

## Supplementary Material

### Iron nitrate/TEMPO-catalyzed oxidative Passerini reaction of alcohols in air

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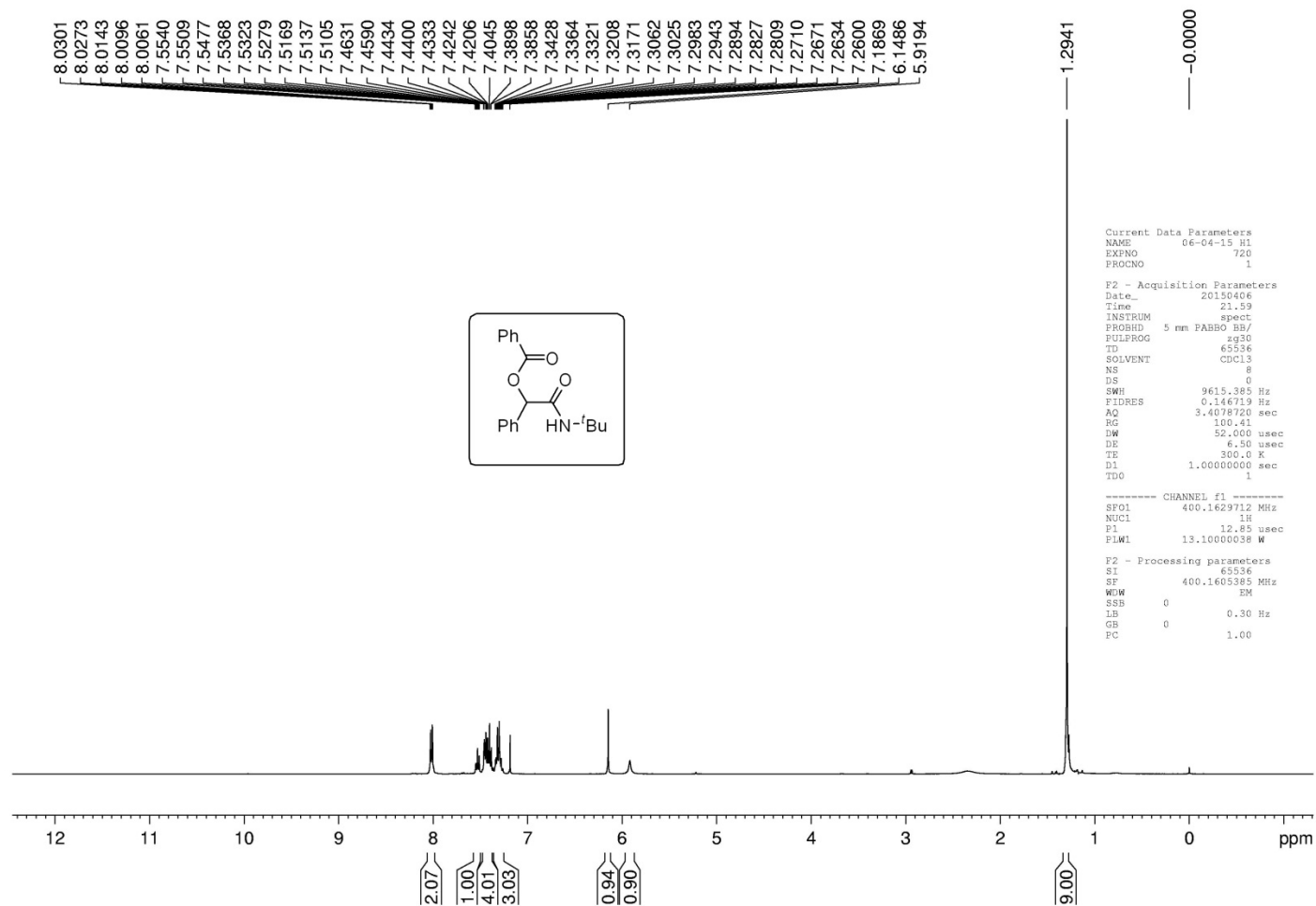
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Dedicated to Dr. Jhillu Singh Yadav on the occasion of his 65<sup>th</sup> anniversary

#### Contents

1. Copies of <sup>1</sup>H NMR and <sup>13</sup>C NMR Spectra of Compounds S-2

Copies  $^1\text{H}$  NMR and  $^{13}\text{C}$  NMR Spectra of Compounds:Figure S1.  $^1\text{H}$ -NMR spectrum of 2-(*tert*-butylamino)-2-oxo-1-phenylethyl benzoate (4aAa).

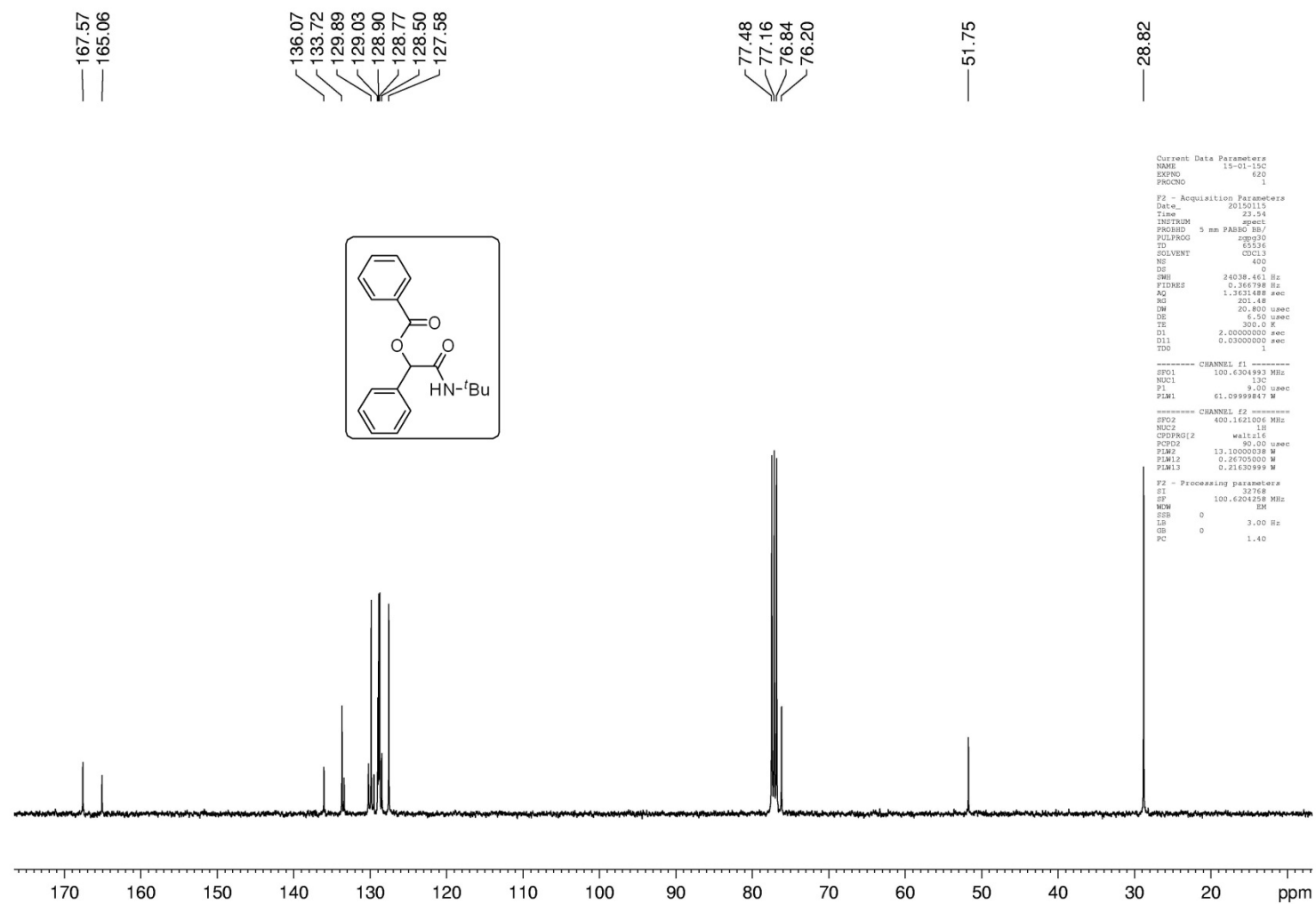


Figure S2. <sup>13</sup>C-NMR spectrum of 2-(*tert*-butylamino)-2-oxo-1-phenylethyl benzoate (4aAa).

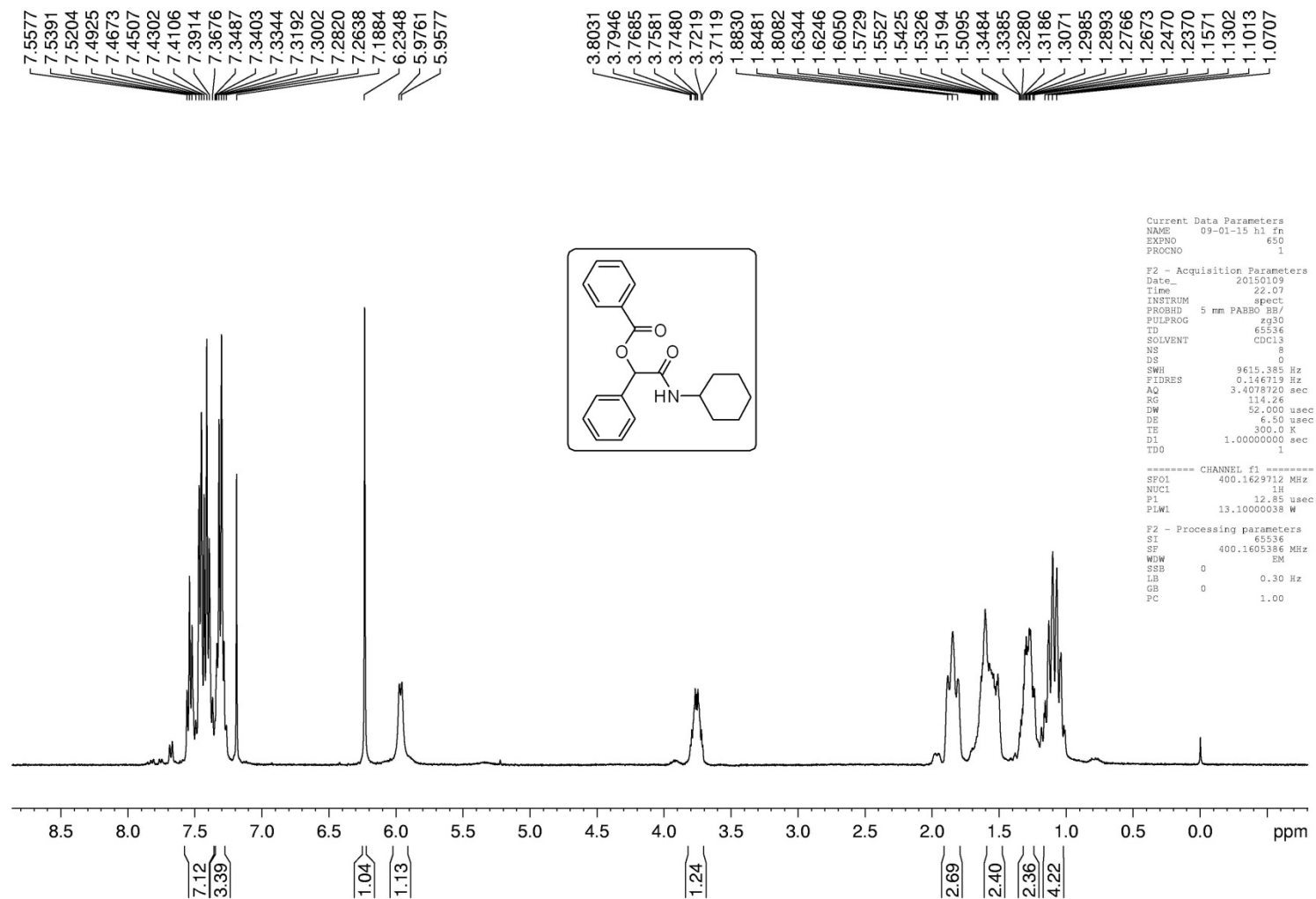
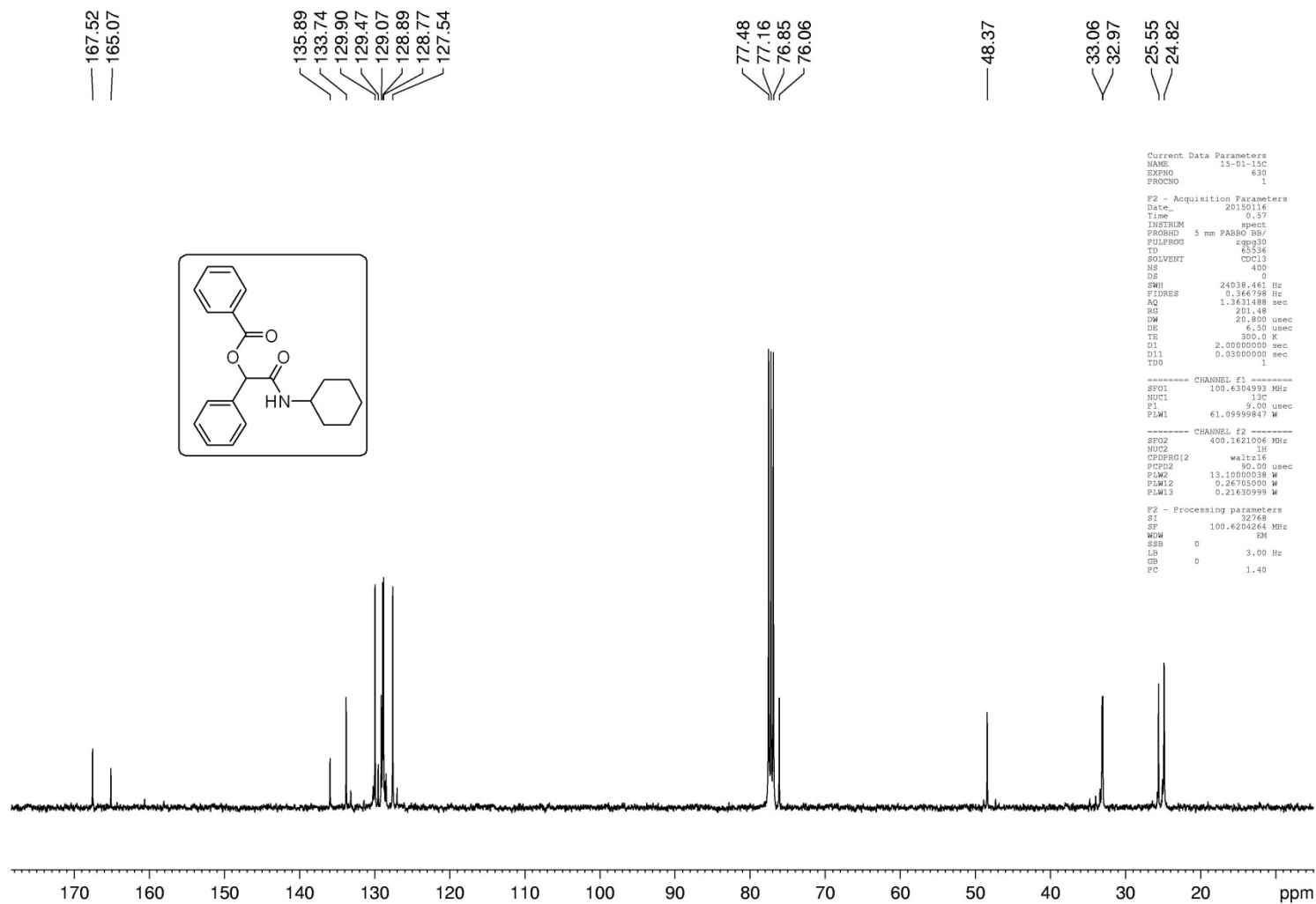


Figure S3. <sup>1</sup>H-NMR spectrum of 2-(cyclohexylamino)-2-oxo-1-phenylethyl benzoate (**4aAb**).



**Figure S4.** <sup>13</sup>C-NMR spectrum of 2-(cyclohexylamino)-2-oxo-1-phenylethyl benzoate (**4aAb**).

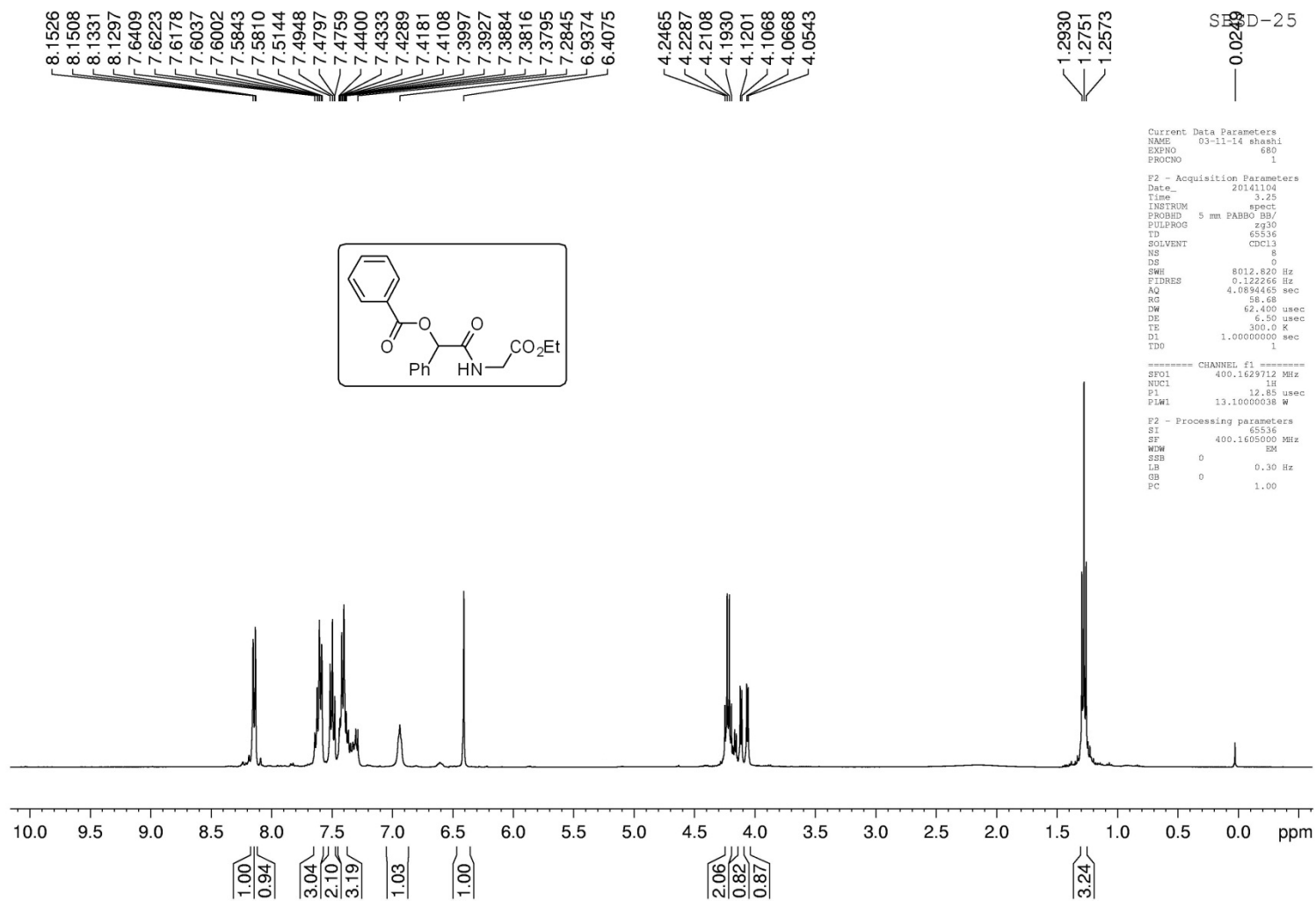
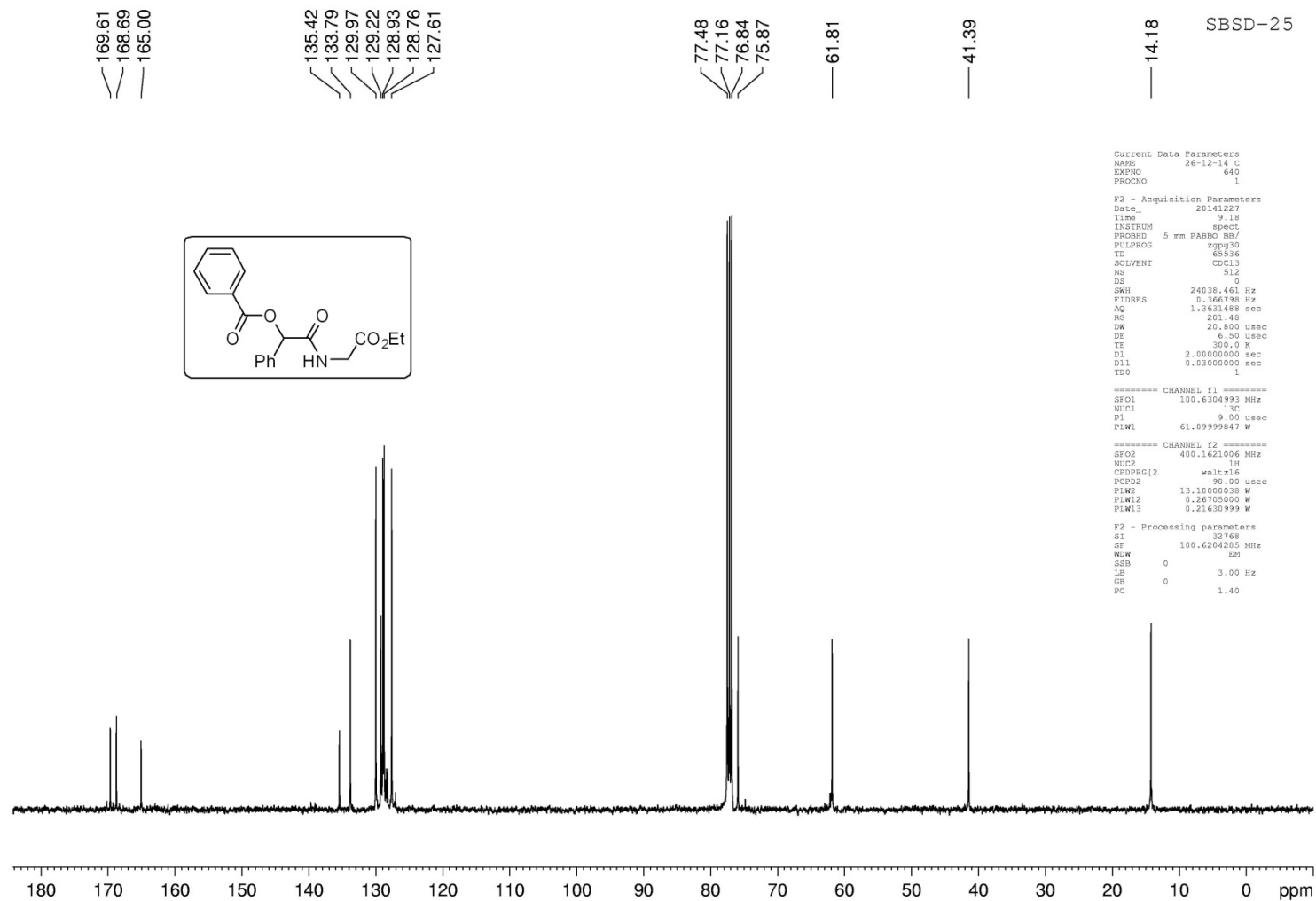
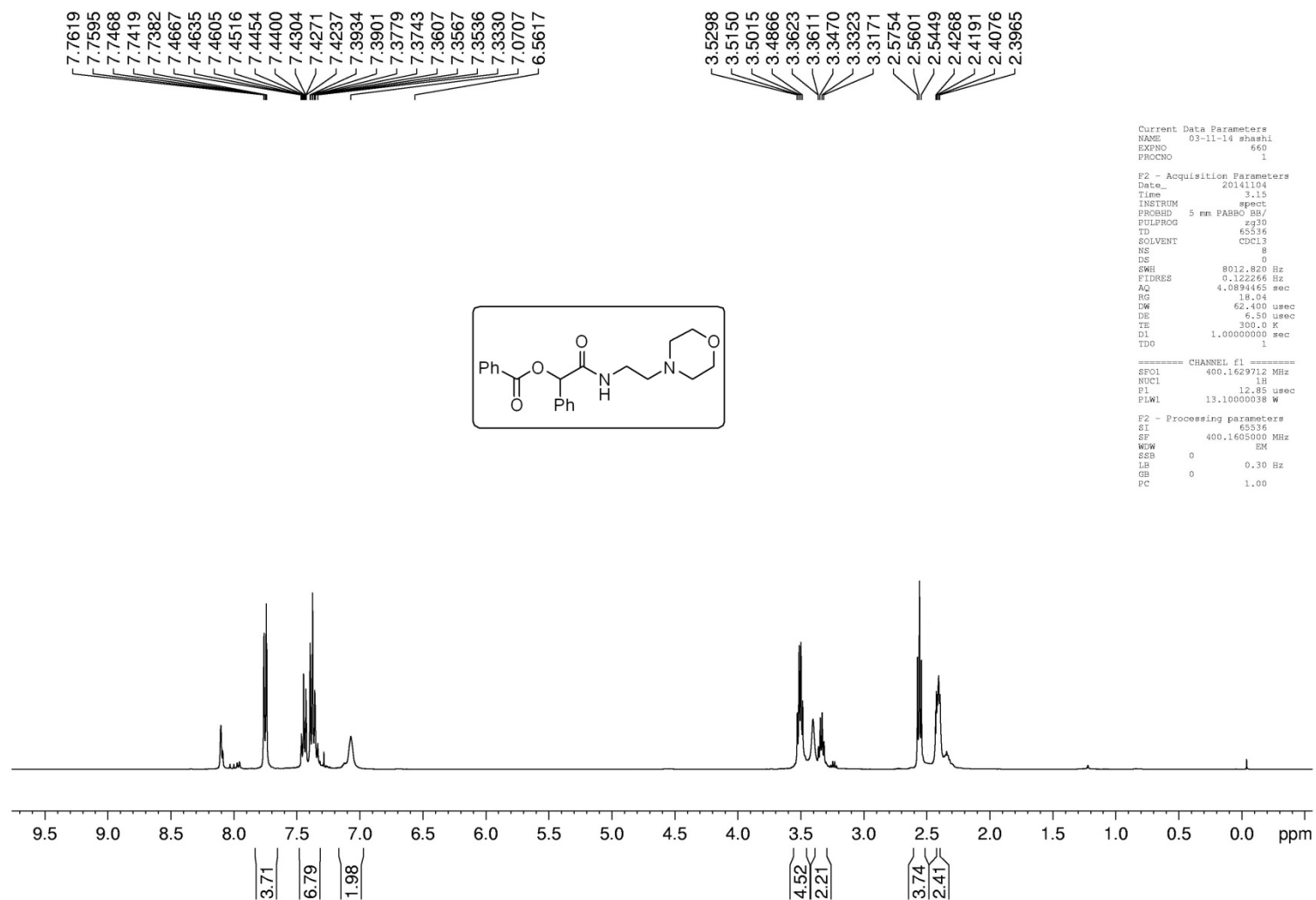


