APPENDIX TWO

Spectra of Compounds in Chapter Two
Figure A2.1 $^1$H NMR of compound **128** (300 MHz, CDCl$_3$)
Figure A2.2 IR of compound 128 (NaCl/film)

Figure A2.3 $^{13}$C NMR of compound 128 (75 MHz, CDCl$_3$)
Figure A2.4  $^1$H NMR of compound 129 (300 MHz, CDCl$_3$)
Figure A2.5  IR of compound 129 (NaCl/film)

Figure A2.6  $^{13}$C NMR of compound 129 (75 MHz, CDCl$_3$)
Figure A2.7  $^1$H NMR of compound 119 (300 MHz, CDCl$_3$)
Figure A2.8  IR of compound 119 (NaCl/film)

Figure A2.9  $^{13}$C NMR of compound 119 (75 MHz, CDCl$_3$)
Figure A2.11  IR of compound 132 (NaCl/film)

Figure A2.12  $^1$C NMR of compound 132 (75 MHz, CDCl$_3$)
Figure A2.13  $^1$H NMR of compound 133 (300 MHz, CDCl$_3$)
Figure A2.14  IR of compound 133 (NaCl/film)

Figure A2.15  $^{13}$C NMR of compound 133 (75 MHz, CDCl$_3$)
Figure A.2.16 H NMR of compound 136 (300 MHz, CDCl₃)
Figure A2.17  IR of compound 136 (NaCl/film)

Figure A2.18  $^{13}$C NMR of compound 136 (75 MHz, CDCl$_3$)
Figure A2.19: $^1$H NMR of compound 138 (300 MHz, CDCl$_3$)
Figure A2.20  IR of compound 138 (NaCl/film)

Figure A2.21  $^{13}$C NMR of compound 138 (75 MHz, CDCl$_3$)
Figure A2.22 $^1$H NMR of compound 149 (300 MHz, CDCl$_3$)
Figure A2.23  IR of compound 149 (NaCl/film)

Figure A2.24  $^{13}$C NMR of compound 149 (75 MHz, CDCl$_3$)
Figure A2.25 H NMR of compound 150 (300 MHz, CDCl₃)
Figure A2.26  IR of compound 150 (NaCl/film)

Figure A2.27  $^{13}$C NMR of compound 150 (75 MHz, CDCl$_3$)
Figure A2.28 $^1$H NMR of compound 147 (300 MHz, CDCl$_3$)
Figure A2.29  IR of compound 147 (NaCl/film)

Figure A2.30  $^{13}$C NMR of compound 147 (75 MHz, CDCl$_3$)
Figure A2.31 $^1$HNMR of compound 157 (300 MHz, CDCl$_3$)
Figure A2.32  IR of compound **157** (NaCl/film)

Figure A2.33  $^{13}$C NMR of compound **157** (75 MHz, CDCl$_3$)
Figure A2.3.4: 1H NMR of compound 154 (300 MHz, CDCl$_3$)
Figure A2.35  IR of compound 154 (NaCl/film)

Figure A2.36  $^{13}$C NMR of compound 154 (75 MHz, CDCl$_3$)
Figure A2.37  $^1$H NMR of compound 156 (300 MHz, CDCl$_3$)
Figure A2.38  IR of compound 156 (NaCl/film)

Figure A2.39  $^{13}$C NMR of compound 156 (75 MHz, CDCl$_3$)
Figure A2.40  $^1$H NMR of compound 142 (300 MHz, CDCl$_3$)
Figure A2.41  IR of compound 142 (NaCl/film)

Figure A2.42  $^{13}$C NMR of compound 142 (75 MHz, CDCl$_3$)
Figure A2.43  $^1$H NMR of compound 158 (300 MHz, CDCl$_3$)
Figure A2.44  IR of compound 158 (NaCl/film)

Figure A2.45  $^{13}$C NMR of compound 158 (75 MHz, CDCl$_3$)
Figure A2.46 $^1$H NMR of compound 159 (300 MHz, CDCl$_3$)
Figure A2.47 IR of compound 159 (NaCl/film)

Figure A2.48 $^{13}$C NMR of compound 159 (75 MHz, CDCl$_3$)
Figure A2.49 H NMR of compound 161 (300 MHz, CDCl₃)
Figure A2.50  IR of compound 161 (NaCl/film)

Figure A2.51  $^{13}$C NMR of compound 161 (75 MHz, CDCl$_3$)
Figure A2.52  $^1$H NMR of compound 162 (300 MHz, CDCl$_3$, 50 °C)
Figure A2.53  IR of compound 162 (NaCl/film)

