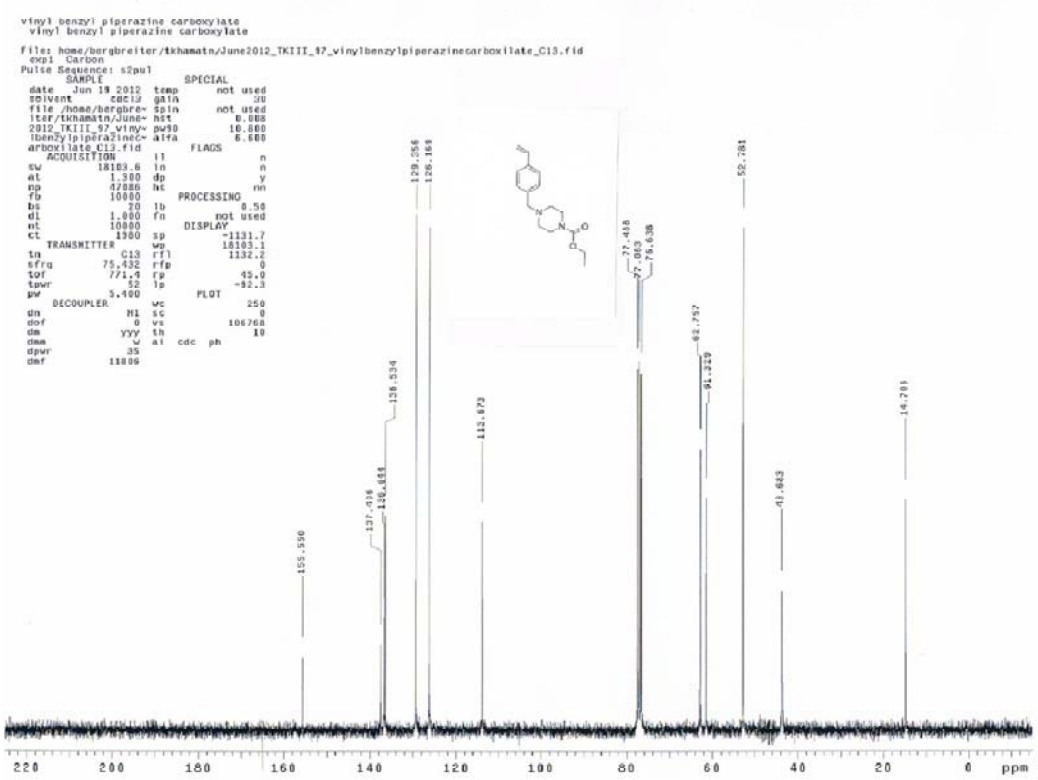
^{1}H NMR of 1-carboethoxy-4-vinylbenzylpiperazine.



^{13}C NMR of 1-carboethoxy-4-(4-vinylbenzyl)piperazine.



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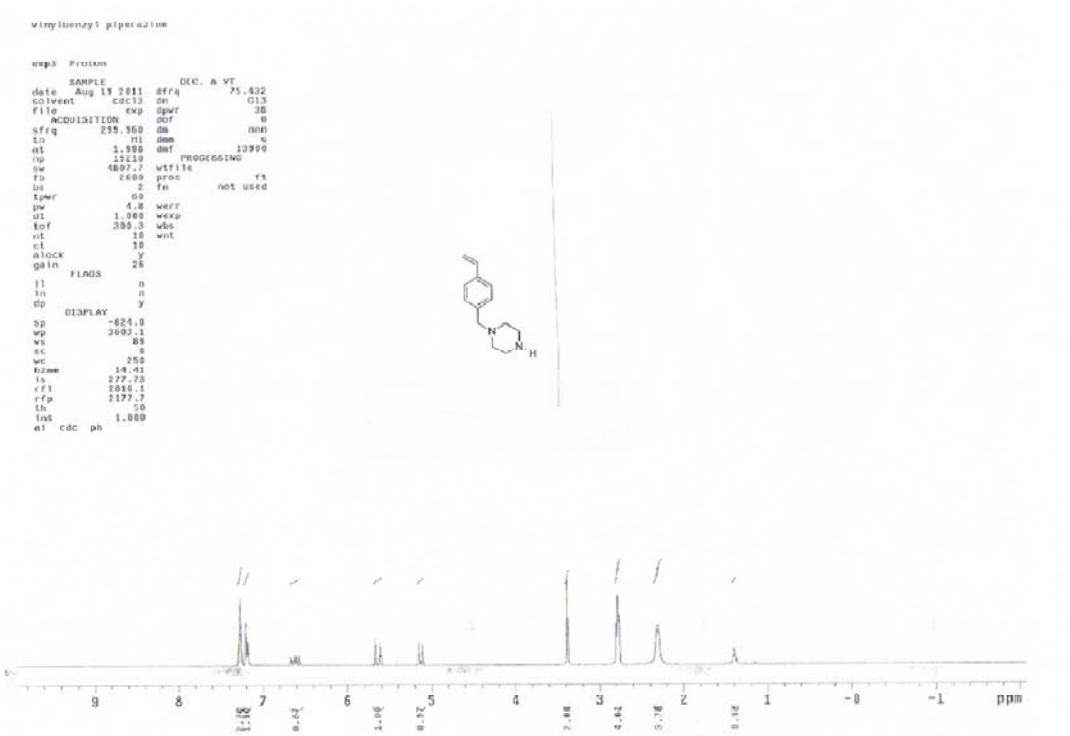
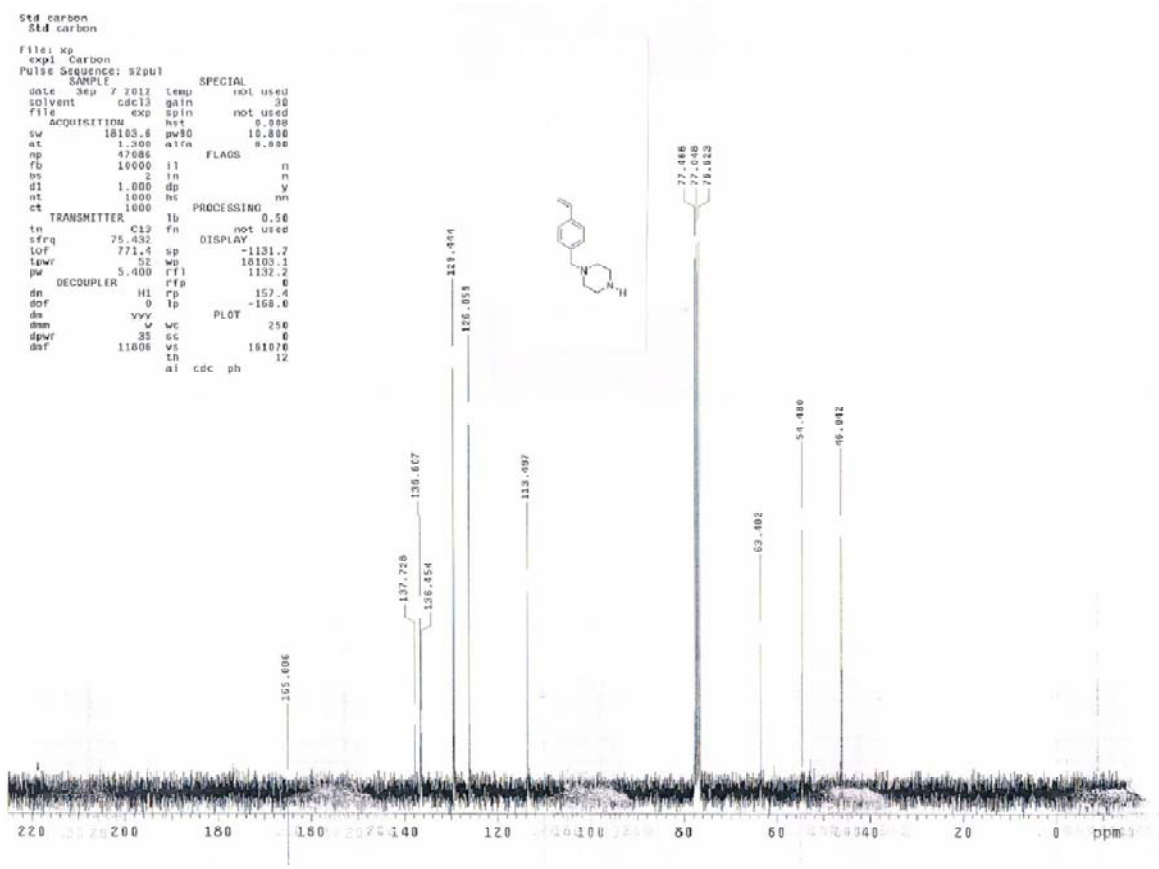
^{1}H NMR of 1-(4-vinylbenzyl)piperazine.