Figure S5. <sup>1</sup>H-NMR spectrum of 2-((2-ethoxy-2-oxoethyl)amino)-2-oxo-1-phenylethyl benzoate (**4aAc**).



**Figure S6.**  $^{13}\text{C}$ -NMR spectrum of 2-((2-ethoxy-2-oxoethyl)amino)-2-oxo-1-phenylethyl benzoate (**4aAc**).



**Figure S7.** <sup>1</sup>H-NMR spectrum of 2-((2-morpholinoethyl)amino)-2-oxo-1-phenylethyl benzoate (**4aAd**).



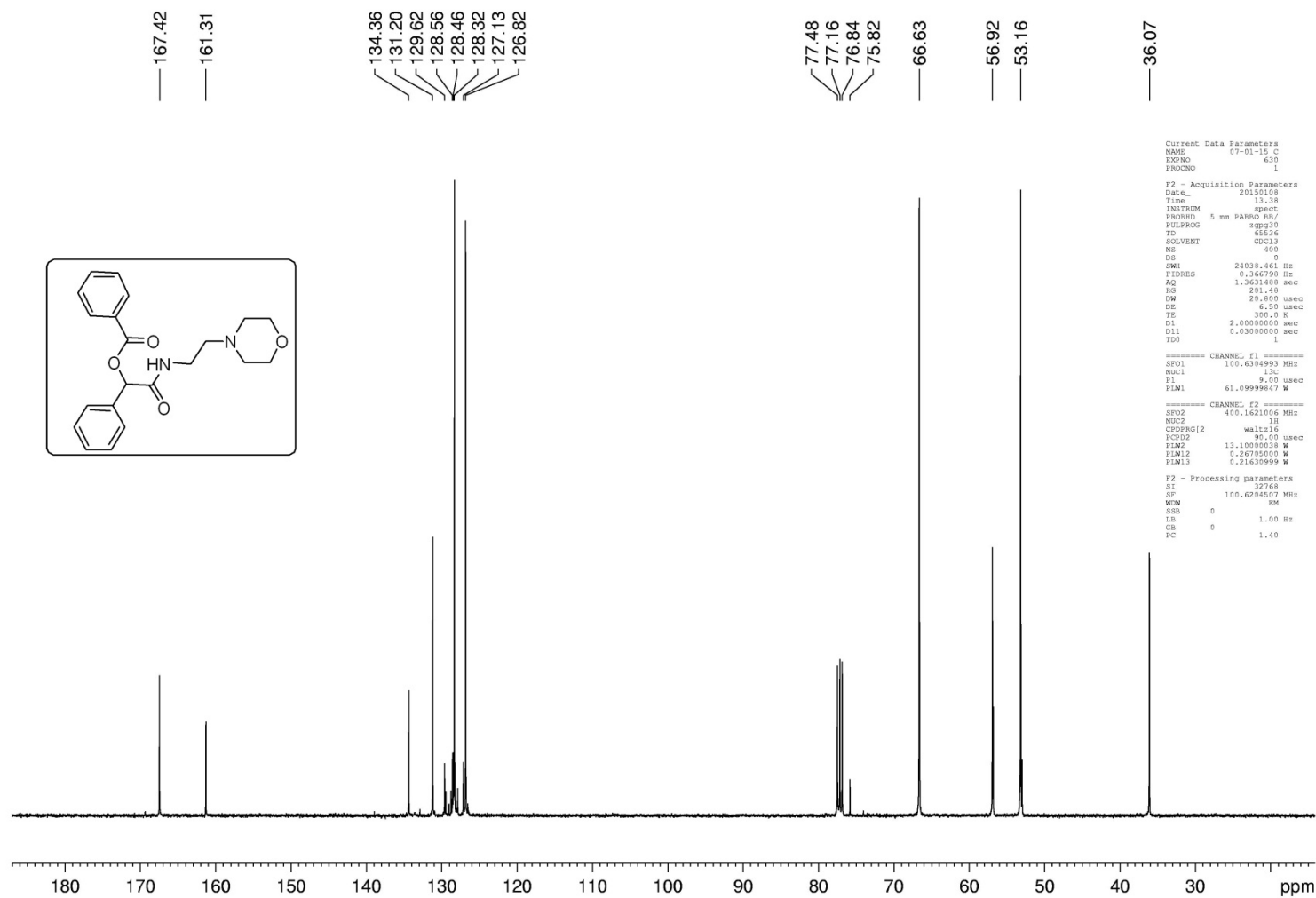


Figure S8. <sup>13</sup>C-NMR spectrum of 2-((2-morpholinoethyl)amino)-2-oxo-1-phenylethyl benzoate (**4aAd**).

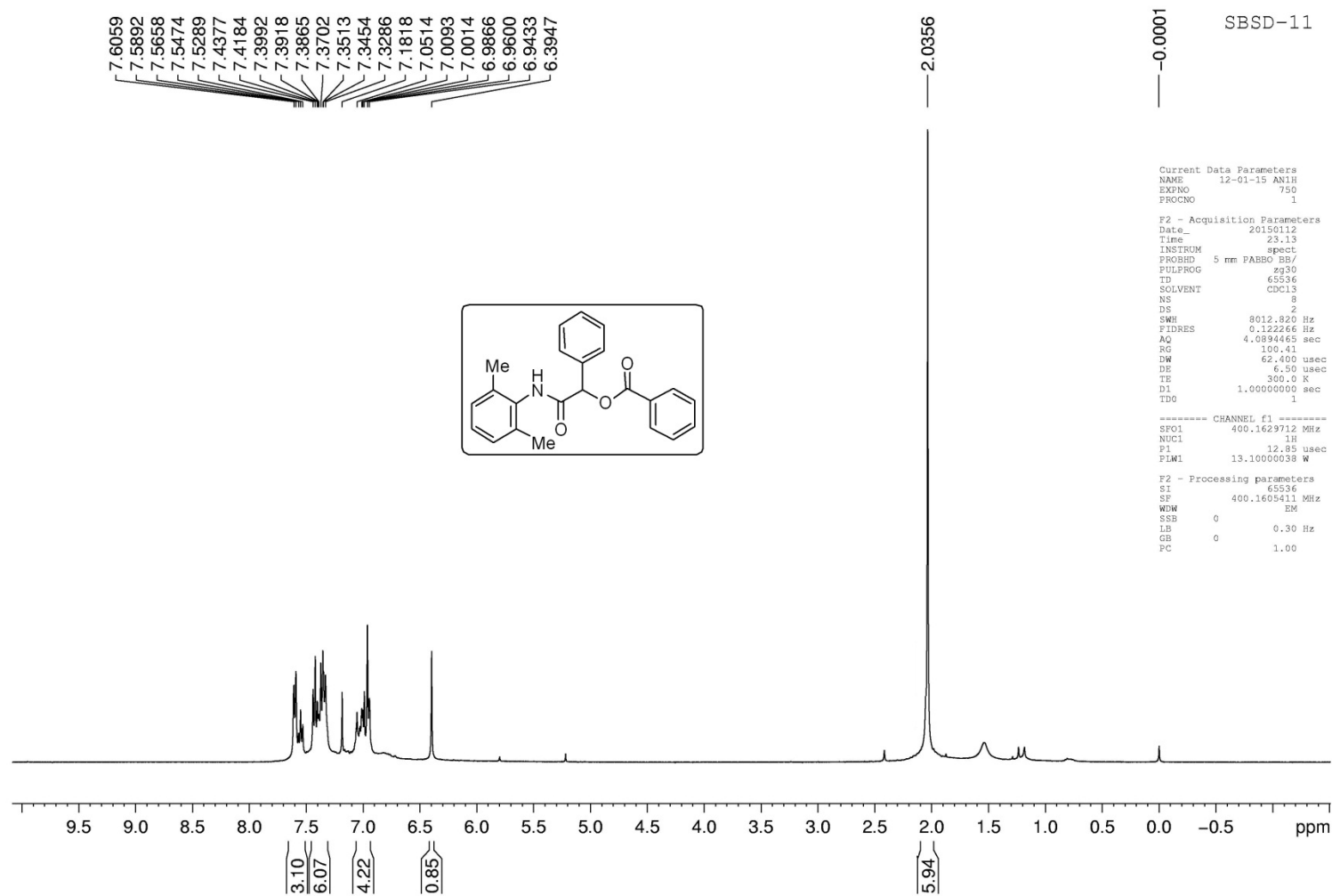
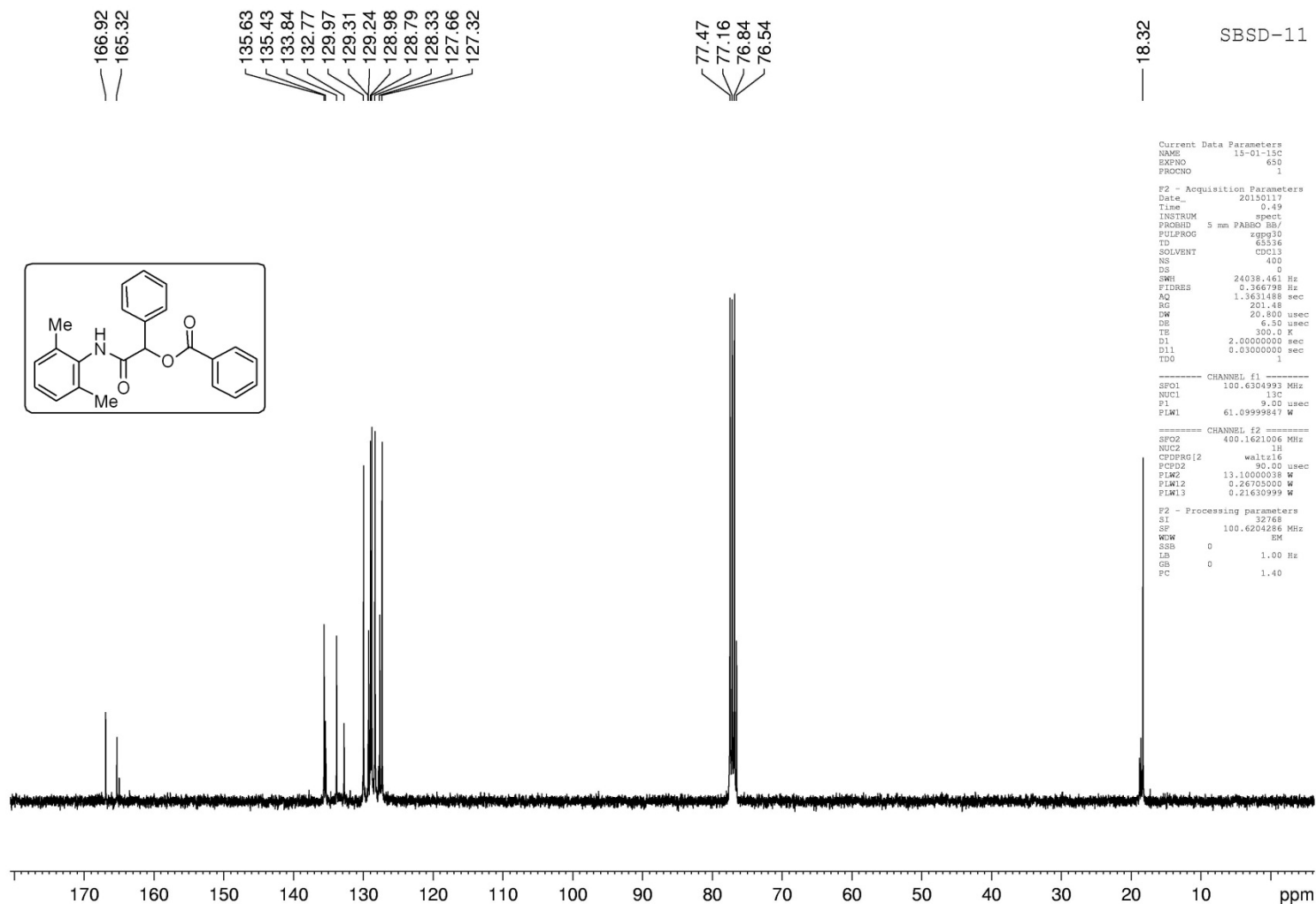
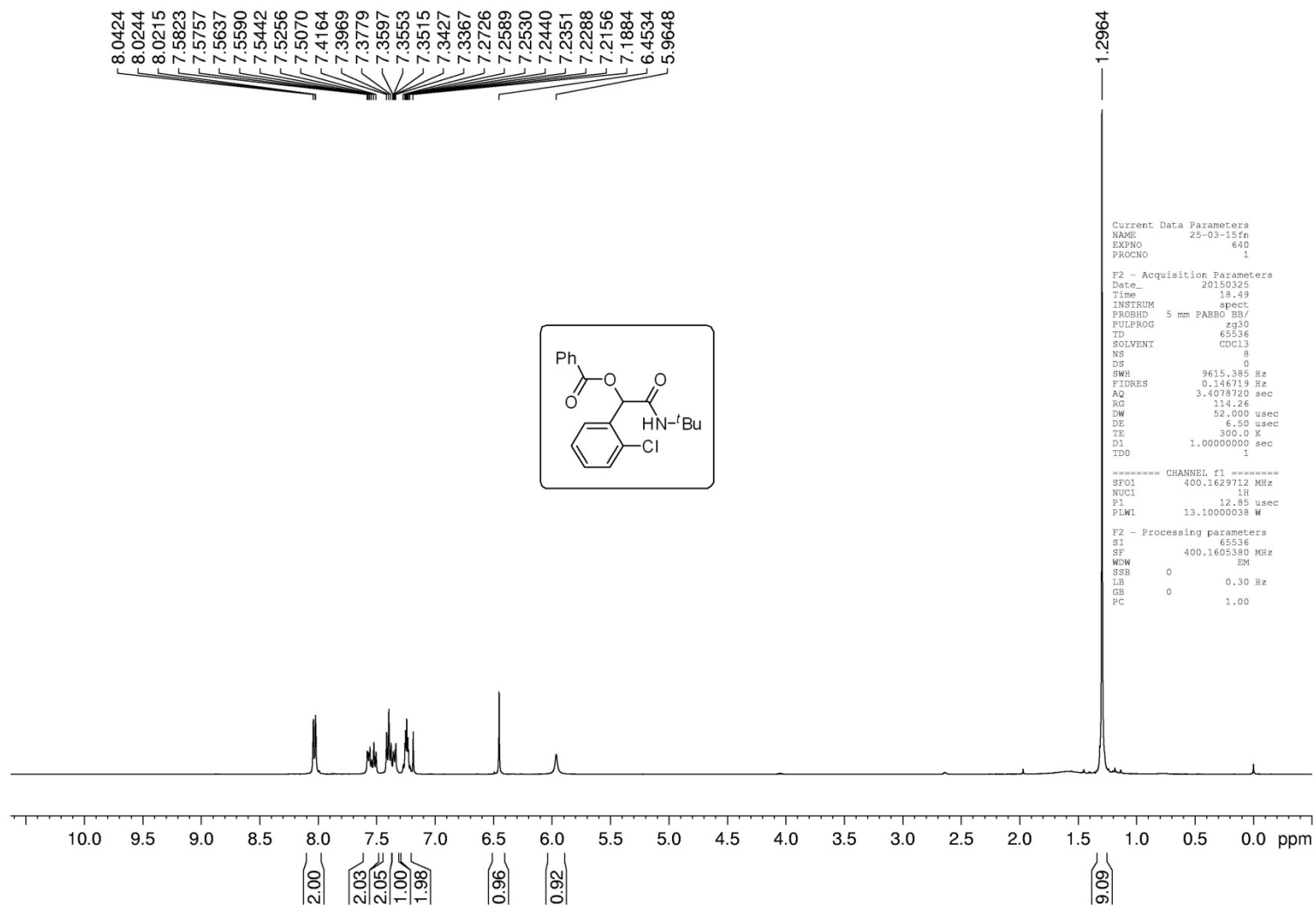


Figure S9. <sup>1</sup>H-NMR spectrum of 2-((2,6-dimethylphenyl)amino)-2-oxo-1-phenylethyl benzoate (**4aAe**).



**Figure S10.** <sup>13</sup>C-NMR spectrum of 2-((2,6-dimethylphenyl)amino)-2-oxo-1-phenylethyl benzoate (**4aAe**).



**Figure S11.** <sup>1</sup>H-NMR spectrum of 2-(*tert*-butylamino)-1-(2-chlorophenyl)-2-oxoethyl benzoate (**4bAa**).

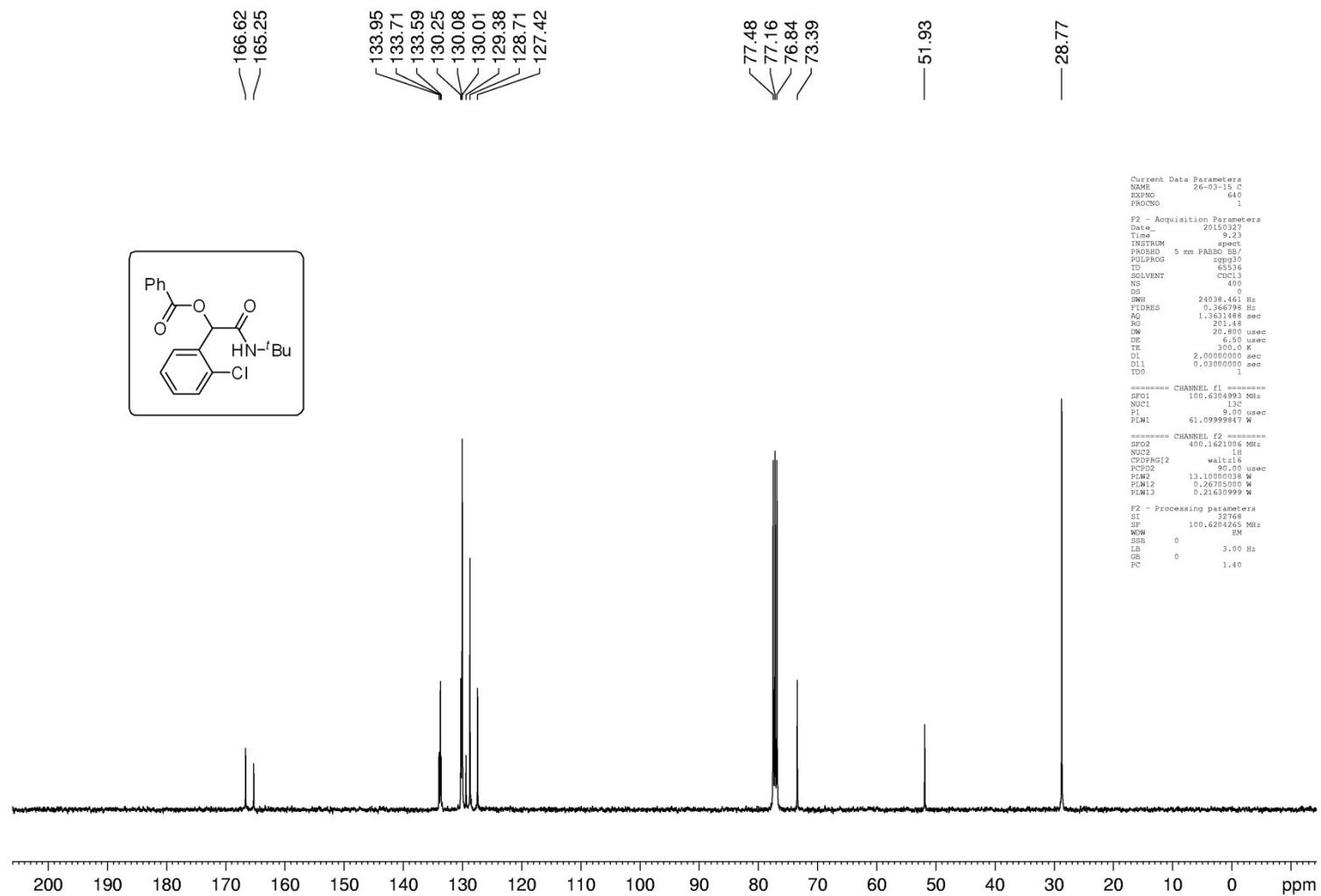


Figure S12. <sup>13</sup>C-NMR spectrum of 2-(*tert*-butylamino)-1-(2-chlorophenyl)-2-oxoethyl benzoate (**4bAa**).