Figure A2.54  $^{13}$C NMR of compound 162 (75 MHz, CDCl$_3$, 50 °C)
Figure A2.55  $^1$H NMR of compound **163** (300 MHz, CDCl$_3$, 50 °C)
Figure A2.56  IR of compound 163 (NaCl/film)

Figure A2.57  $^{13}$C NMR of compound 163 (75 MHz, CDCl$_3$, 50 °C)
Figure A2.59 $^1$H NMR of compound 168 (300 MHz, CDCl$_3$, 50 °C)
Figure A2.60  IR of compound 168 (NaCl/film)

Figure A2.61  $^{13}$C NMR of compound 168 (75 MHz, CDCl$_3$, 50 °C)
Figure A2.62 ¹H NMR of compound 169 (300 MHz, CDCl₃, 50 ℃)
Figure A2.63  IR of compound 169 (NaCl/film)

Figure A2.64  $^{13}$C NMR of compound 169 (75 MHz, CDCl$_3$, 50 °C)
Figure A2.65: H NMR of compound 167 (300 MHz, CD3OD, 50 °C)
Figure A2.66  IR of compound 167 (NaCl/film)

Figure A2.67  $^{13}$C NMR of compound 167 (75 MHz, DMSO-$d_6$, 75 °C)
Figure A2.68 ¹H NMR of compound 172 (300 MHz, CDCl₃)
Figure A2.69  IR of compound 172 (NaCl/film)

Figure A2.70  $^{13}$C NMR of compound 172 (75 MHz, CDCl$_3$)
Figure A2.72 IR of compound 173 (NaCl/film)

Figure A2.73 $^{13}$C NMR of compound 173 (75 MHz, CDCl$_3$)
Figure A2.74  $^1$H NMR of compound 174 (300 MHz, CDCl$_3$)
Figure A2.75  IR of compound \textbf{174} (NaCl/film)

Figure A2.76  $^{13}$C NMR of compound \textbf{174} (75 MHz, C$_6$D$_6$)
Figure A2.77 $^1$H NMR of compound 175 (300 MHz, CDCl$_3$)
Figure A2.78  IR of compound 175 (NaCl/film)

Figure A2.79  $^{13}$C NMR of compound 175 (75 MHz, Acetone-$d_6$)
Figure A2.80 $^1$H NMR of compound 176 (300 MHz, CDCl$_3$)
Figure A2.81  IR of compound 176 (NaCl/film)

Figure A2.82  $^1^3$C NMR of compound 176 (75 MHz, CDCl$_3$)
Figure A2.83 ¹H NMR of compound 179 (300 MHz, CDCl₃)
Figure A2.84  IR of compound 179 (NaCl/film)

Figure A2.85  $^{13}$C NMR of compound 179 (75 MHz, CDCl$_3$)
Figure A2.86  $^1$H NMR of compound 180 (300 MHz, CDCl$_3$)
Figure A2.87  IR of compound 180 (NaCl/film)

Figure A2.88  $^1^3$C NMR of compound 180 (75 MHz, CDCl$_3$)
Figure A2.89 $^1$H NMR of compound 181 (300 MHz, CDCl$_3$)
Figure A2.90  IR of compound 181 (NaCl/film)

Figure A2.91  $^{13}$C NMR of compound 181 (75 MHz, CDCl$_3$)
Figure A2.93  IR of compound 166 (NaCl/film)

Figure A2.94  $^{13}$C NMR of compound 166 (75 MHz, CD$_3$OD)
Figure A2.95 1H NMR of compound 182 (300 MHz, CD,OD, 45 °C)
Figure A2.96  IR of compound 182 (NaCl/film)

Figure A2.97  $^{13}$C NMR of compound 182 (75 MHz, CD$_3$OD, 50 °C)
Figure A2.98  
'H NMR of compound 184 (300 MHz, CDCl₃, 50 °C)
Figure A2.99 $^1$H NMR of compound 188 (300 MHz, $D_2$O)
Figure A2.100  IR of compound 186 (NaCl/film)

Figure A2.101  $^{13}$C NMR of compound 186 (125 MHz, D$_2$O)
Figure A2.103 ¹H NMR of (−)-Lemonomycin (1) (600 MHz, D₂O)
Figure A2.104 IR of (−)-Lemonomycin (1) (NaCl/film)

Figure A2.105 $^{13}$C NMR of (−)-Lemonomycin (1) (125 MHz, D$_2$O)