^{13}C NMR of 1-(4-vinylbenzyl)piperazine.



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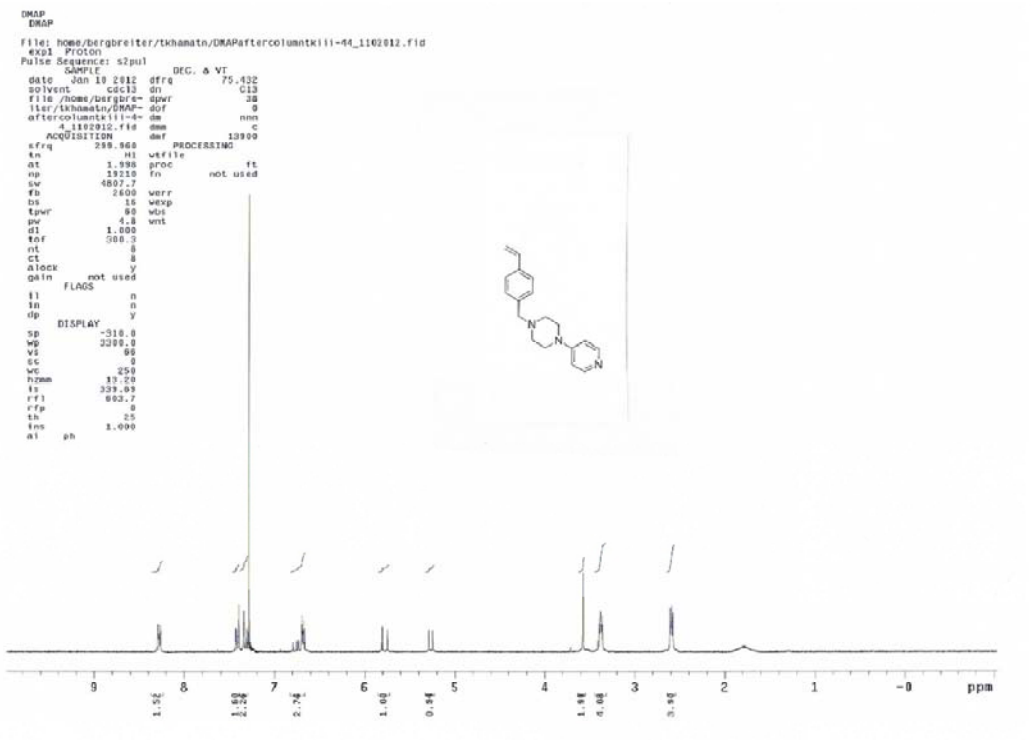
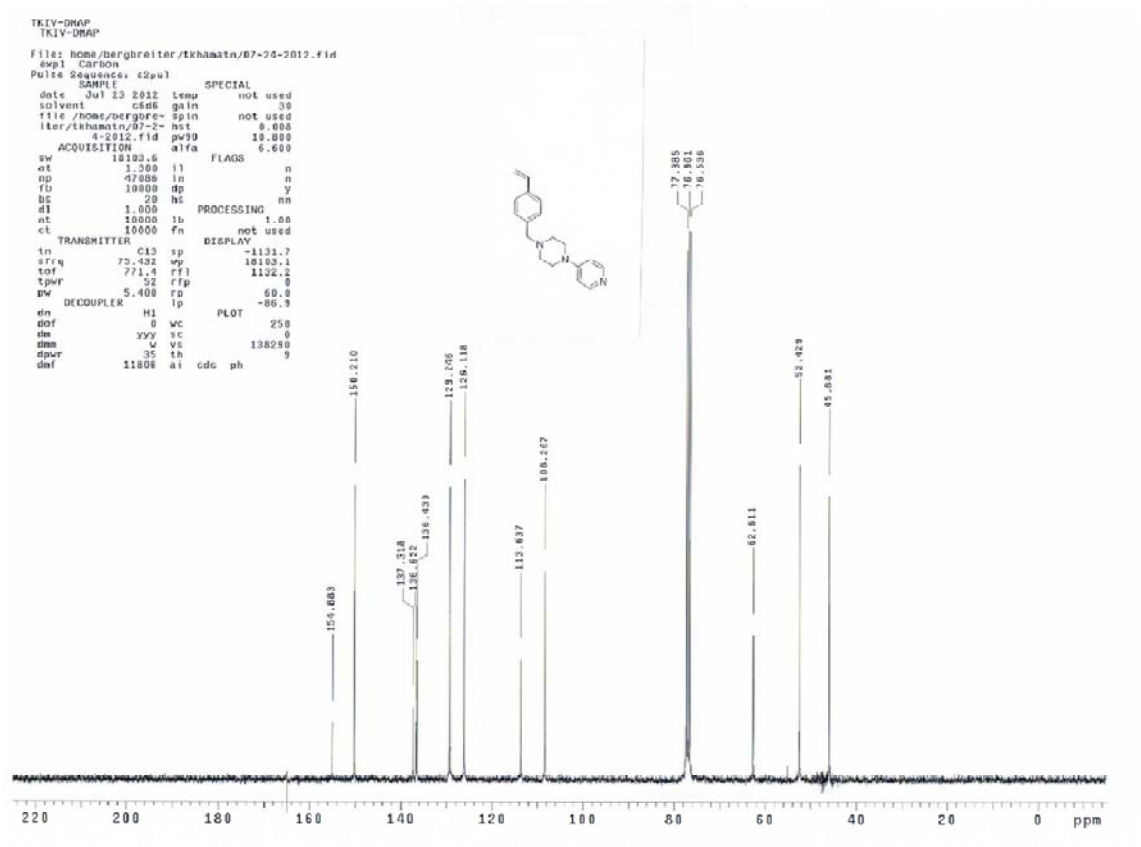
^{1}H NMR of 1-(4-*N*-vinylbenzyl)-4-*N*-(4-pyridyl)piperazine 7.