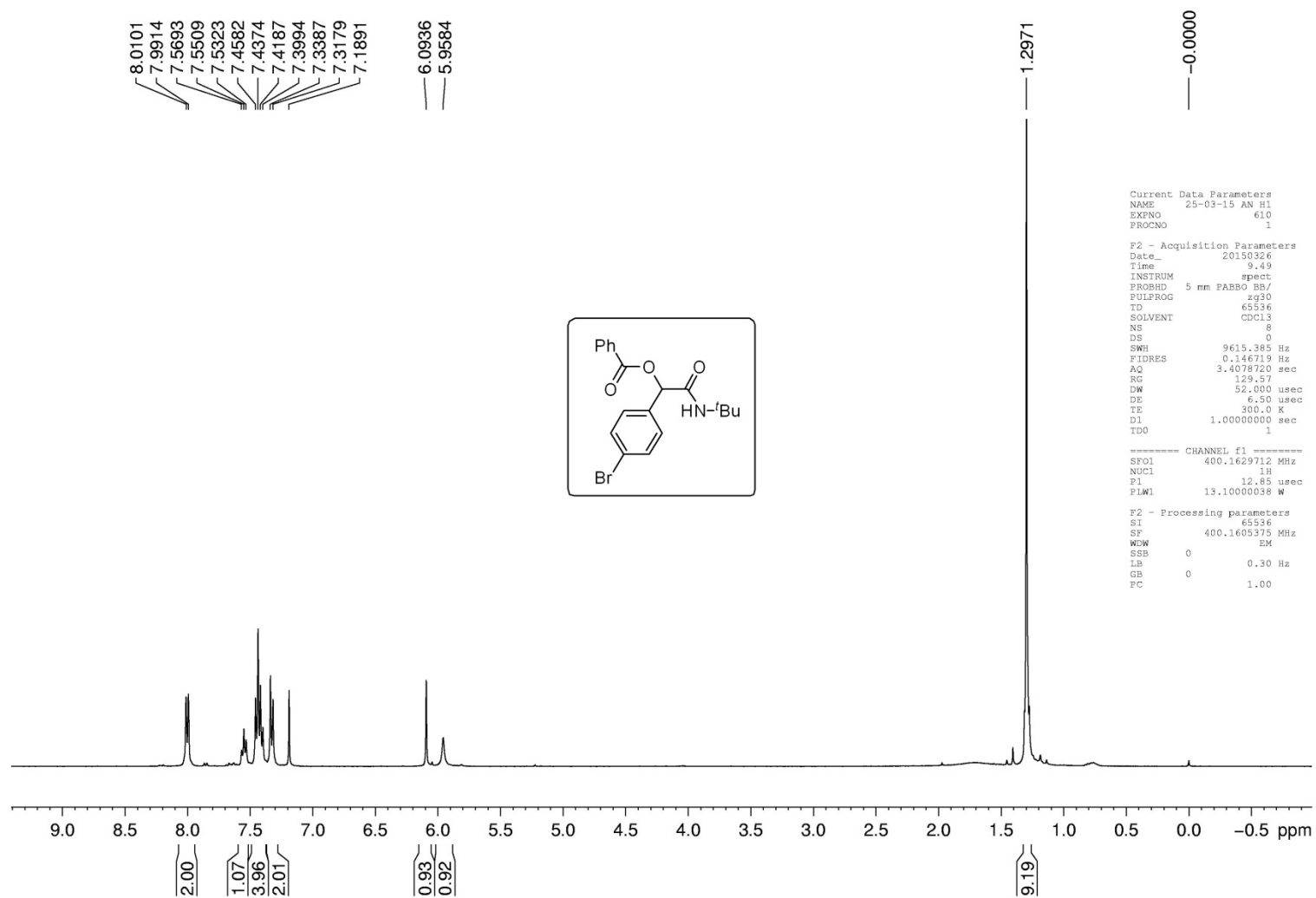
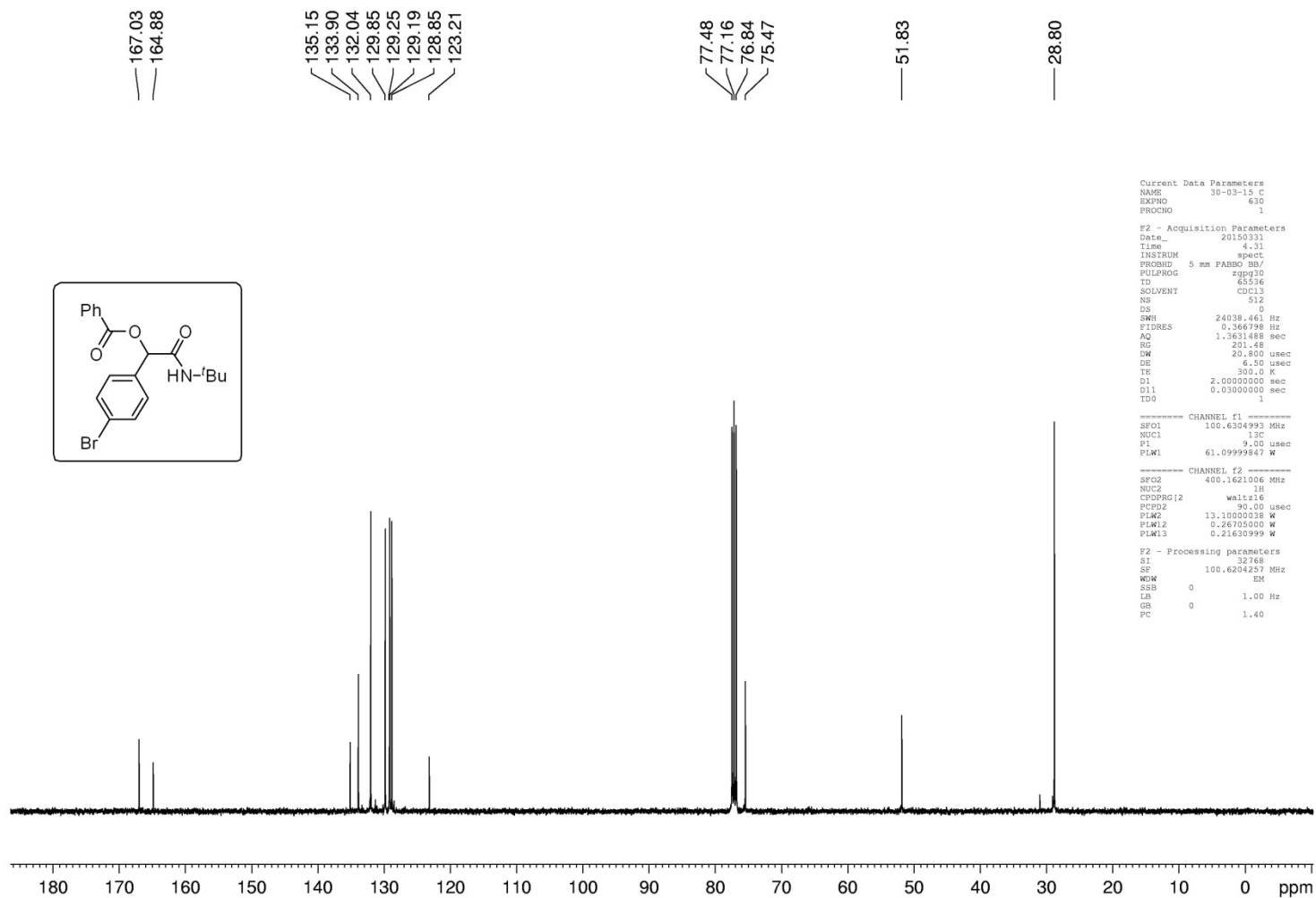
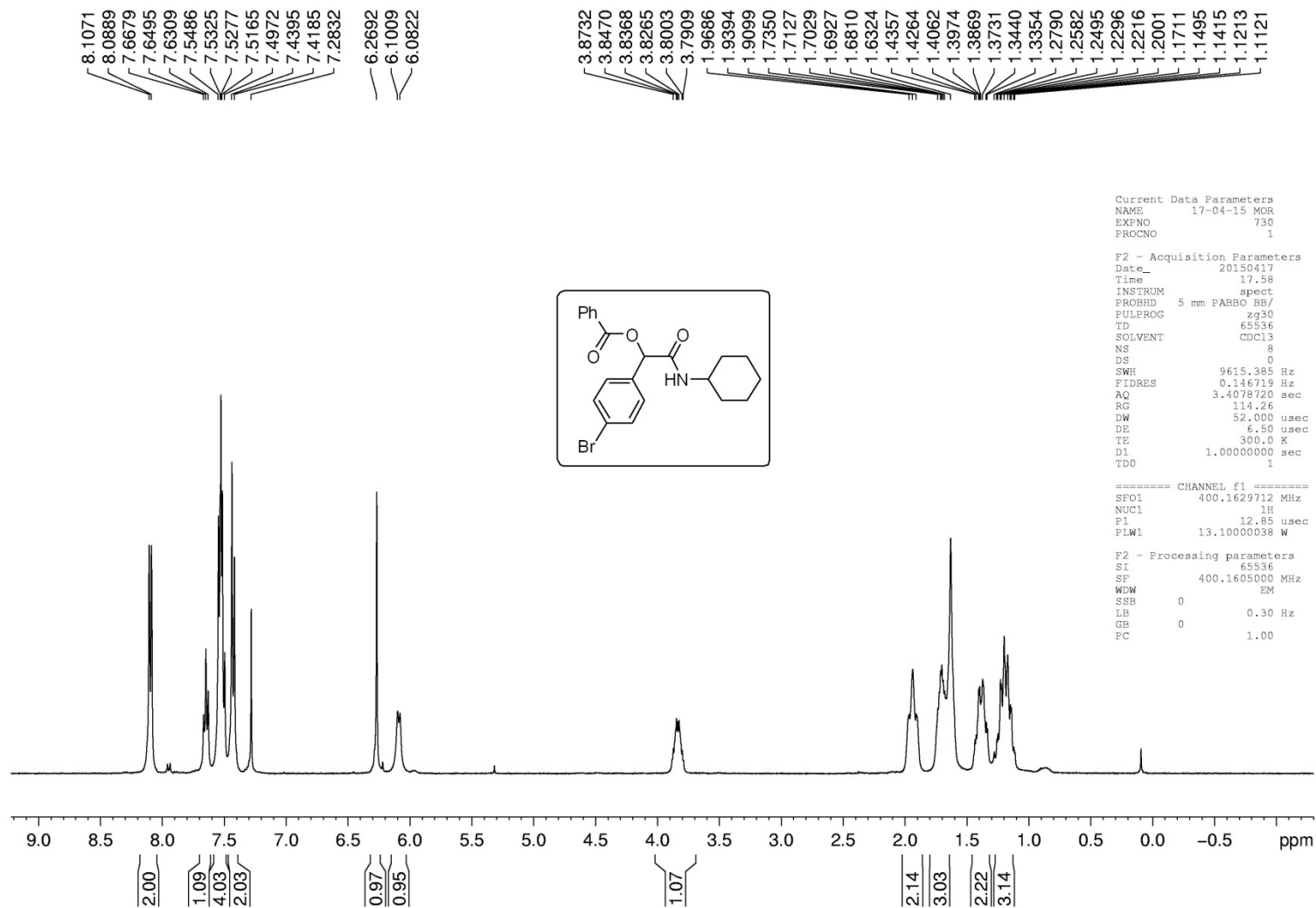


Figure S13. <sup>1</sup>H-NMR spectrum of 1-(4-bromophenyl)-2-(tert-butylamino)-2-oxoethyl benzoate (4cAa).



**Figure S14.** <sup>13</sup>C-NMR spectrum of 1-(4-bromophenyl)-2-(tert-butylamino)-2-oxoethyl benzoate (**4cAa**).



**Figure S15.** <sup>1</sup>H-NMR spectrum of 1-(4-bromophenyl)-2-(cyclohexylamino)-2-oxoethyl benzoate (**4cAb**).



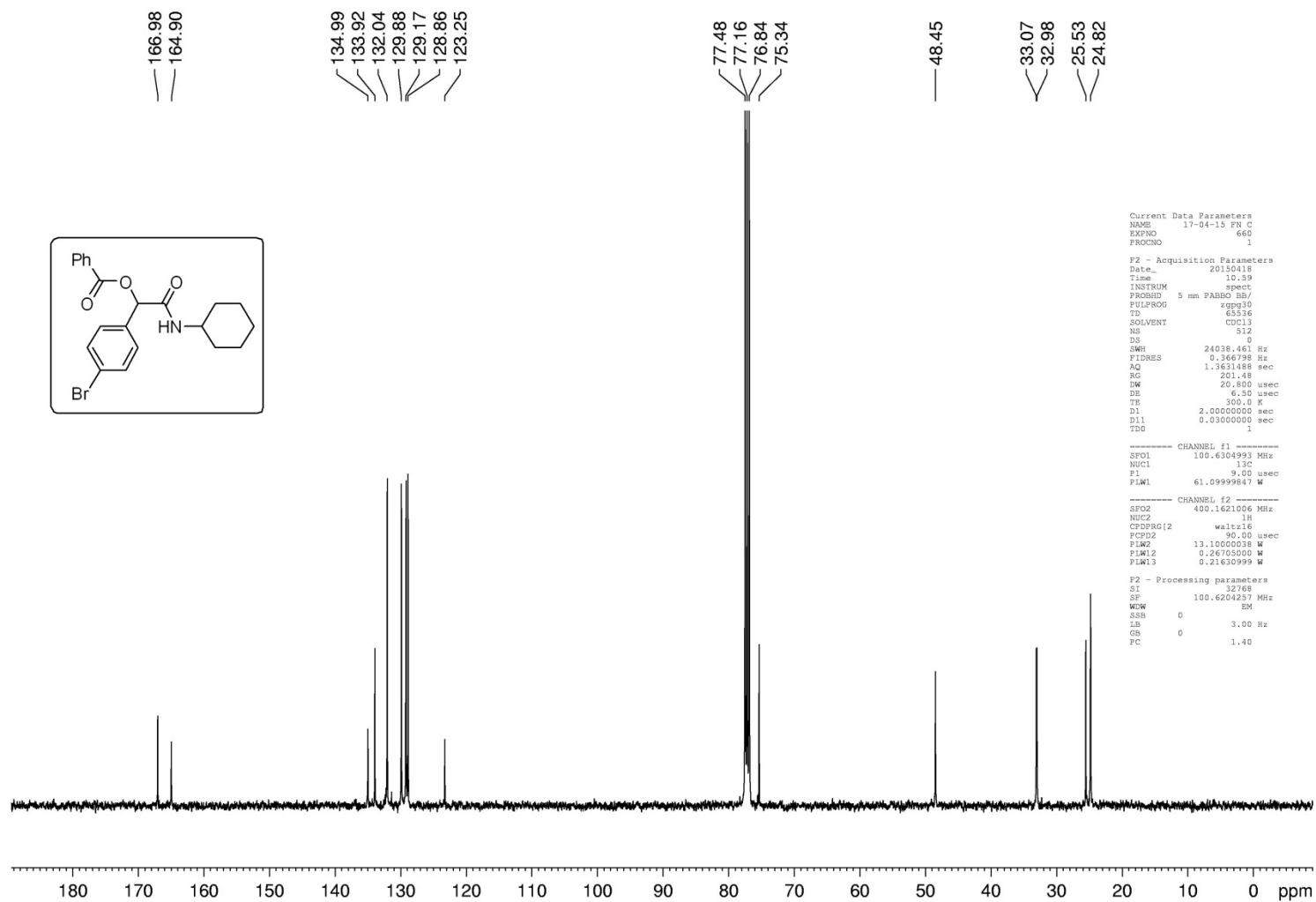
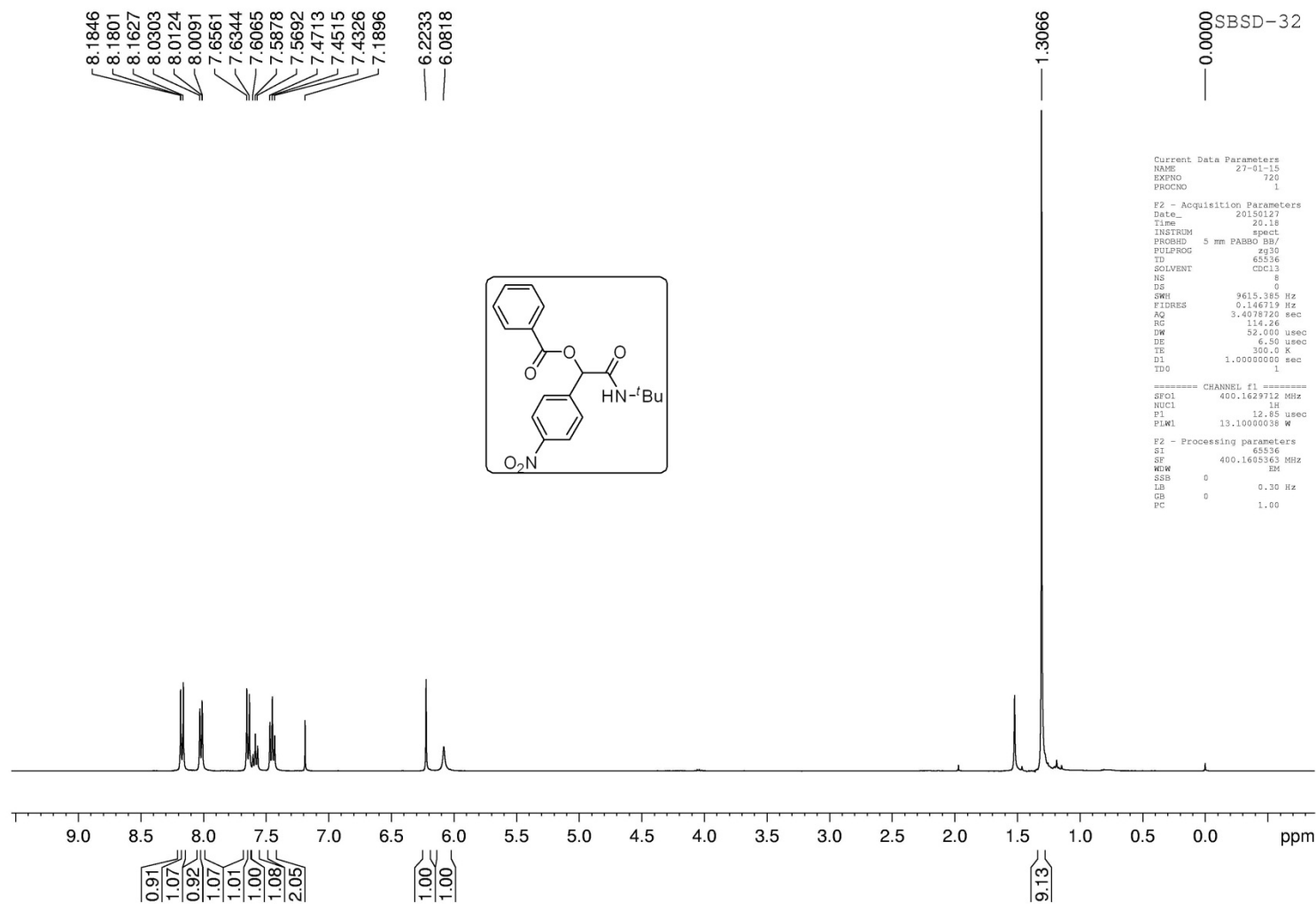
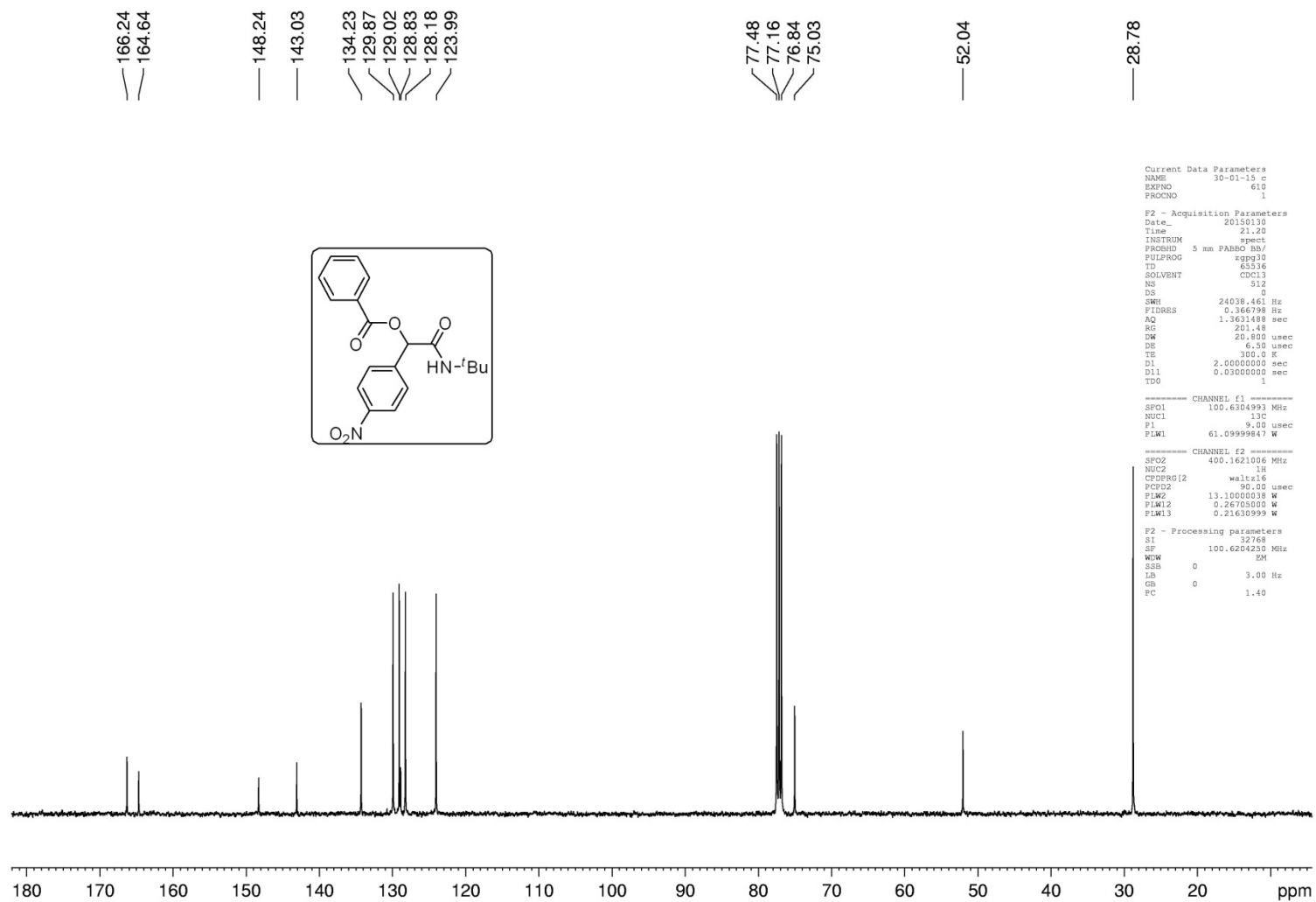


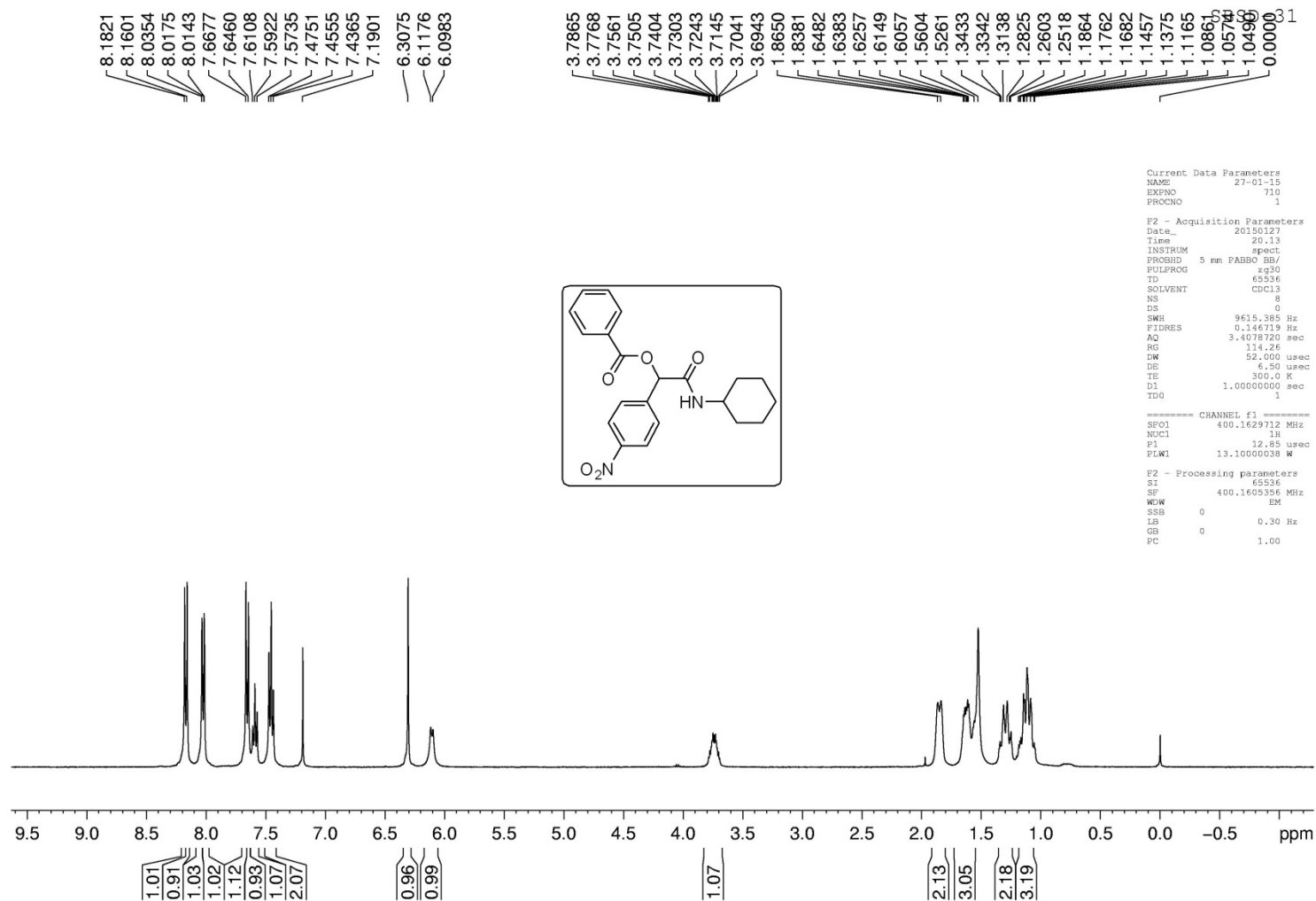
Figure S16. <sup>13</sup>C-NMR spectrum of 1-(4-bromophenyl)-2-(cyclohexylamino)-2-oxoethyl benzoate (**4cAb**).



**Figure S17.**  $^1\text{H-NMR}$  spectrum of 2-(*tert*-butylamino)-1-(4-nitrophenyl)-2-oxoethyl benzoate (**4dAa**).



**Figure S18.**  $^{13}\text{C}$ -NMR spectrum of 2-(*tert*-butylamino)-1-(4-nitrophenyl)-2-oxoethyl benzoate (**4dAa**).



**Figure S19.**  $^1\text{H-NMR}$  spectrum of 2-(cyclohexylamino)-1-(4-nitrophenyl)-2-oxoethyl benzoate (**4dAb**).

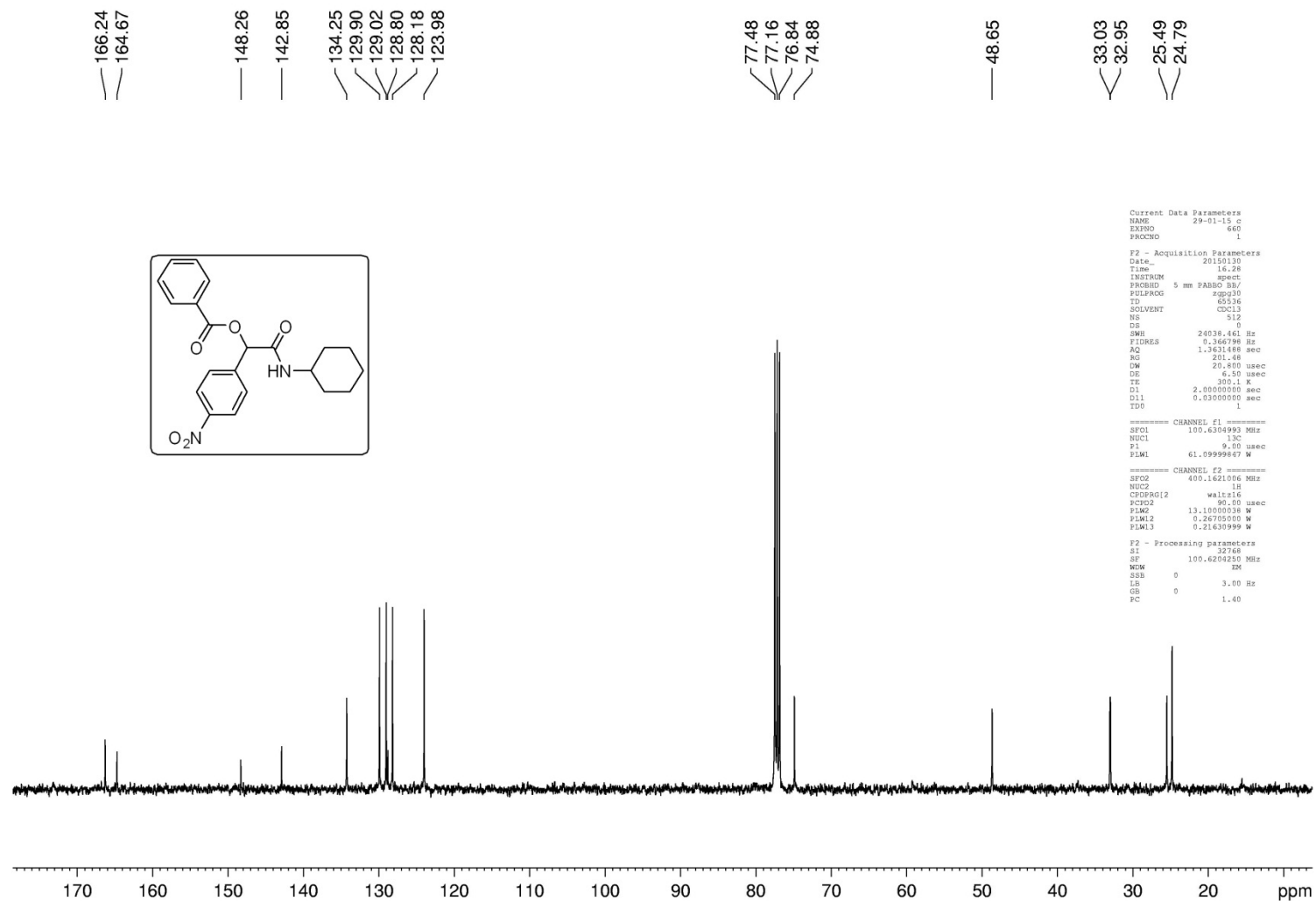
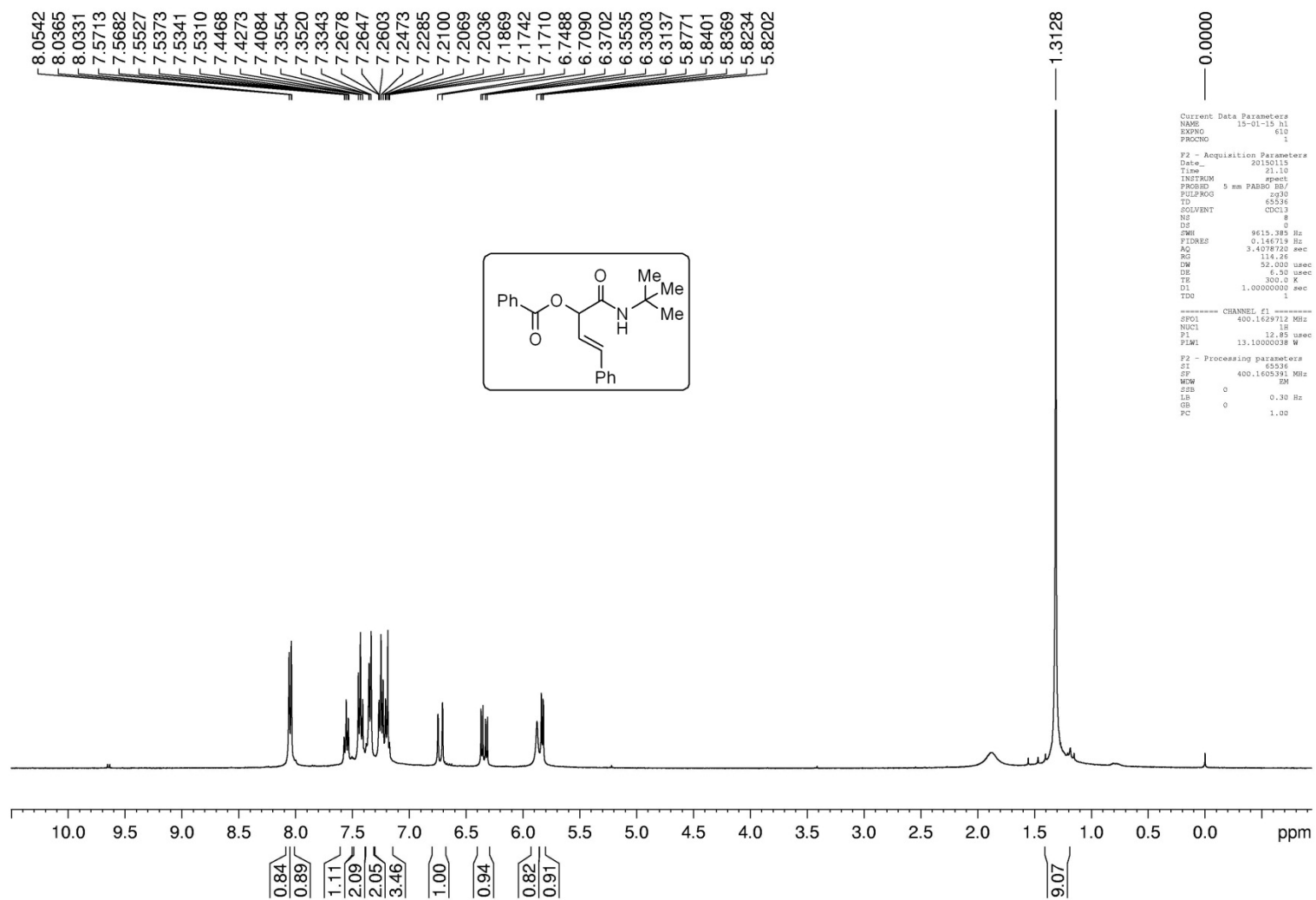


Figure S20. <sup>13</sup>C-NMR spectrum of 2-(cyclohexylamino)-1-(4-nitrophenyl)-2-oxoethyl benzoate (**4dAb**).



**Figure S21.** <sup>1</sup>H-NMR spectrum of *(E)*-1-(*tert*-butylamino)-1-oxo-4-phenylbut-3-en-2-yl benzoate (**4eAa**).

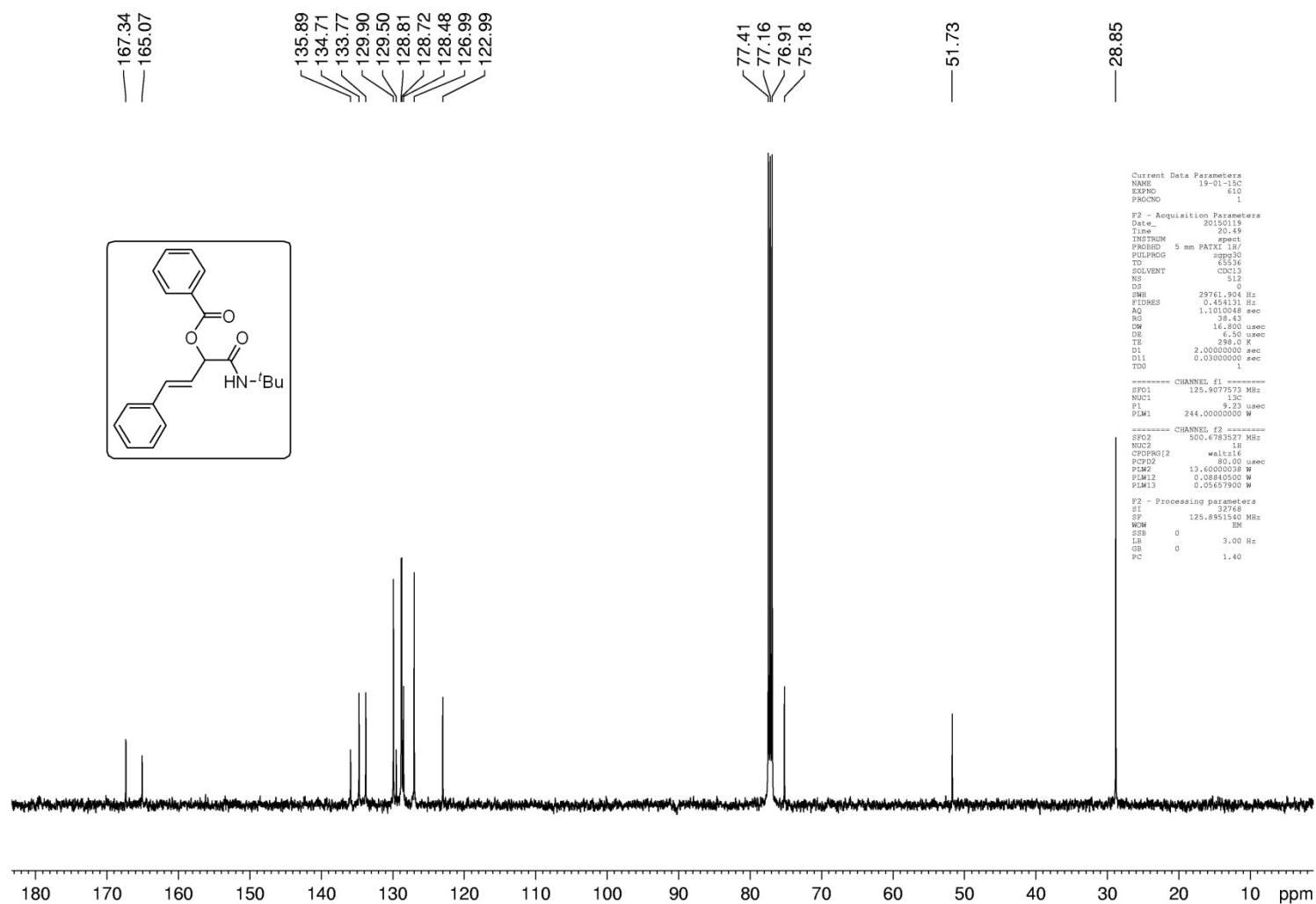


Figure S22. <sup>13</sup>C-NMR spectrum of (*E*)-1-(*tert*-butylamino)-1-oxo-4-phenylbut-3-en-2-yl benzoate (**4eAa**).

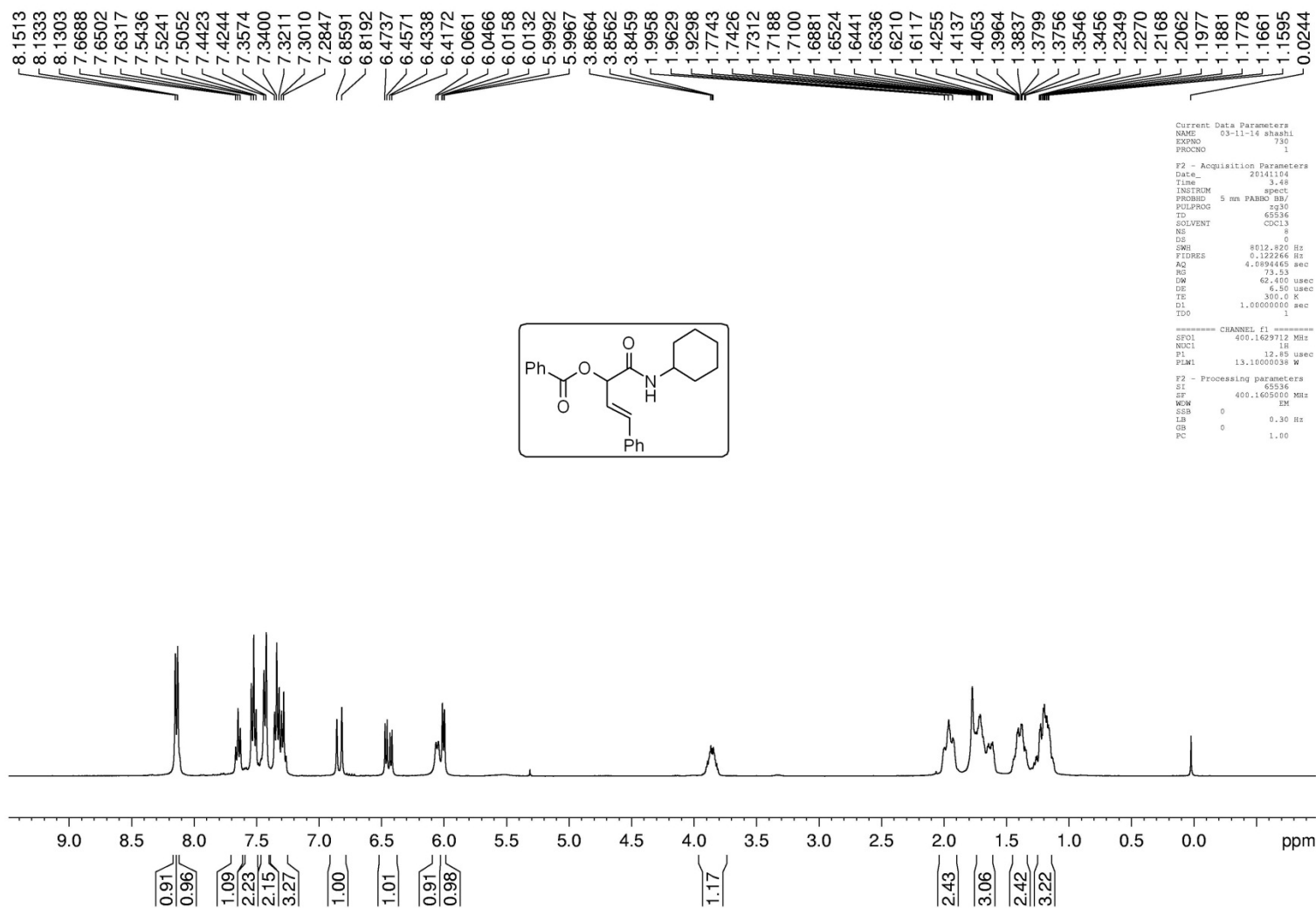
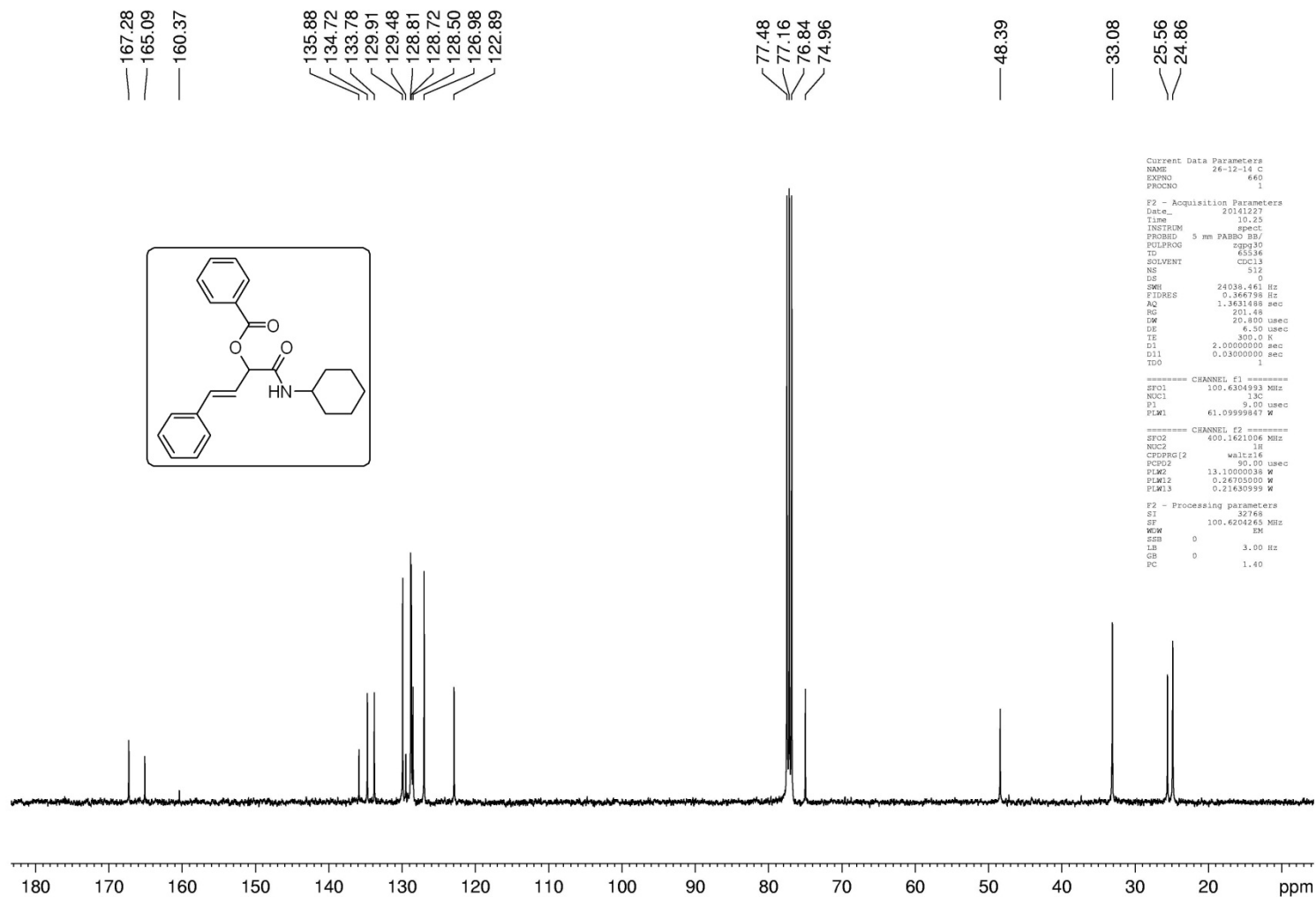
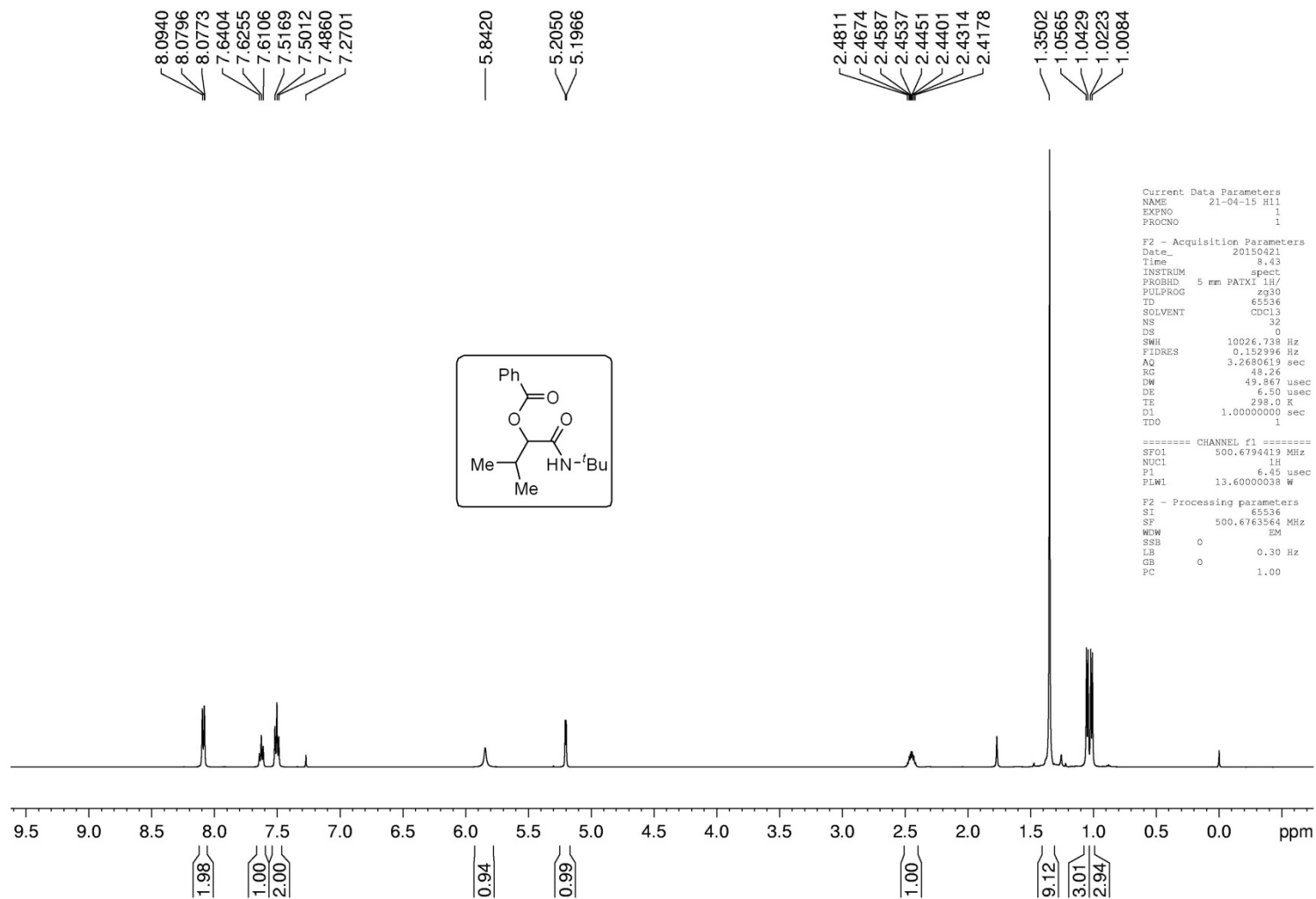