^{13}C NMR of 1-(4-*N*-vinylbenzyl)-4-*N*-(4-pyridyl)piperazine 7.



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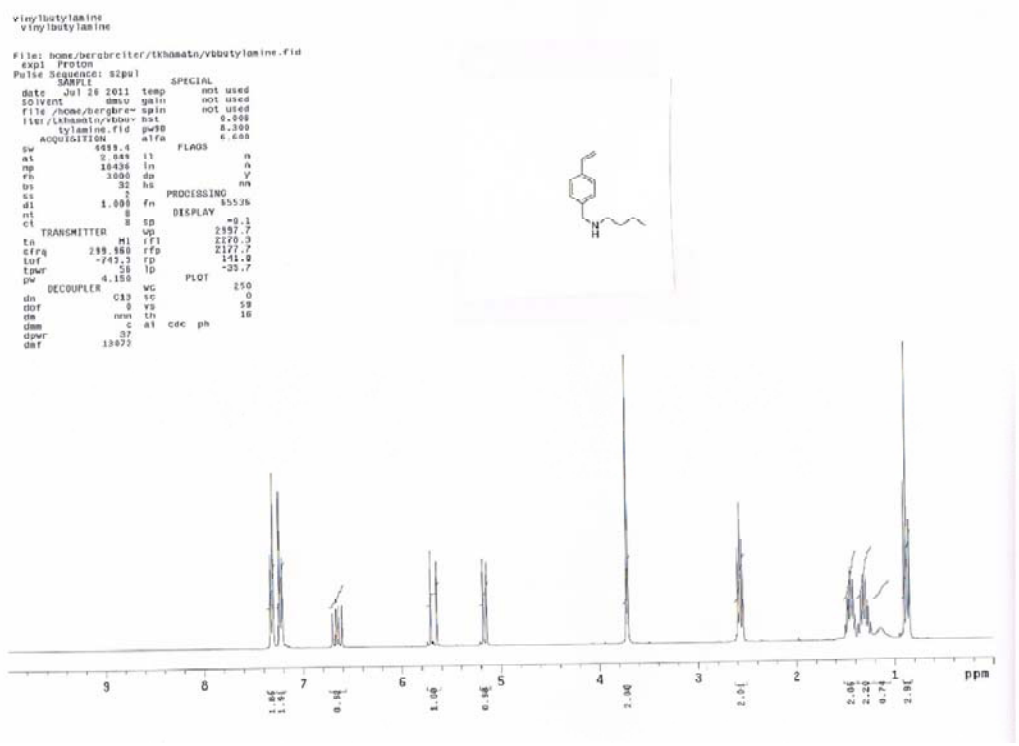
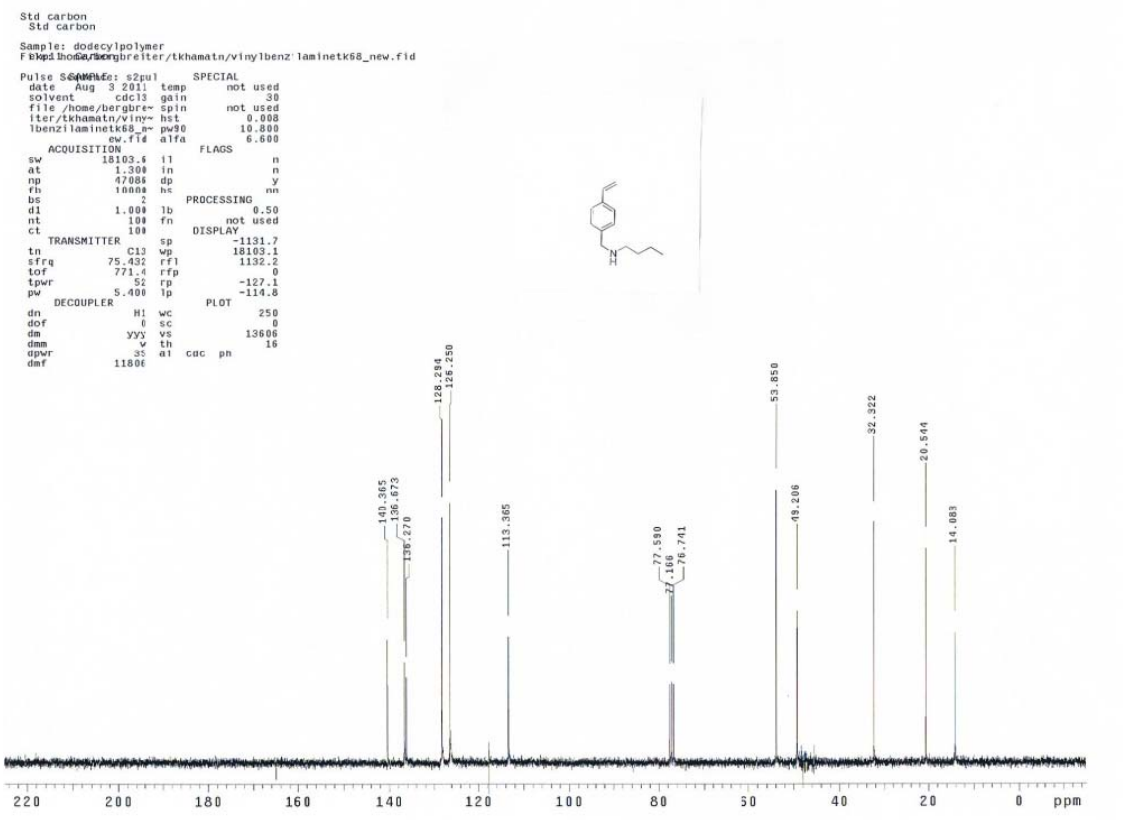
^{1}H NMR of 4-vinylbenzylbutylamine 8.