Figure S23. <sup>1</sup>H-NMR spectrum of (*E*)-1-(cyclohexylamino)-1-oxo-4-phenylbut-3-en-2-yl benzoate (**4eAb**).

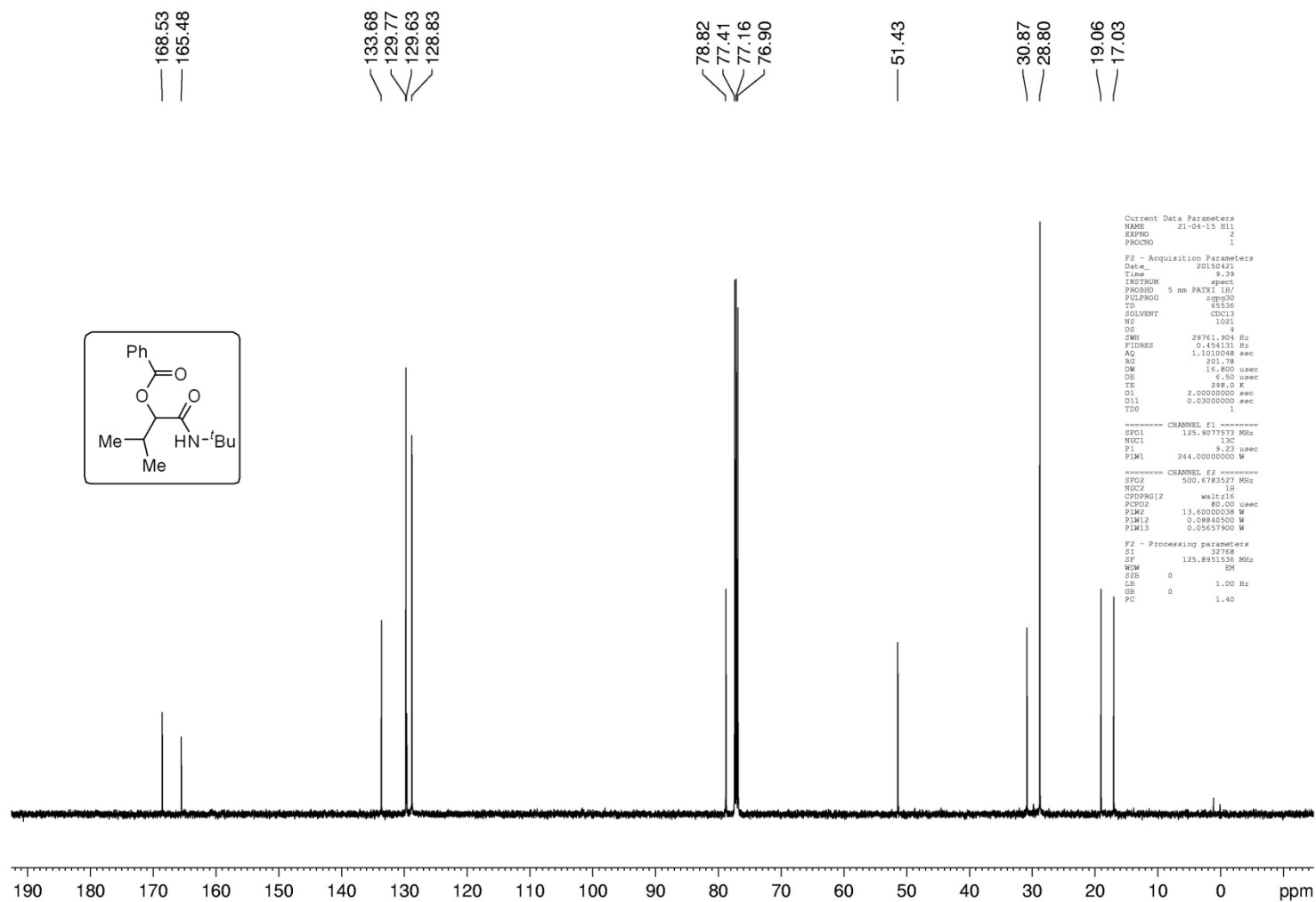




**Figure S24.** <sup>13</sup>C-NMR spectrum of (*E*)-1-(cyclohexylamino)-1-oxo-4-phenylbut-3-en-2-yl benzoate (**4eAb**).



**Figure S25.** <sup>1</sup>H-NMR spectrum of 1-(*tert*-butylamino)-3-methyl-1-oxobutan-2-yl benzoate (4fAa).



**Figure S26.**  $^{13}\text{C}$ -NMR spectrum of 1-(*tert*-butylamino)-3-methyl-1-oxobutan-2-yl benzoate (4fAa).

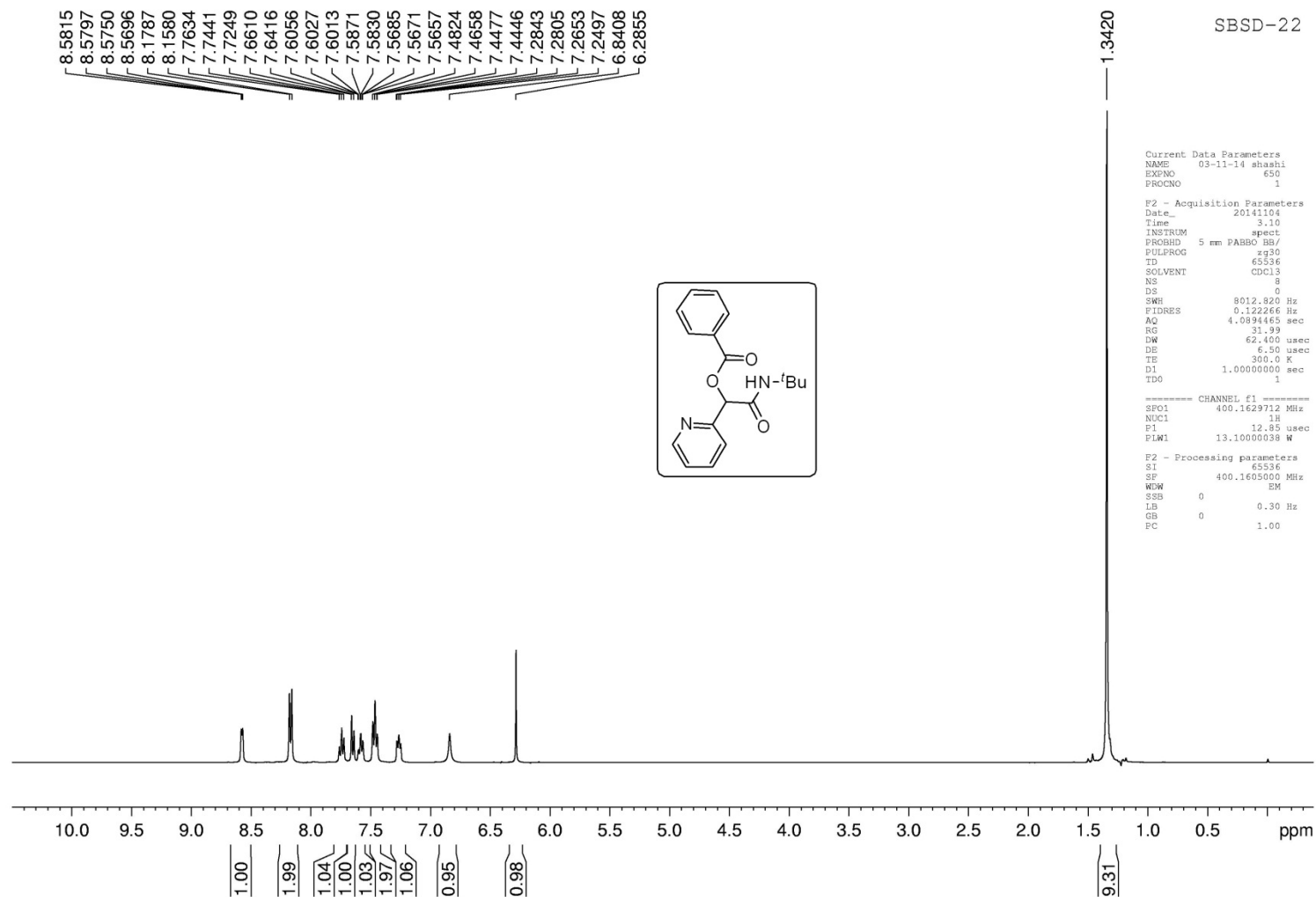


Figure S27. <sup>1</sup>H-NMR spectrum of 2-(*tert*-butylamino)-2-oxo-1-(pyridin-2-yl)ethyl benzoate (**4gAa**).

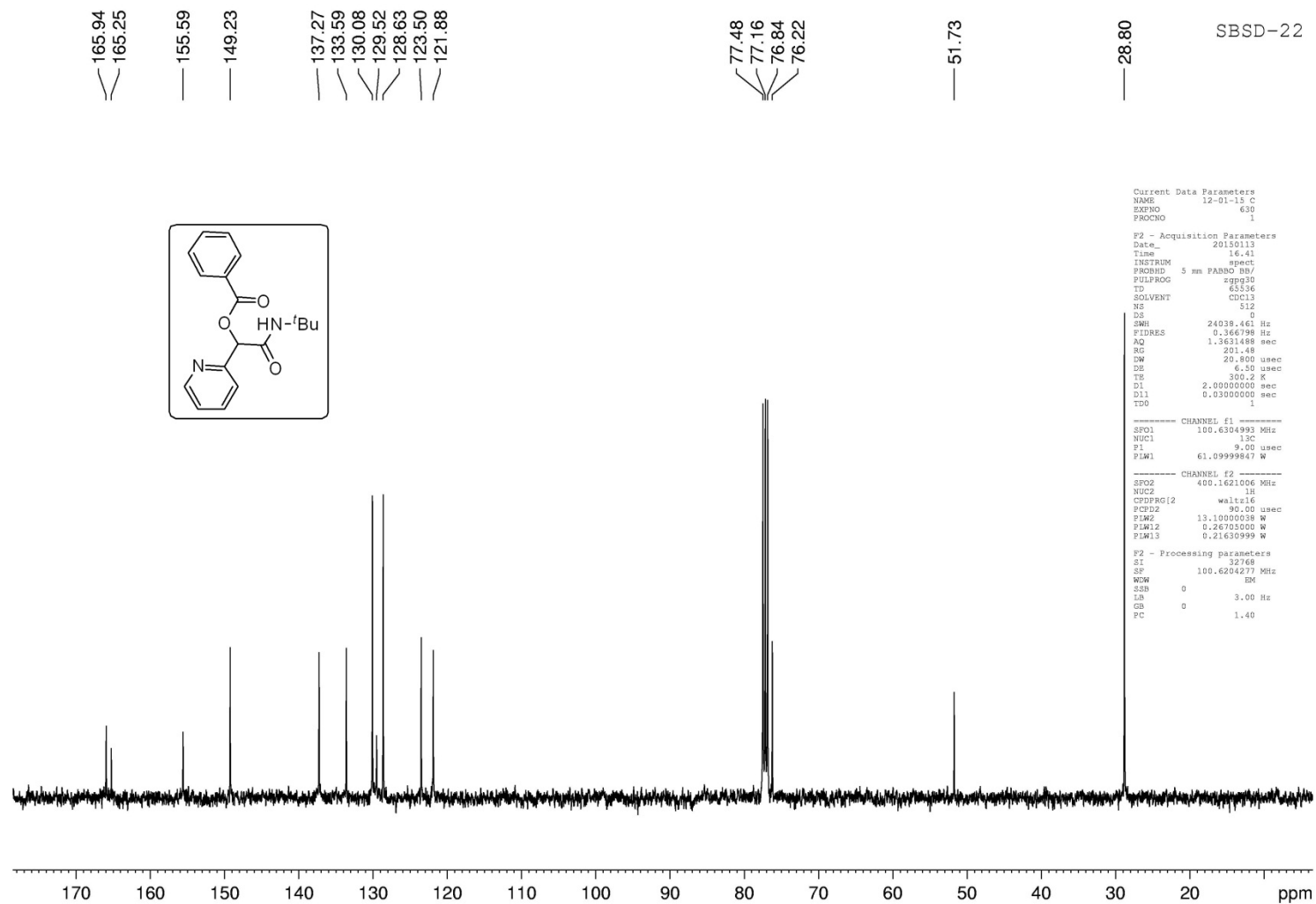
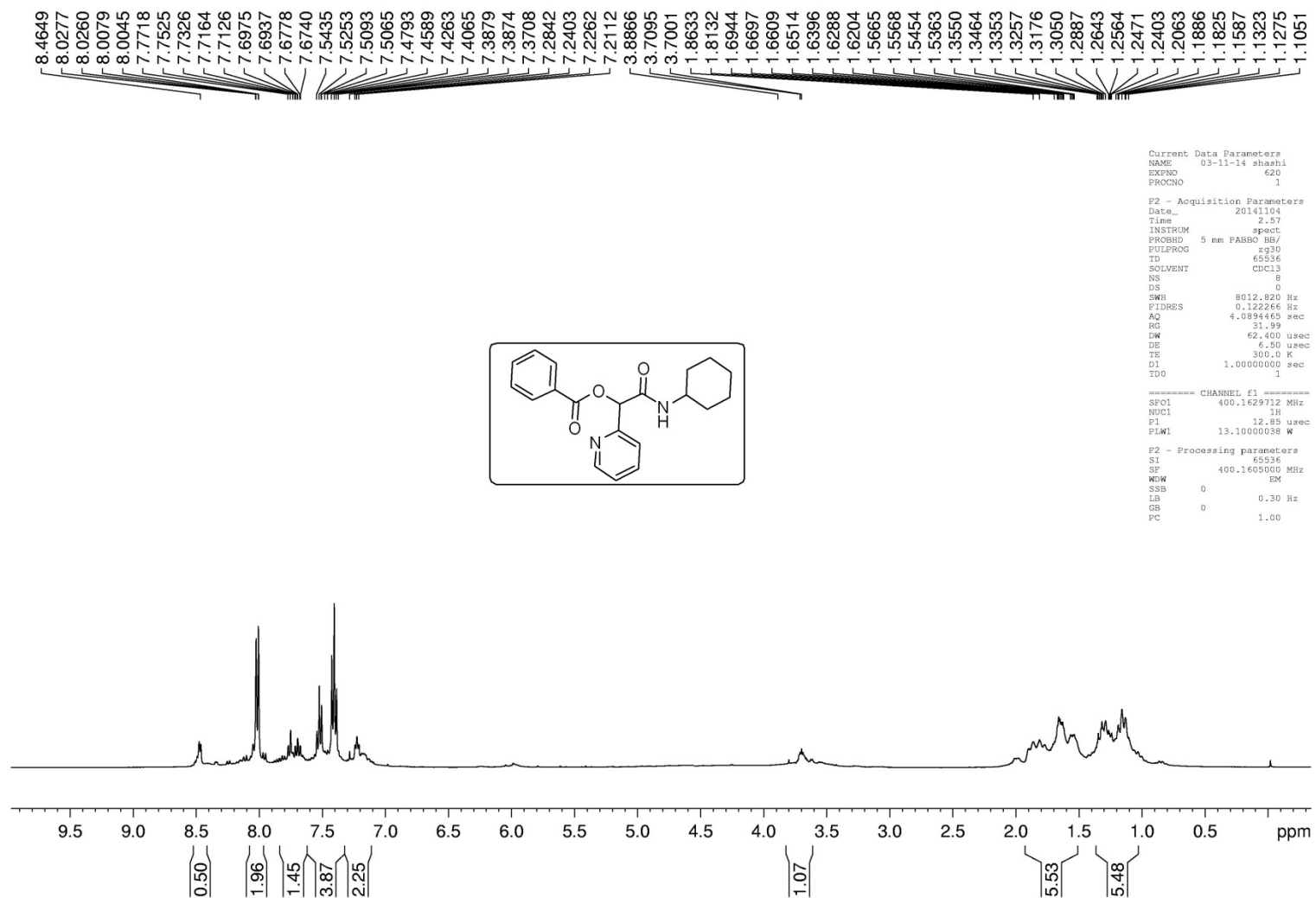
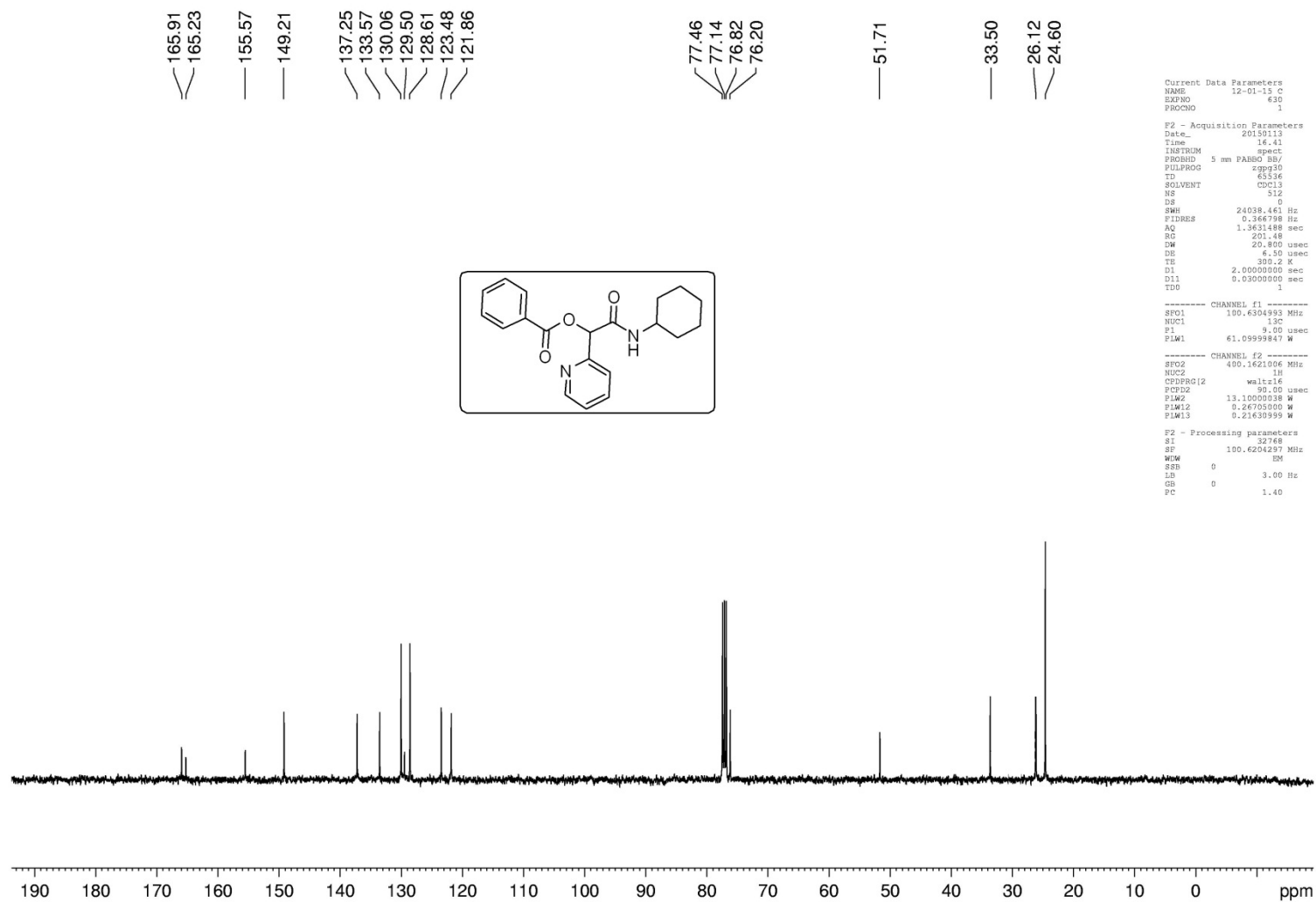


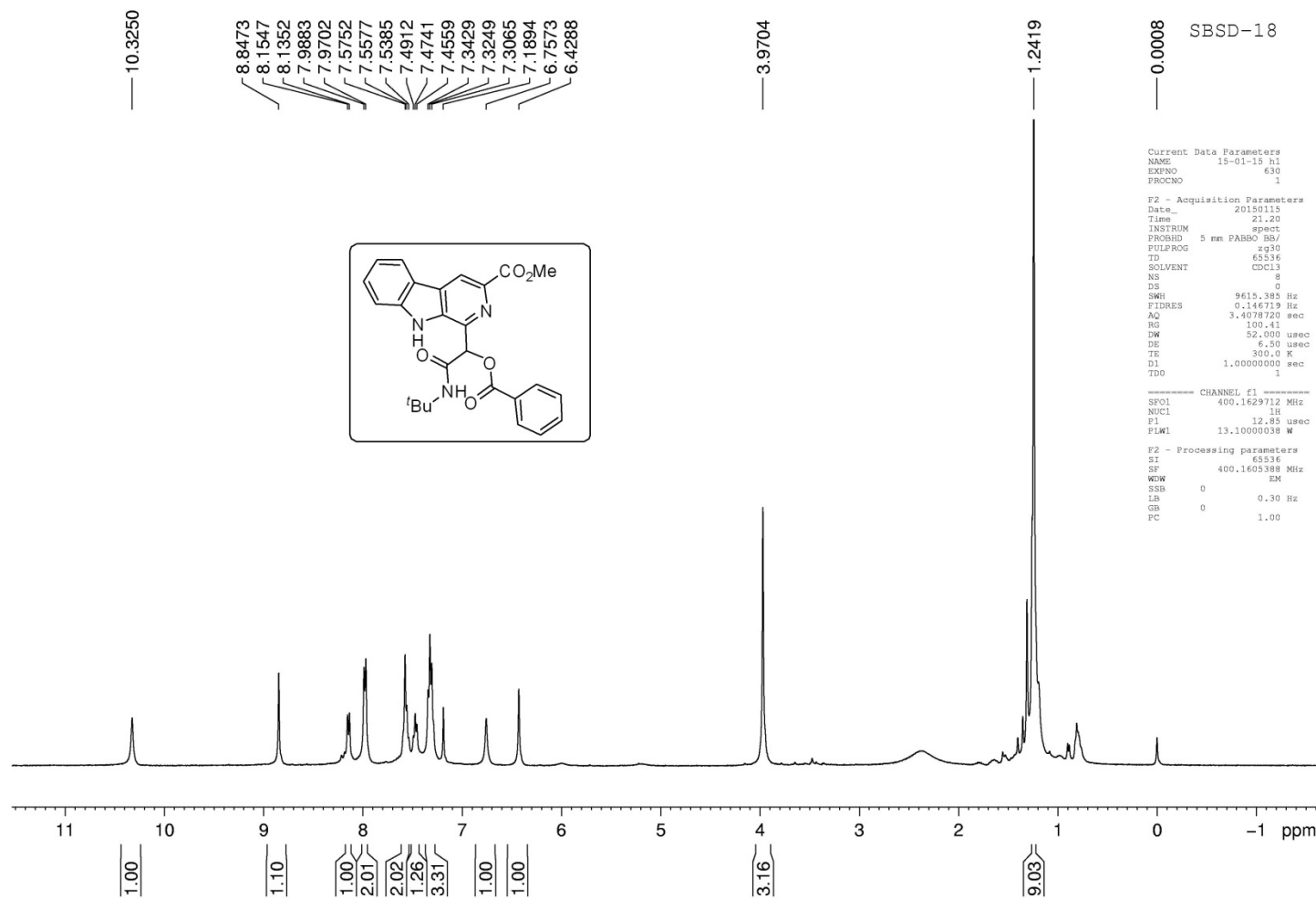
Figure S28.  $^{13}\text{C}$ -NMR spectrum of 2-(*tert*-butylamino)-2-oxo-1-(pyridin-2-yl)ethyl benzoate (**4gAa**).



**Figure S29.**  $^1\text{H-NMR}$  spectrum of 2-(cyclohexylamino)-2-oxo-1-(pyridin-2-yl)ethyl benzoate (**4gAb**).

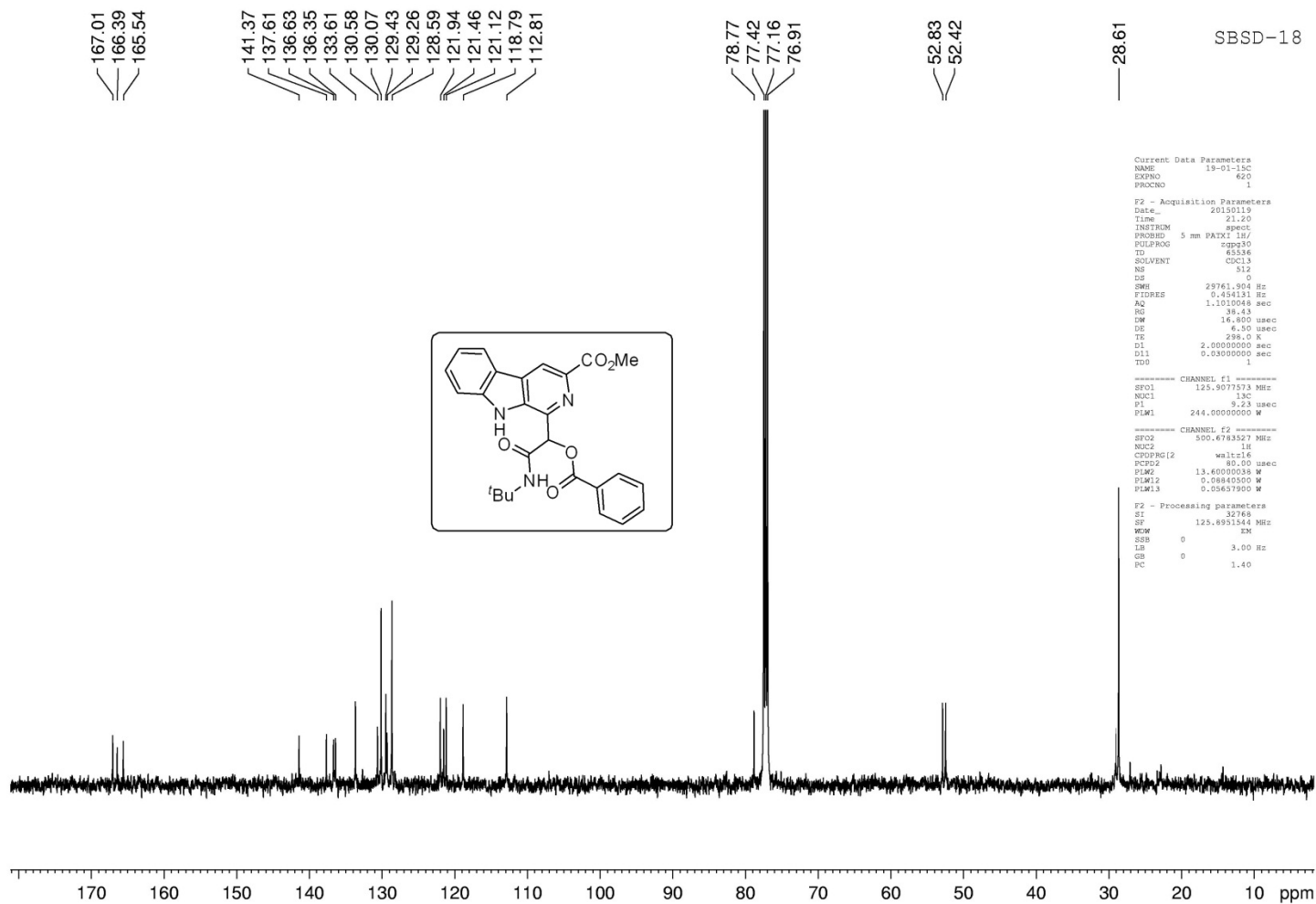


**Figure S30.**  $^{13}\text{C}$ -NMR spectrum of 2-(cyclohexylamino)-2-oxo-1-(pyridin-2-yl)ethyl benzoate (**4gAb**).

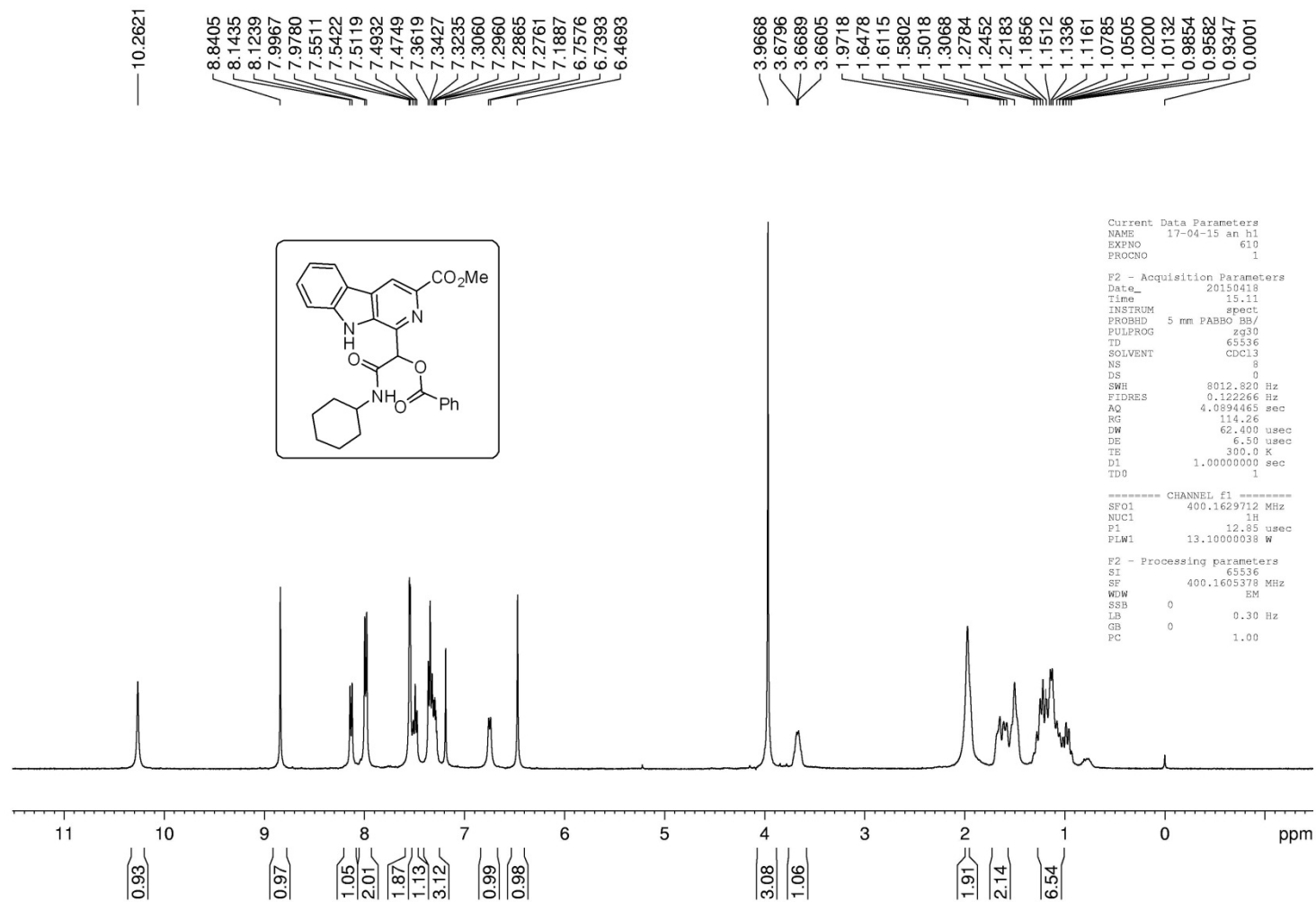


**Figure S31.** <sup>1</sup>H-NMR spectrum of methyl 1-(1-(benzoyloxy)-2-(*tert*-butylamino)-2-oxoethyl)-9*H*-pyrido[3,4-*b*]indole-3-carboxylate (4hAa).

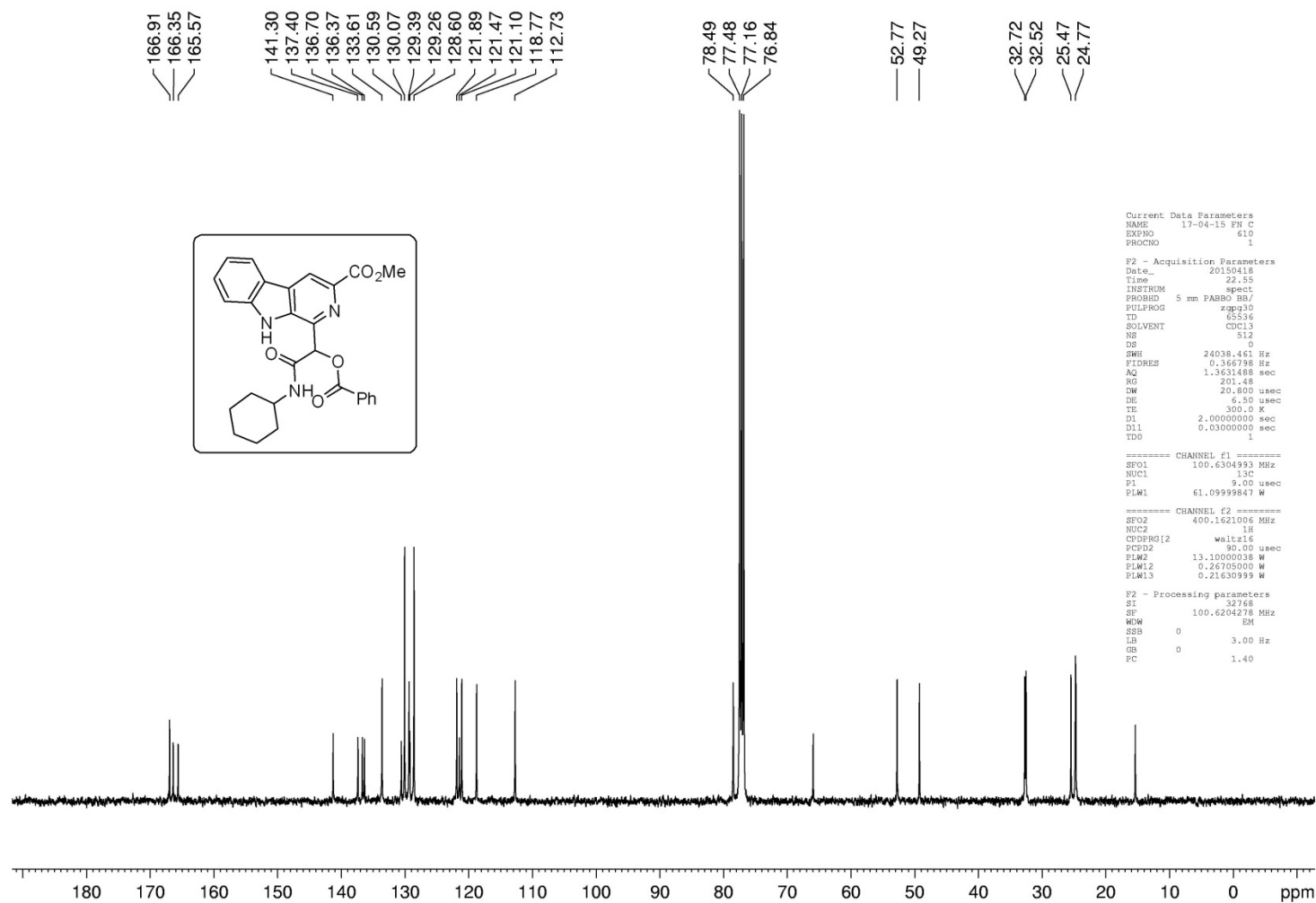




**Figure S32.**  $^{13}\text{C}$ -NMR spectrum of methyl 1-(1-(benzoyloxy)-2-(*tert*-butylamino)-2-oxoethyl)-9*H*-pyrido[3,4-*b*]indole-3-carboxylate (**4hAa**).



**Figure S33.** <sup>1</sup>H-NMR spectrum of methyl 1-(1-(benzoyloxy)-2-(cyclohexylamino)-2-oxoethyl)-9H-pyrido[3,4-b]indole-3-carboxylate (4hAb).



**Figure S34.** <sup>13</sup>C-NMR spectrum of methyl 1-(1-(benzoyloxy)-2-(cyclohexylamino)-2-oxoethyl)-9H-pyrido[3,4-b]indole-3-carboxylate (4hAb).

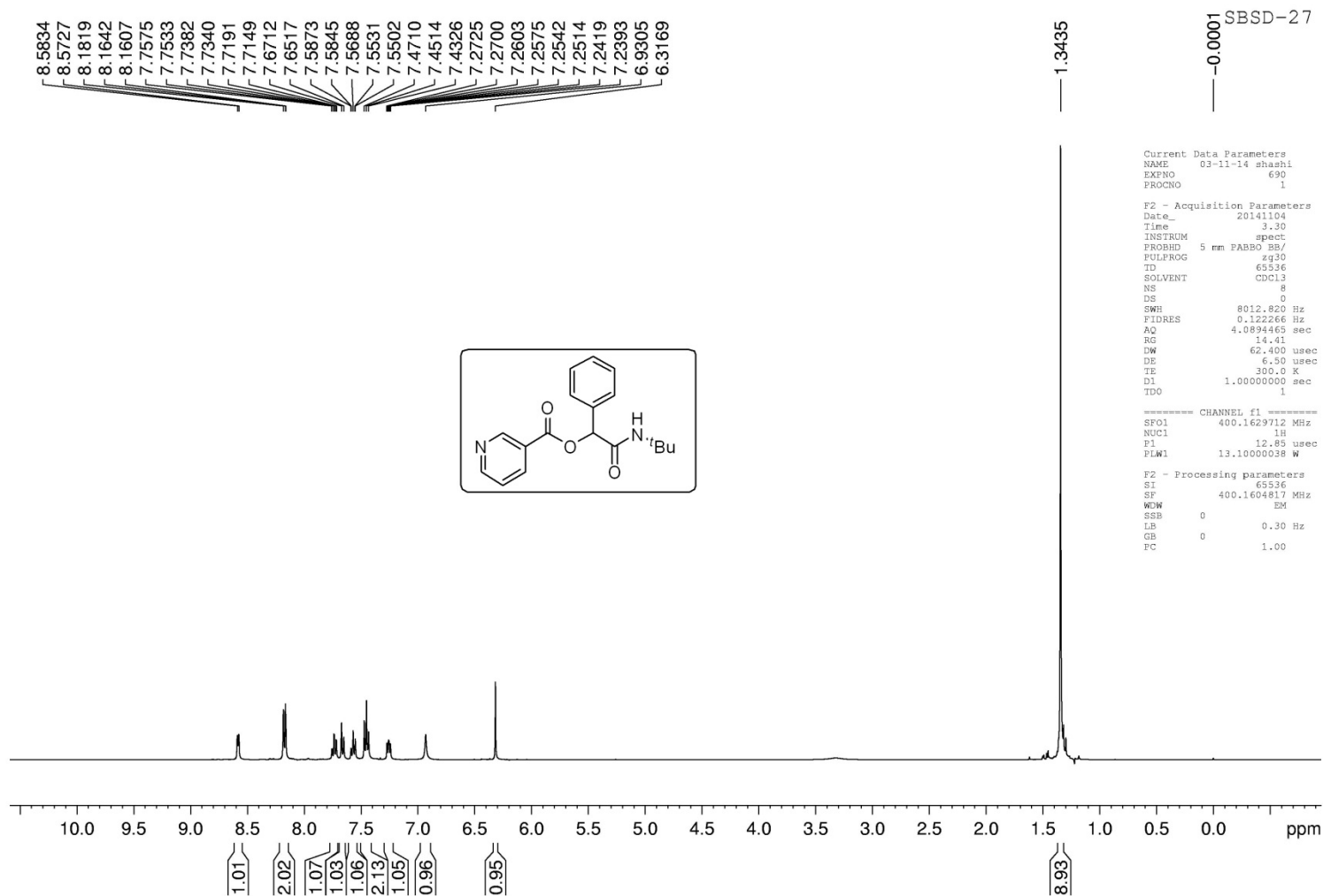


Figure S35. <sup>1</sup>H-NMR spectrum of 2-(*tert*-butylamino)-2-oxo-1-phenylethyl nicotinate (**4aBa**).