^{13}C NMR of 4-vinylbenzybutylamine 8.



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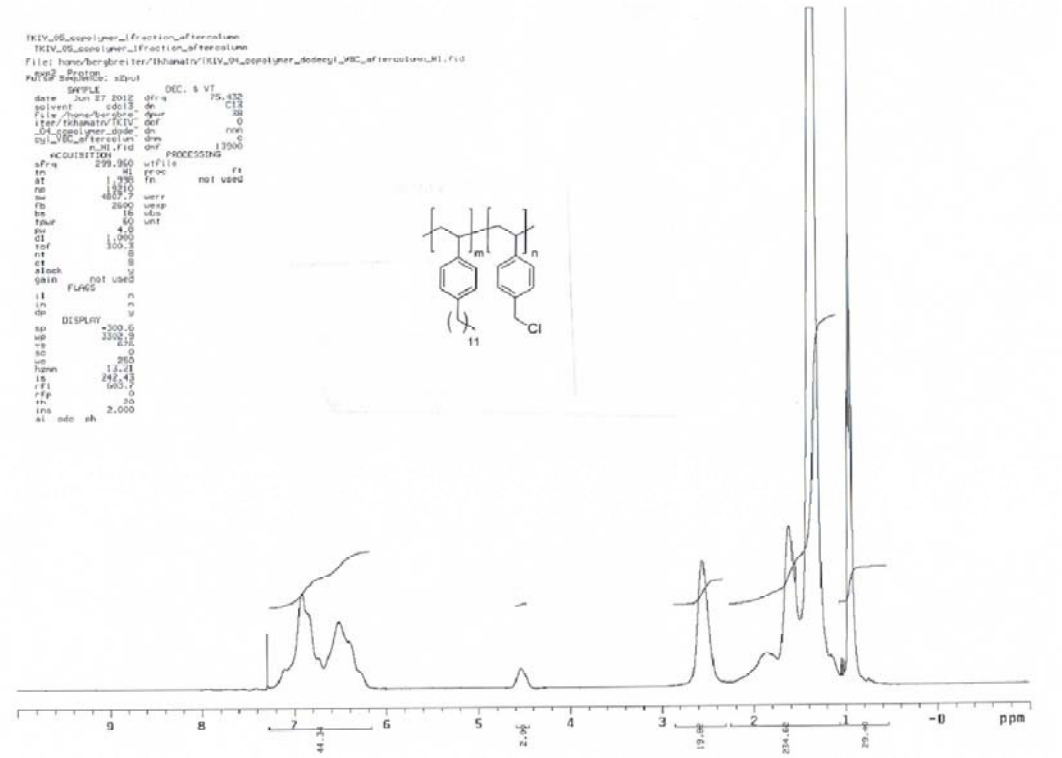
^{1}H NMR of Poly((4-dodecylstyrene)-*c*-(4-chloromethylstyrene)) 3.



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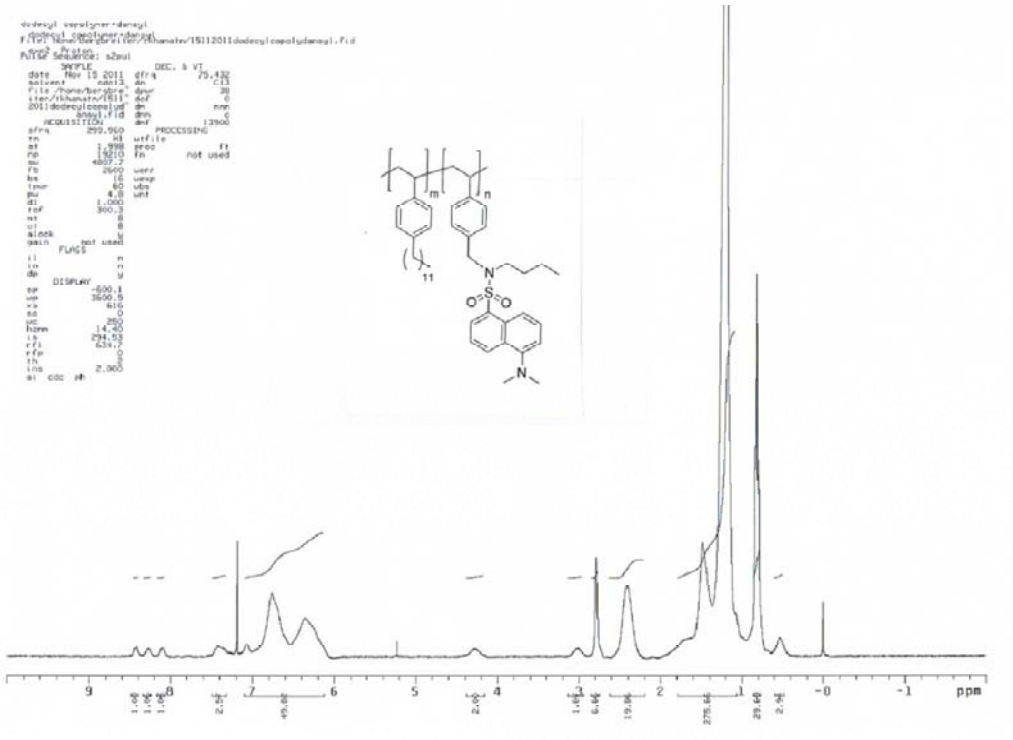
^{1}H NMR of Poly((4-dodecylstyrene)-*c*-(4-(*N*-dansylaminomethy)styrene) 5.



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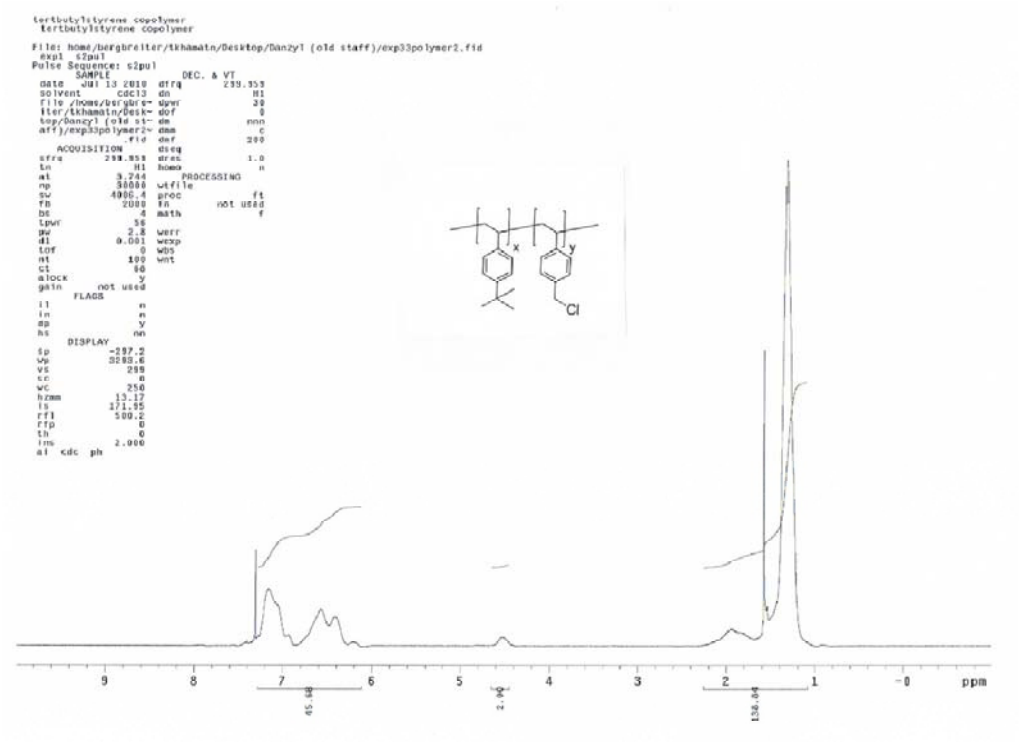
^{1}H NMR of poly((4-*tert*-butylstyrene)-*c*-(4-chloromethylstyrene)) 4.