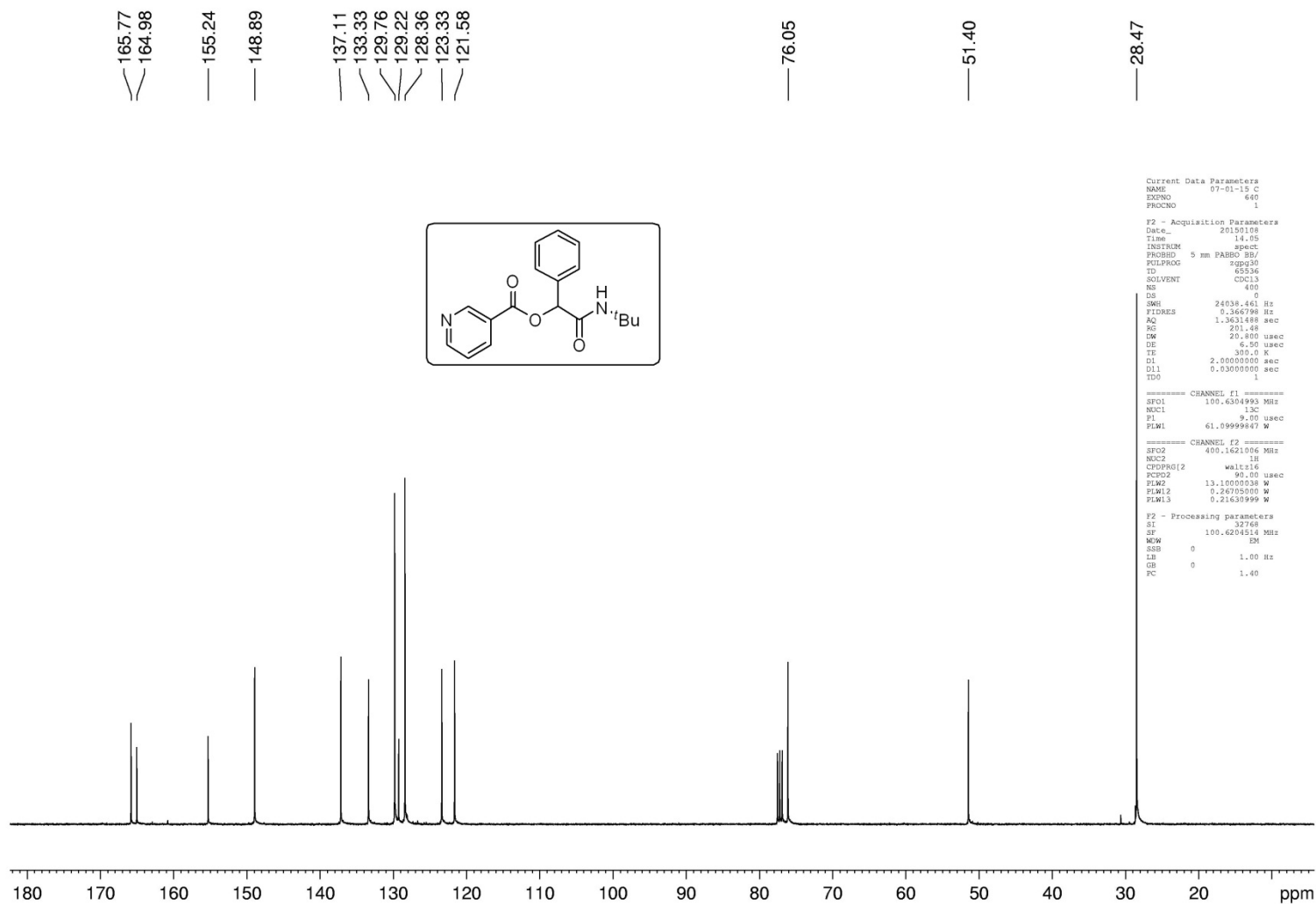
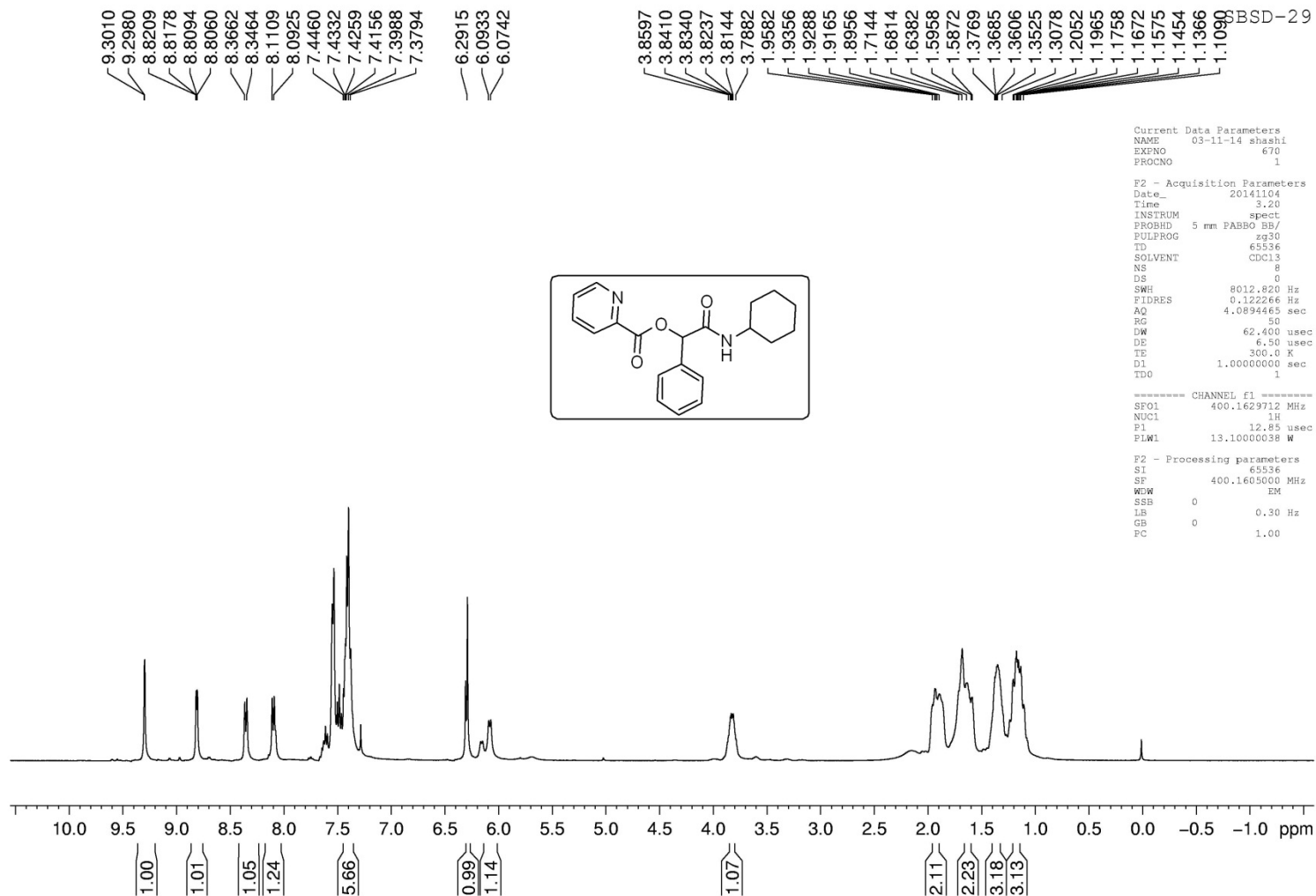


Figure S36. <sup>13</sup>C-NMR spectrum of 2-(*tert*-butylamino)-2-oxo-1-phenylethyl nicotinate (4aBa).



**Figure S37.**  $^1\text{H-NMR}$  spectrum of 2-(cyclohexylamino)-2-oxo-1-phenylethyl nicotinate (**4aBb**).

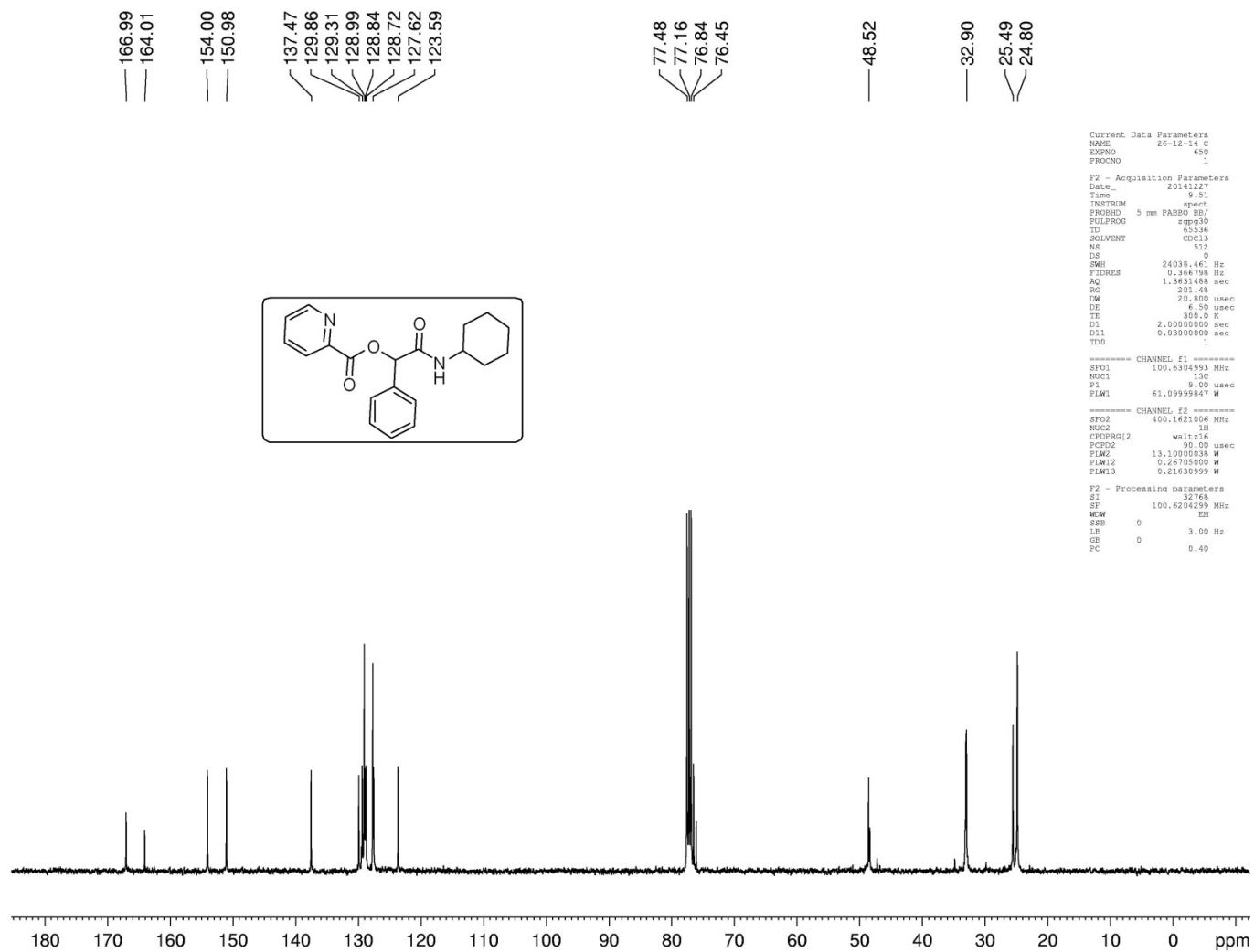


Figure S38.  $^{13}\text{C}$ -NMR spectrum of 2-(cyclohexylamino)-2-oxo-1-phenylethyl nicotinate (**4aBb**).

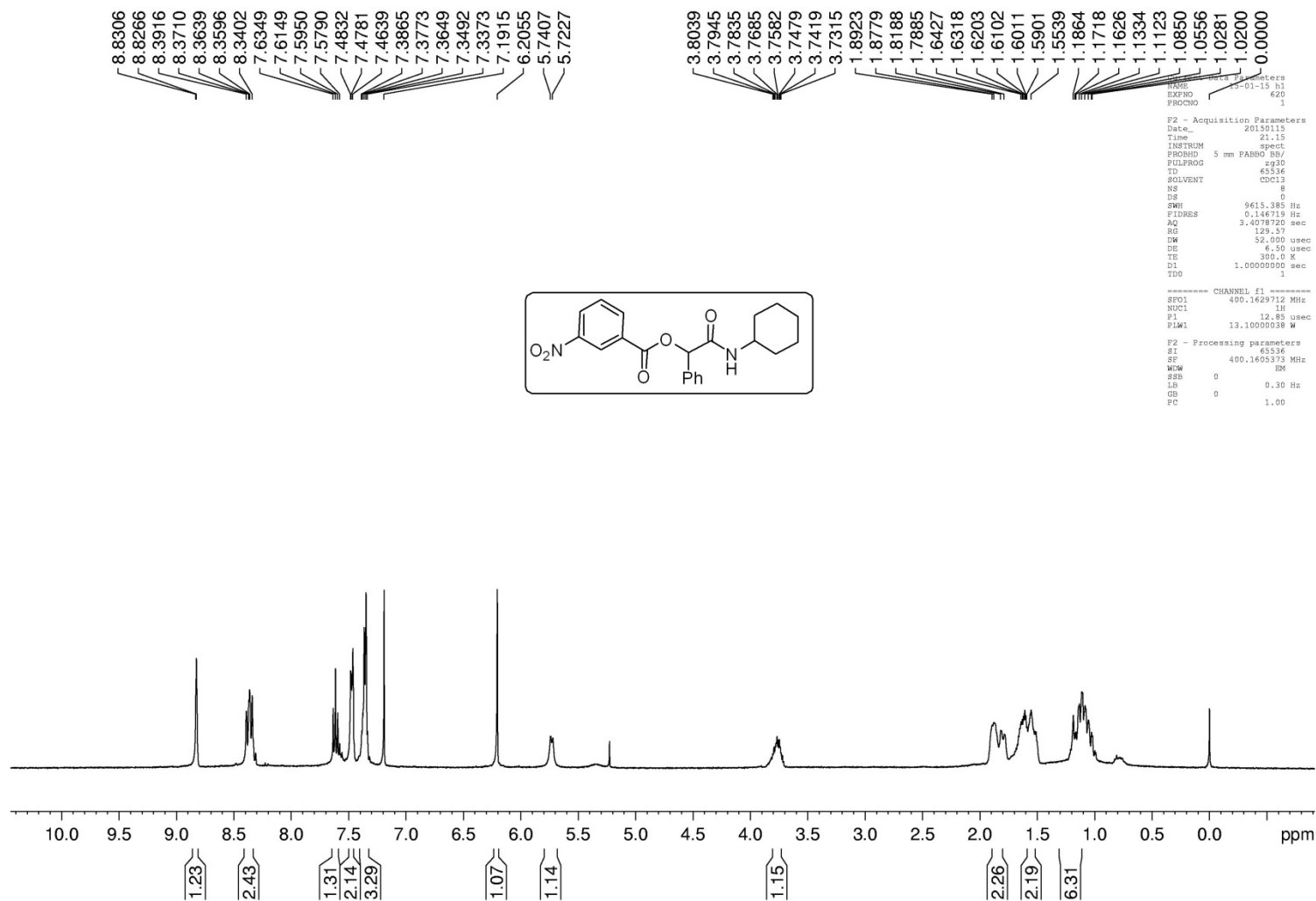
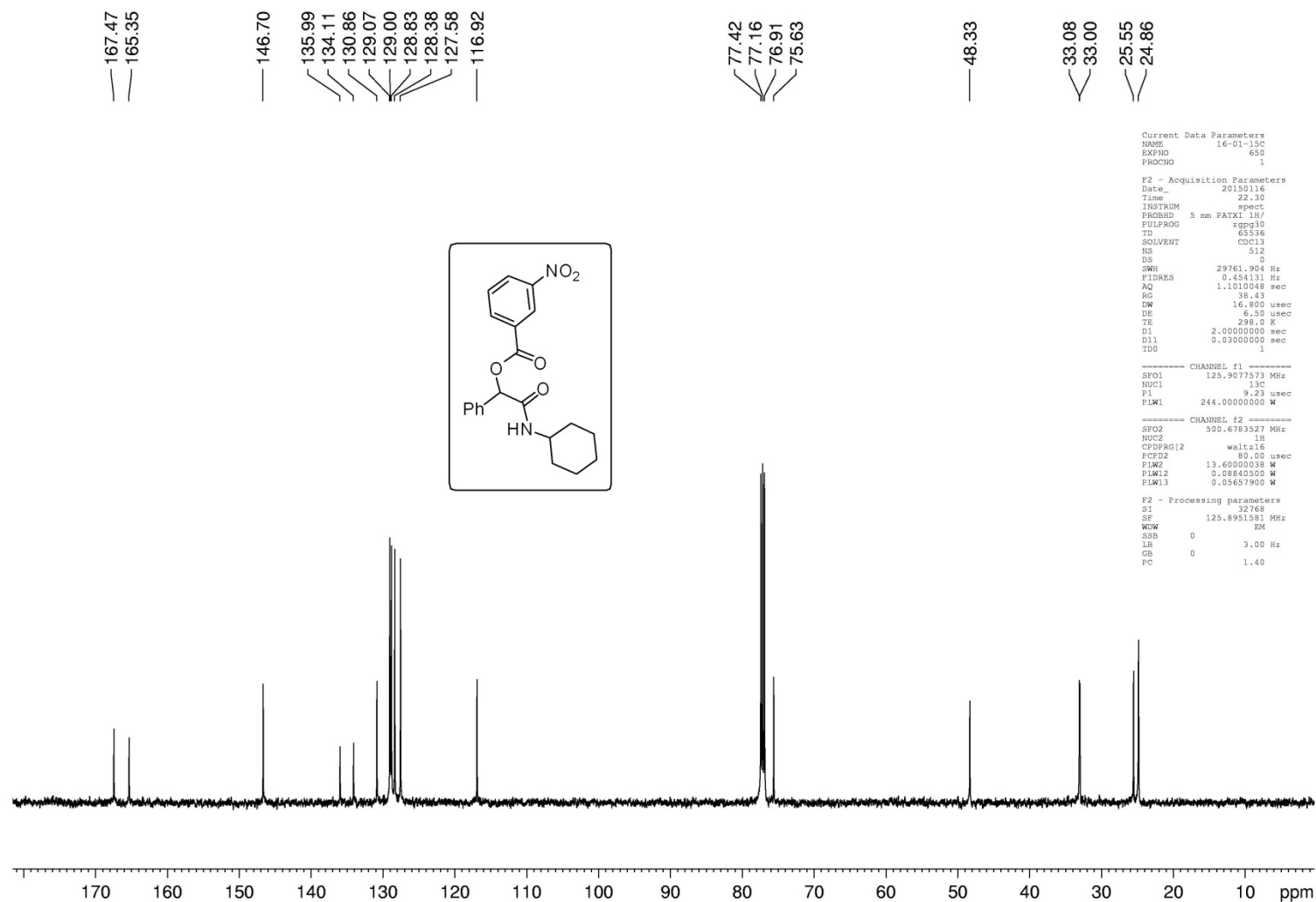
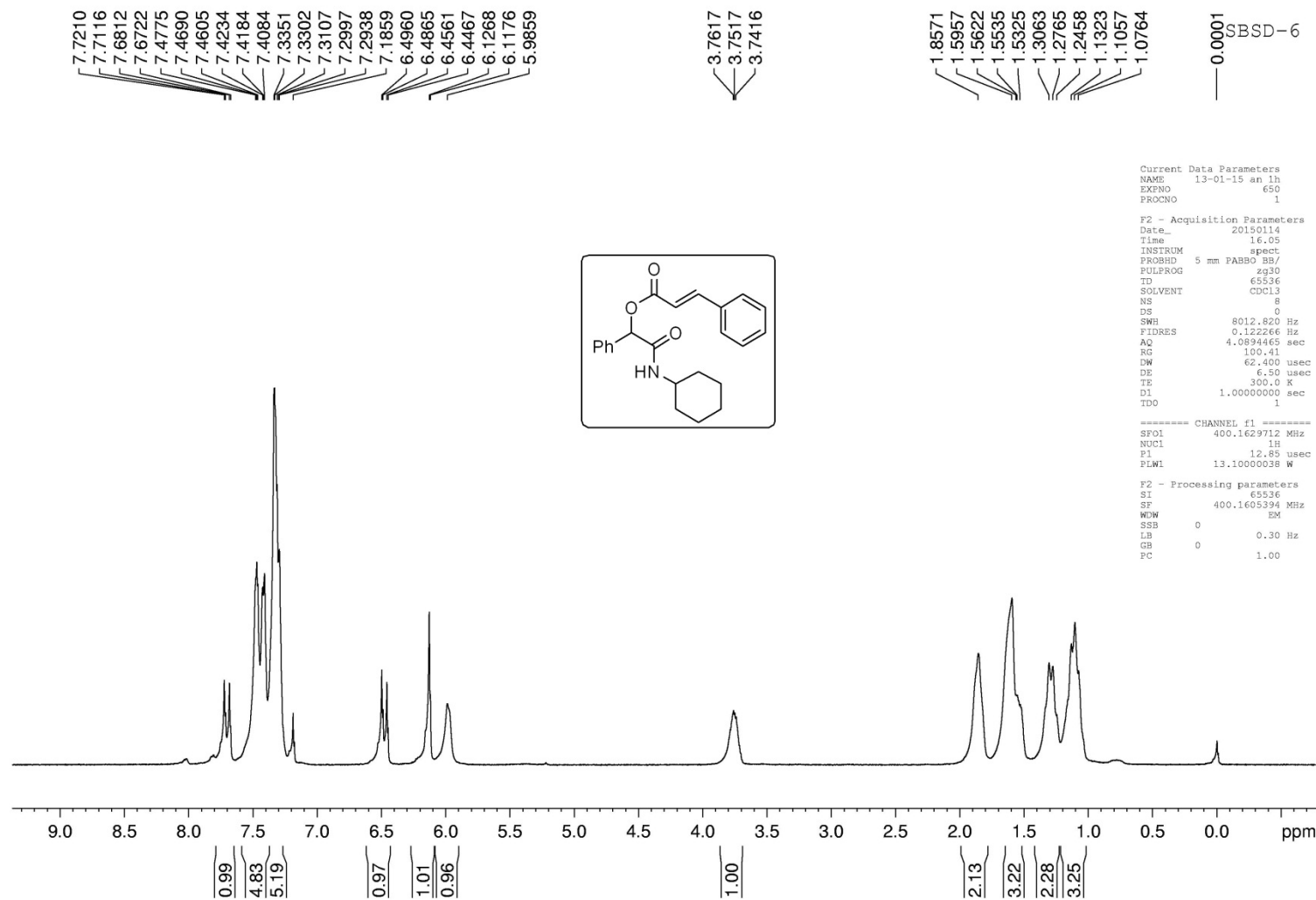


Figure S39. <sup>1</sup>H-NMR spectrum of 2-(cyclohexylamino)-2-oxo-1-phenylethyl 3-nitrobenzoate (4aCb).





**Figure S40.** <sup>13</sup>C-NMR spectrum of 2-(cyclohexylamino)-2-oxo-1-phenylethyl 3-nitrobenzoate (**4aCb**).



**Figure S41.** <sup>1</sup>H-NMR spectrum of 2-(cyclohexylamino)-2-oxo-1-phenylethyl cinnamate (**4aDb**).

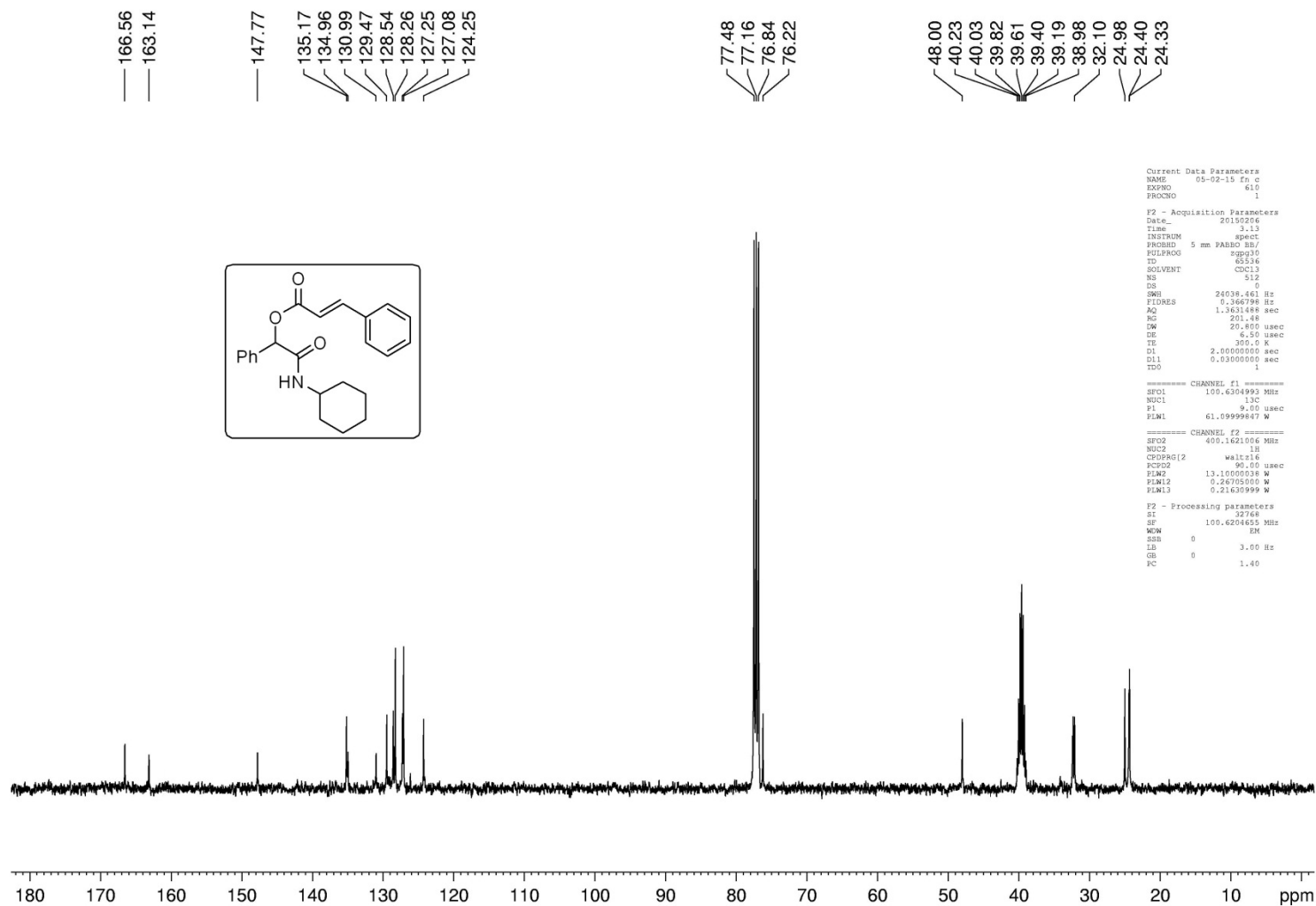
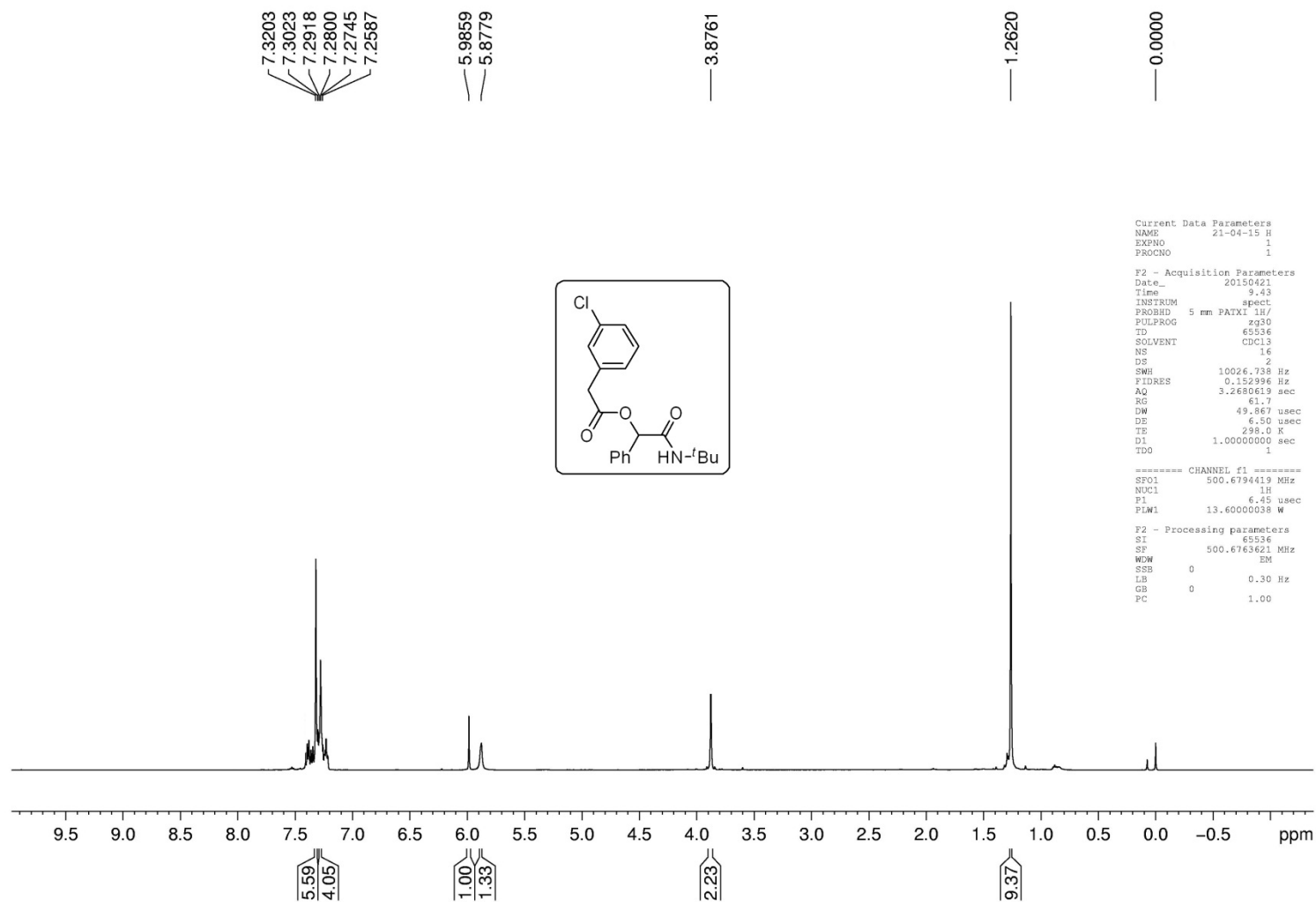
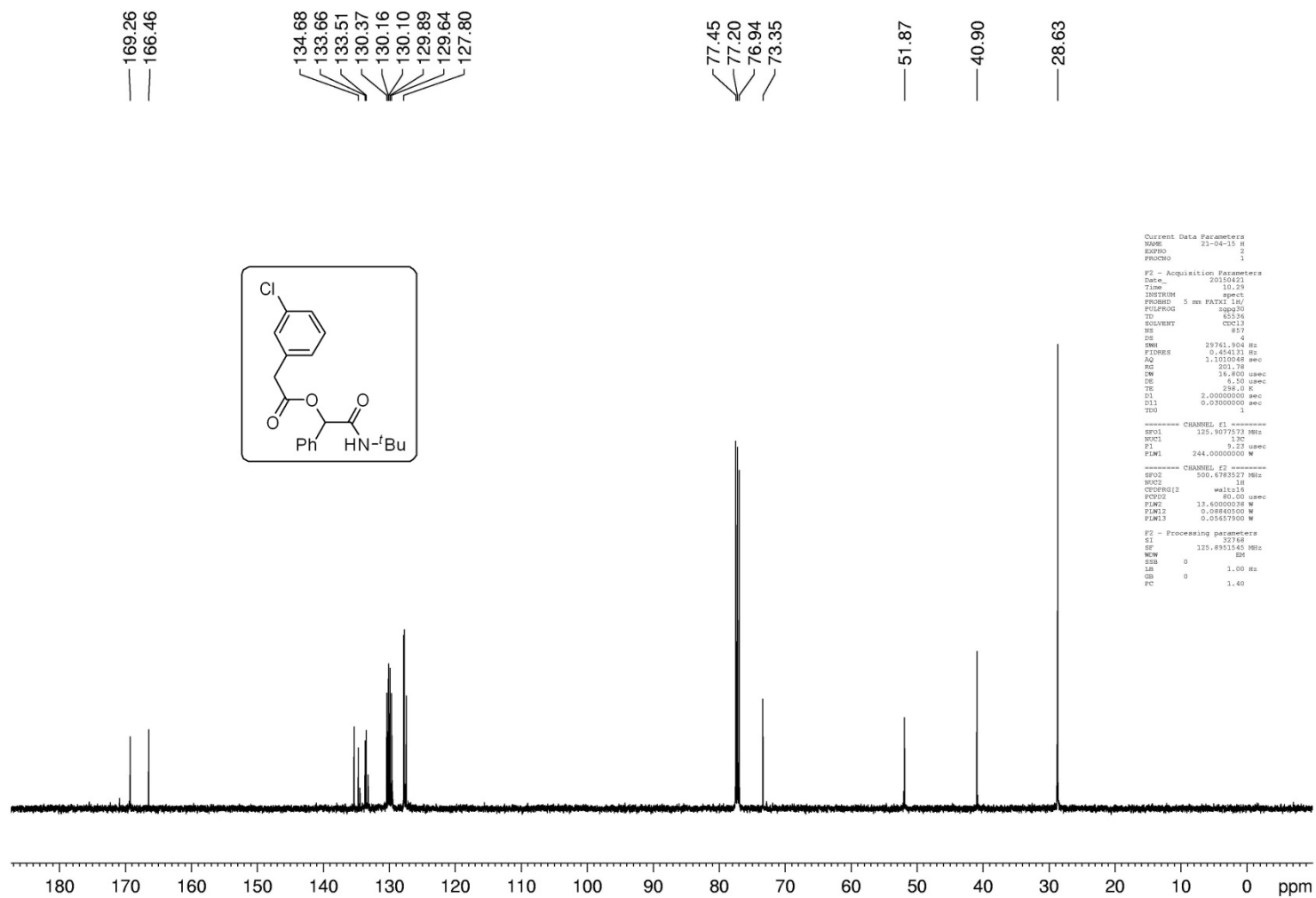


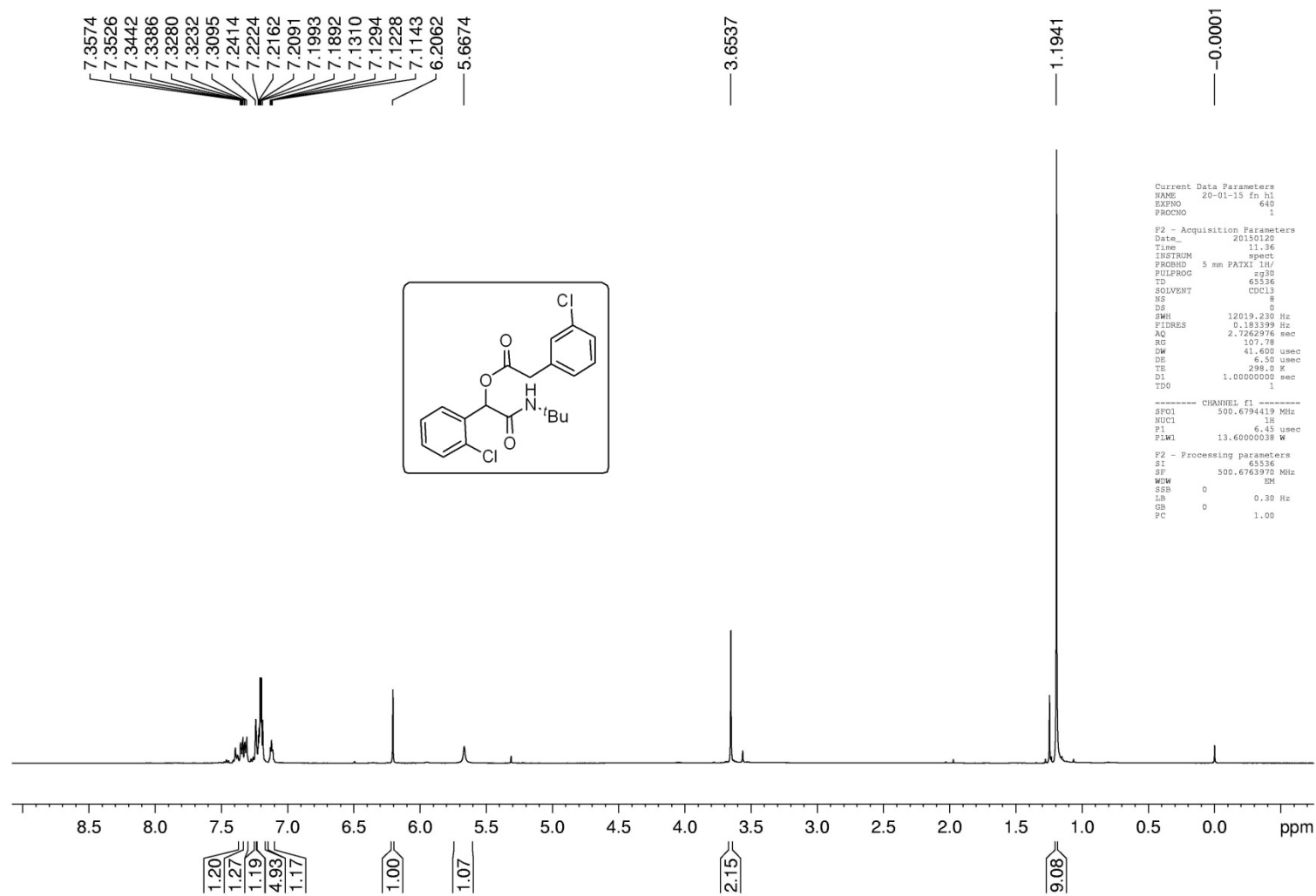
Figure S42.  $^{13}\text{C}$ -NMR spectrum of 2-(cyclohexylamino)-2-oxo-1-phenylethyl cinnamate (4aDb).



**Figure S43.**  $^1\text{H-NMR}$  spectrum of 2-(*tert*-butylamino)-2-oxo-1-phenylethyl 2-(3-chlorophenyl)acetate (**4aEa**).



**Figure S44.**  $^{13}\text{C}$ -NMR spectrum of 2-(*tert*-butylamino)-2-oxo-1-phenylethyl 2-(3-chlorophenyl)acetate (**4aEa**).



**Figure S45.** <sup>1</sup>H-NMR spectrum of 2-(*tert*-butylamino)-1-(2-chlorophenyl)-2-oxoethyl 2-(3-chlorophenyl)acetate (**4bEa**).

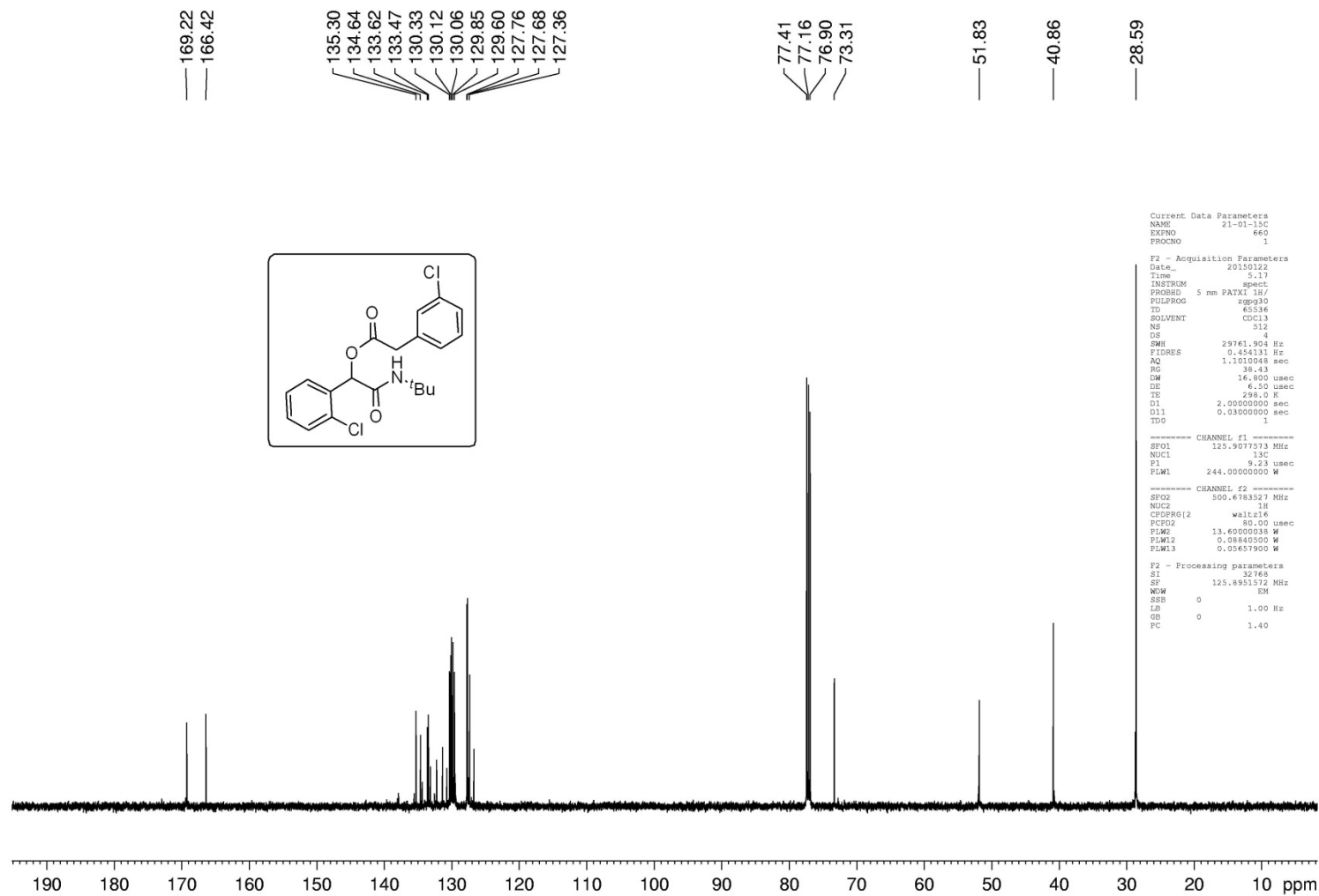


Figure S46. <sup>13</sup>C-NMR spectrum of 2-(*tert*-butylamino)-1-(2-chlorophenyl)-2-oxoethyl 2-(3-chlorophenyl)acetate (**4bEa**).

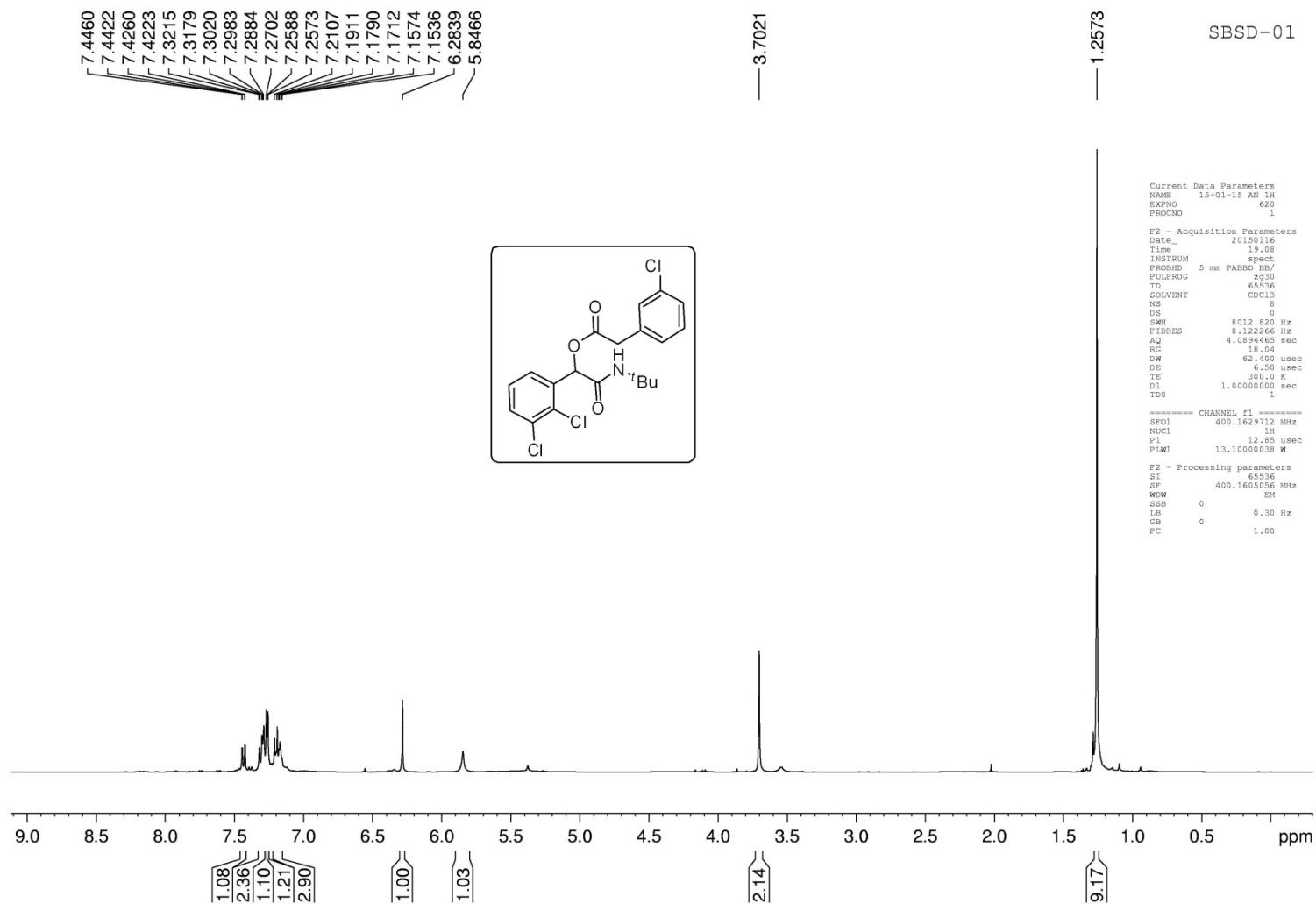
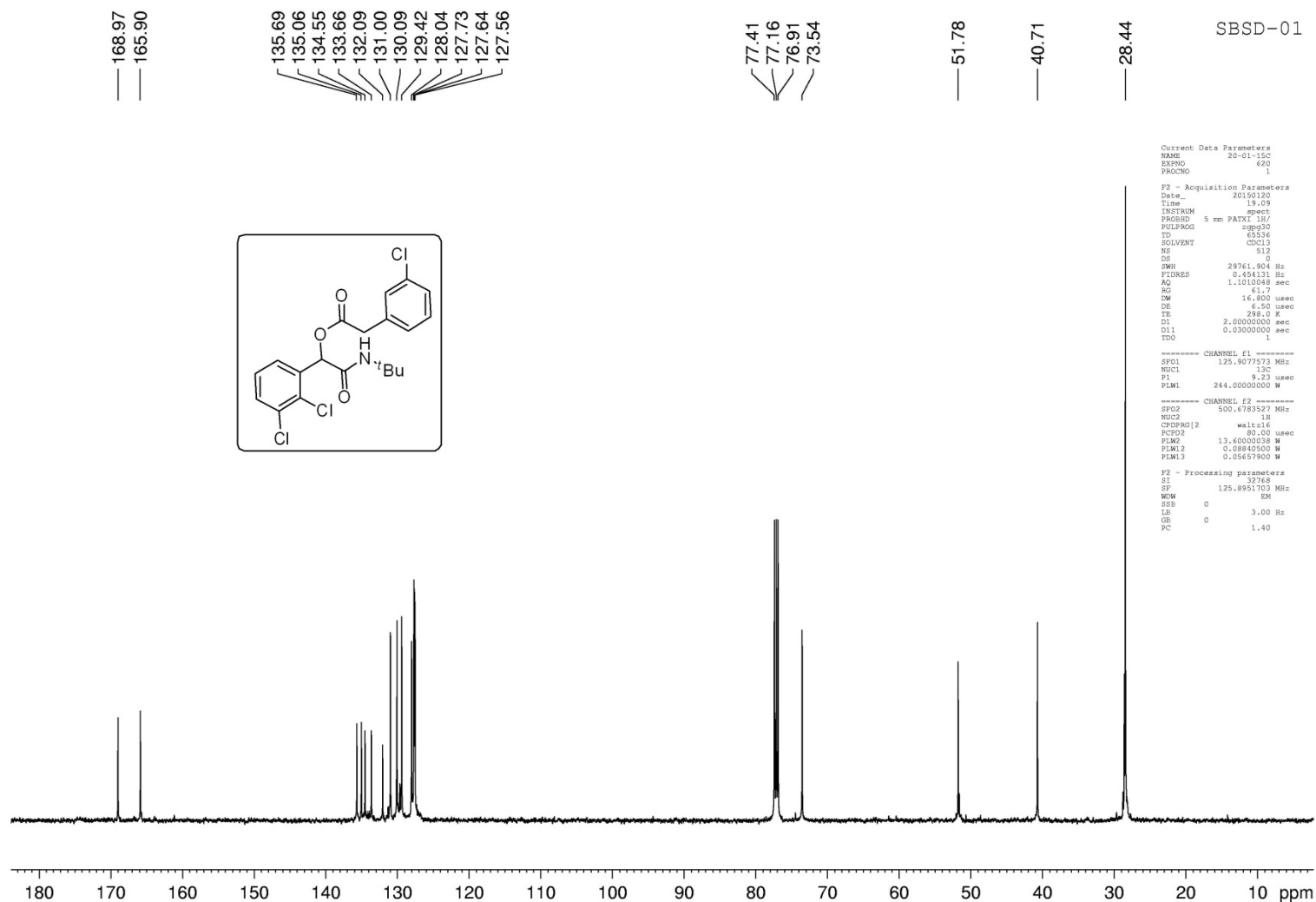


Figure S47.  $^1\text{H}$ -NMR spectrum of 2-(*tert*-butylamino)-1-(2,3-dichlorophenyl)-2-oxoethyl 2-(3-chlorophenyl)acetate (**4iEa**).





**Figure S48.** <sup>13</sup>C-NMR spectrum of 2-(*tert*-butylamino)-1-(2,3-dichlorophenyl)-2-oxoethyl 2-(3-chlorophenyl)acetate (**4iEa**).