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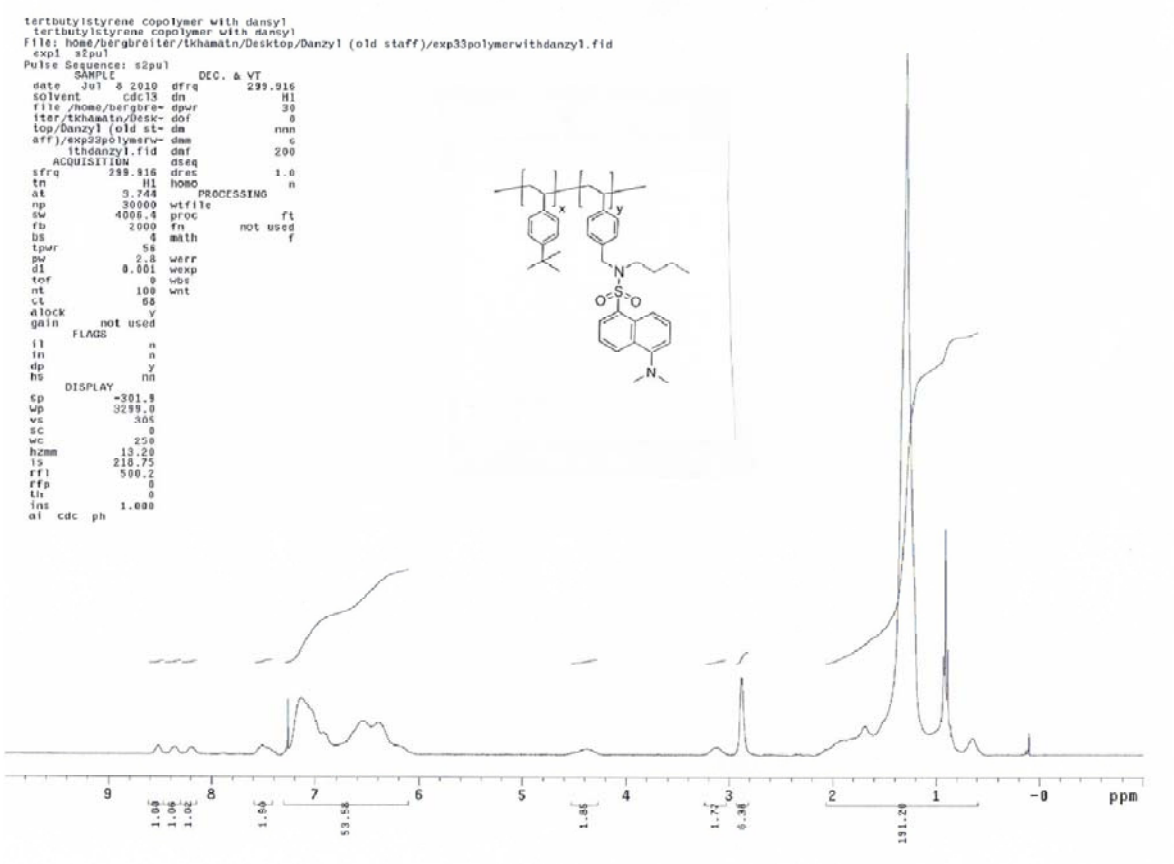
^{1}H NMR of poly((4-*tert*-butylstyrene)-*c*-(4-(*N*-dansylaminomethy)styrene) 6.



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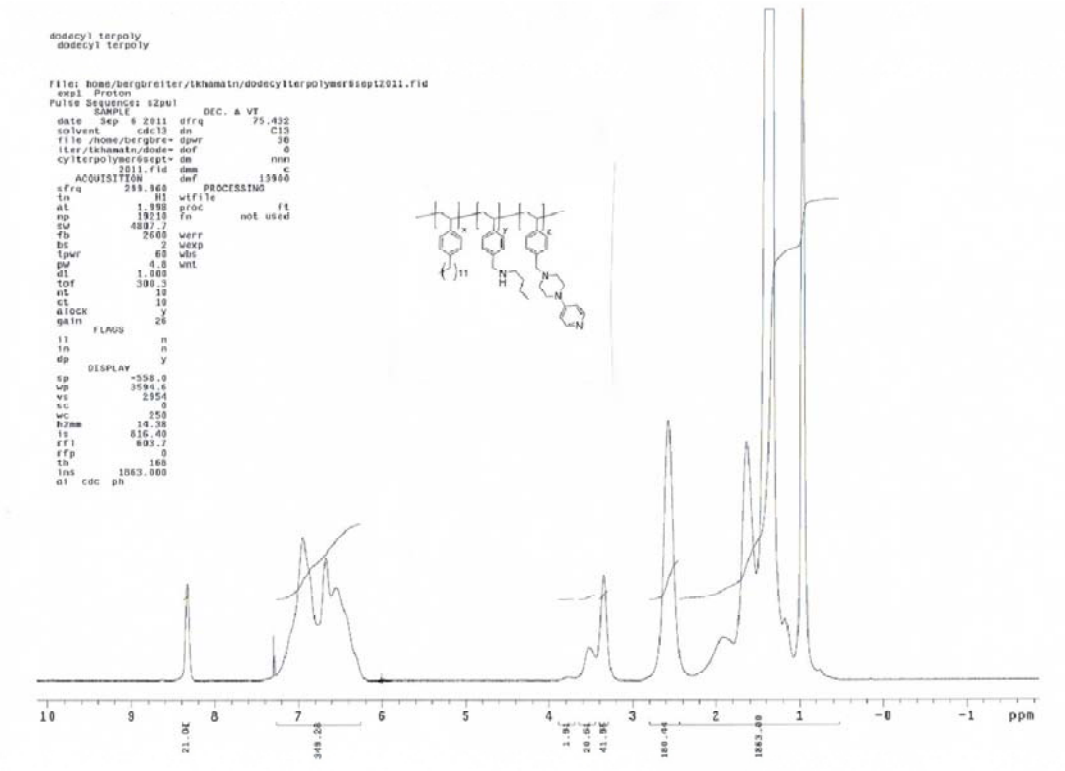
^{1}H NMR of terpolymer 9 containing dodecyl-, DMAP- and *N*-butyl-aminomethyl-substituted styrene groups



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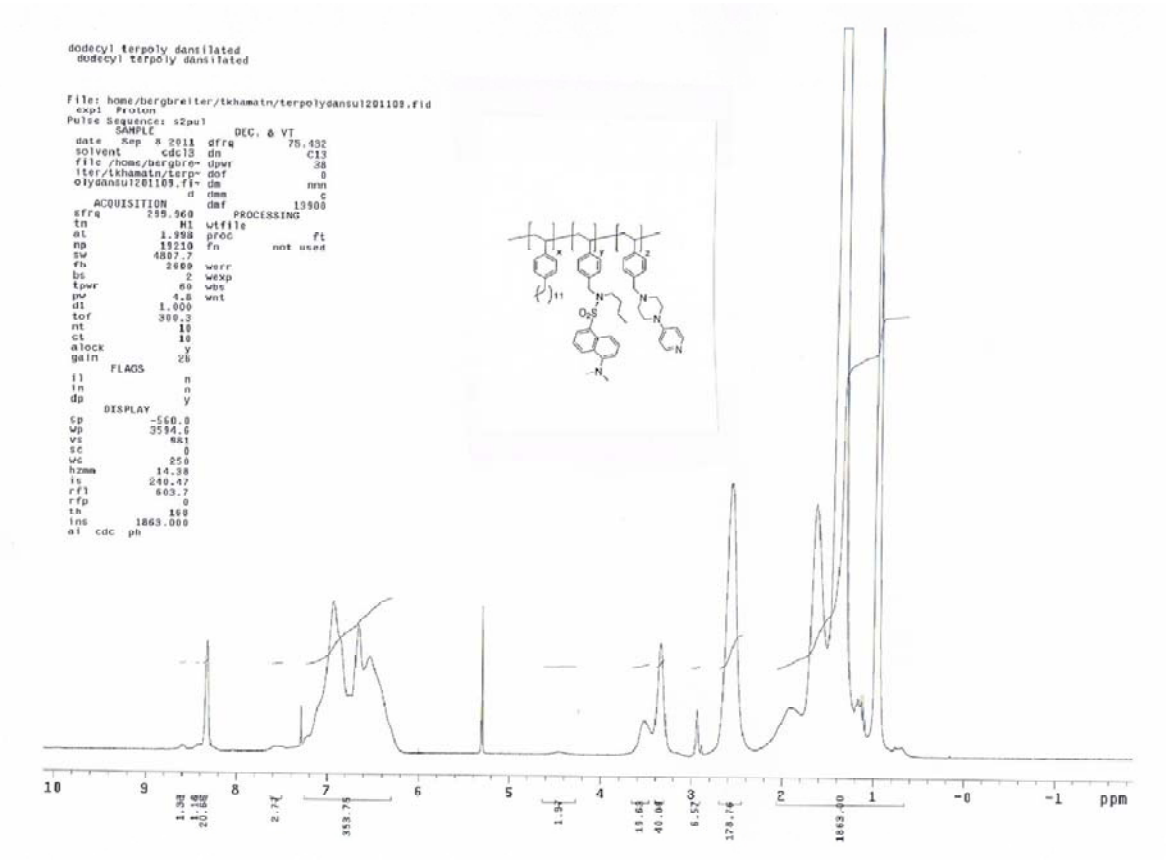
^{1}H NMR of Terpolymer 10 containing dodecyl-, DMAP- (0.44 mmol/g loading) and *N*-butyl-*N*-dansylaminomethyl- substituted styrene groups (0.07 mmol/g loading).



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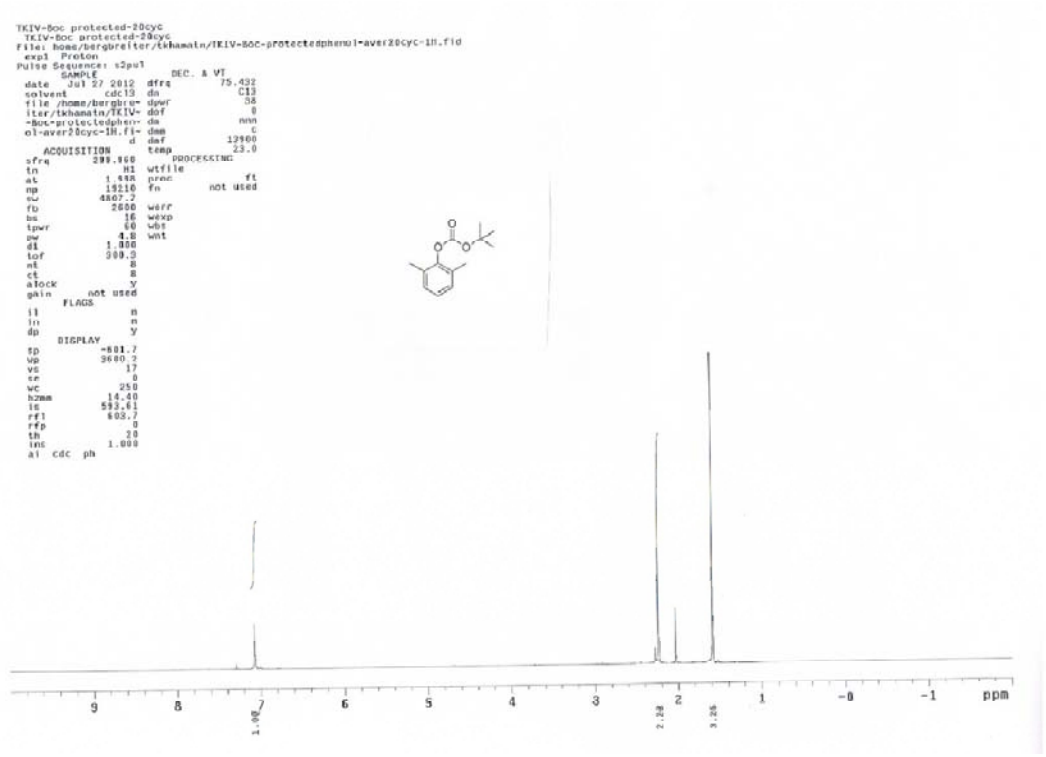
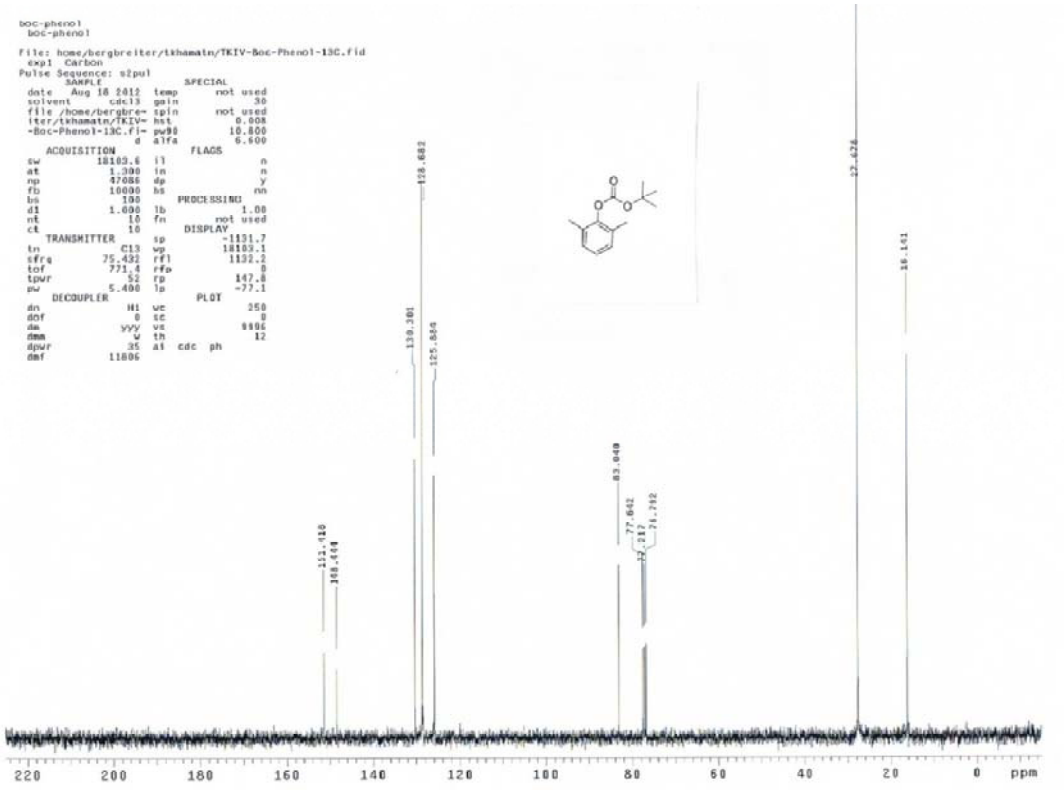
^{1}H NMR of Boc protected 2,6-dimethylphenol 11.



^{13}C NMR of Boc protected 2,6-dimethylphenol 11.



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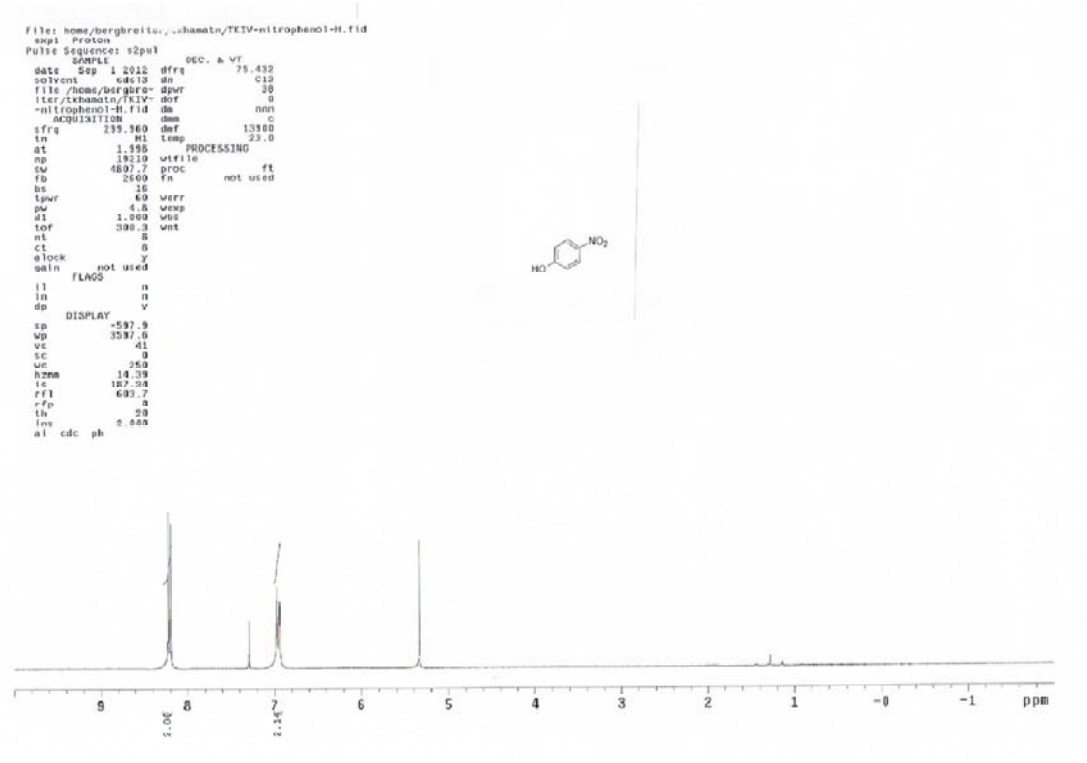
^{1}H NMR of 4-nitrophenol 12.



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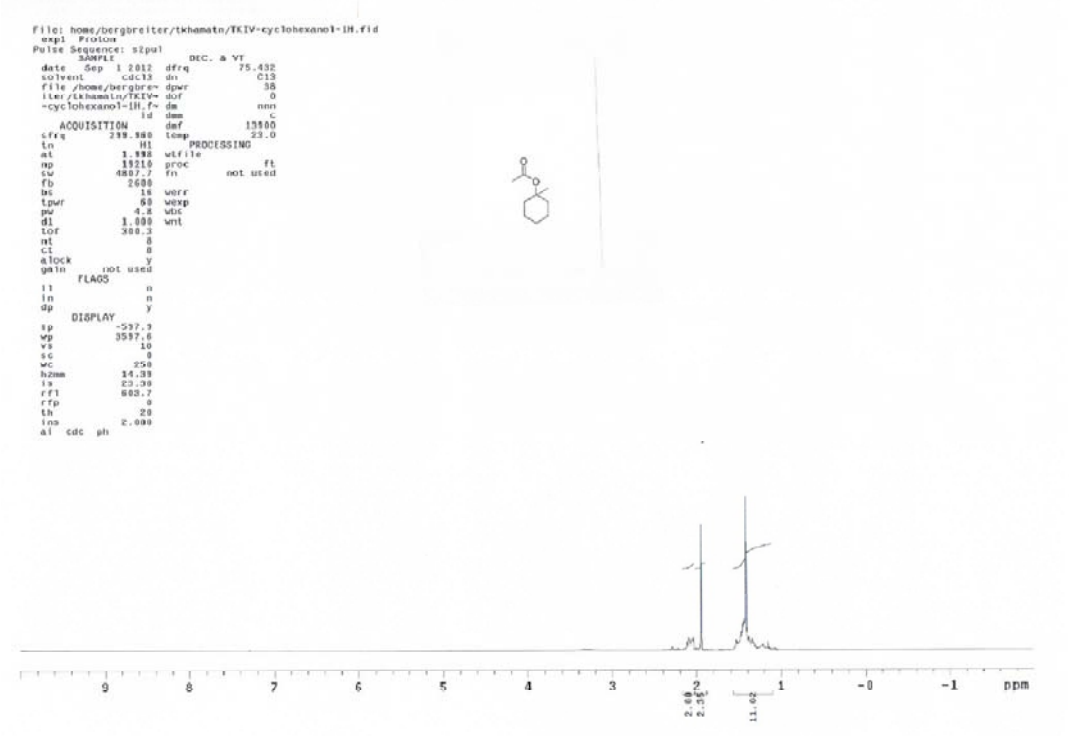
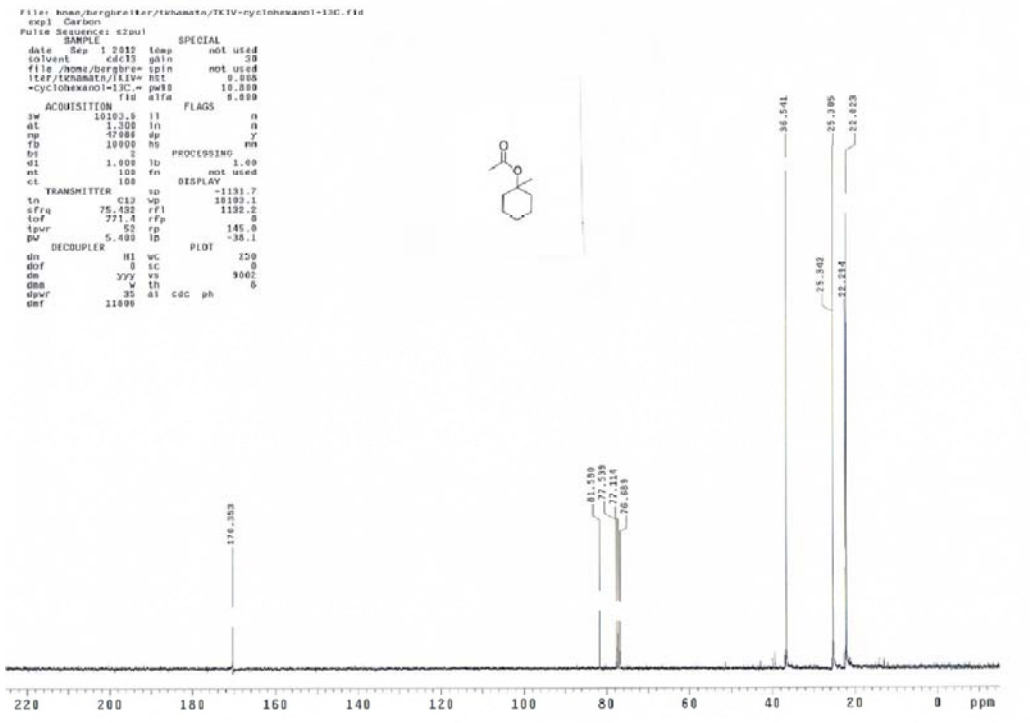
^{1}H NMR of acylated 1-methylcyclohexanol 13.



^{13}C NMR of acylated 1-methylcyclohexanol 13.



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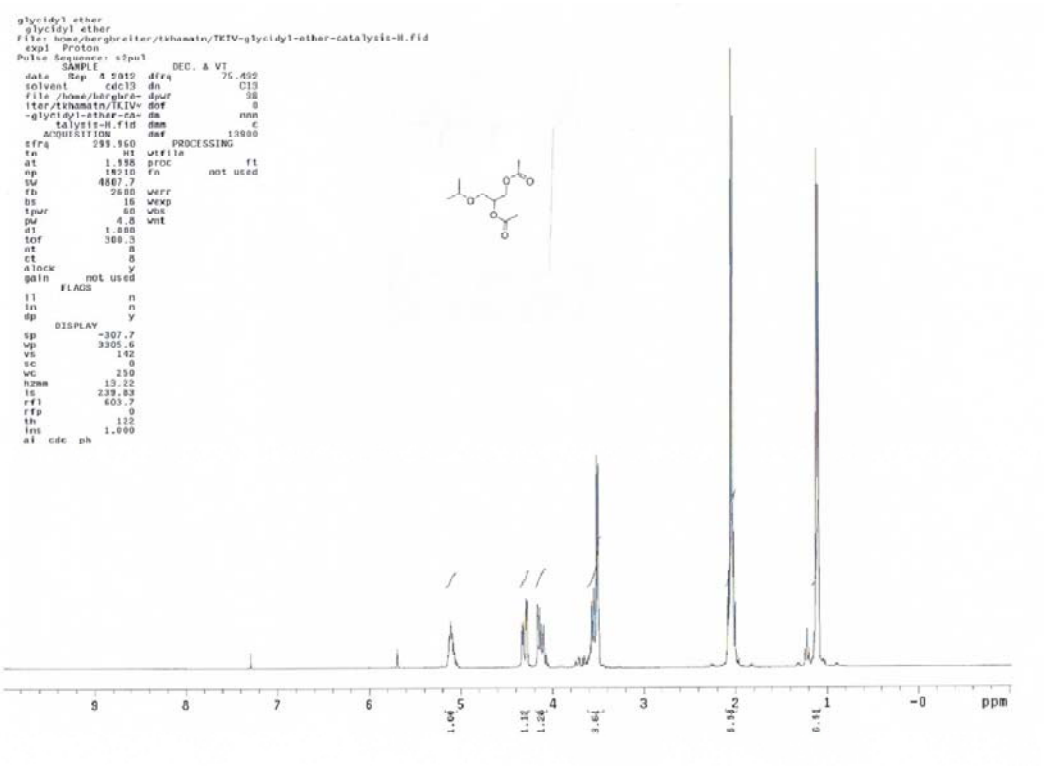
^{1}H NMR of acylated glycidyl isopropyl ether 14.



^{13}C NMR of acylated glycidyl isopropyl ether 14.