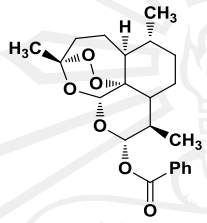
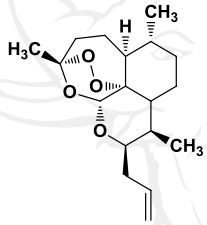
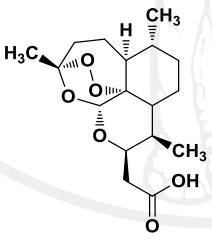
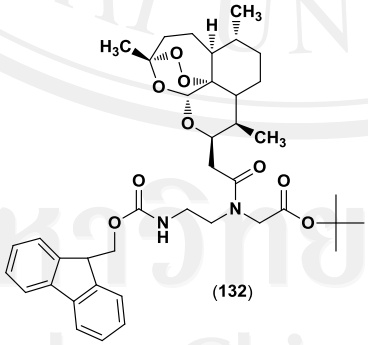
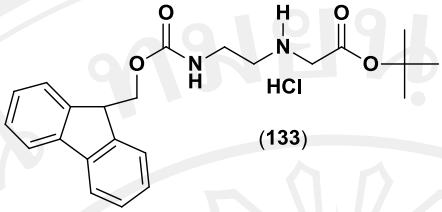
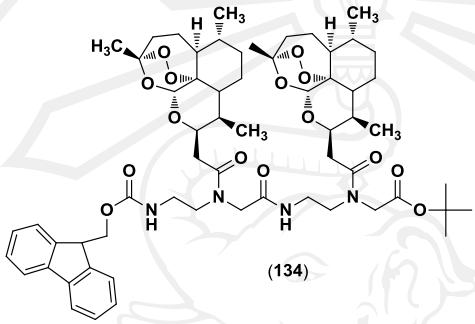
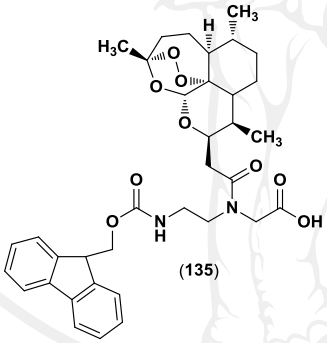
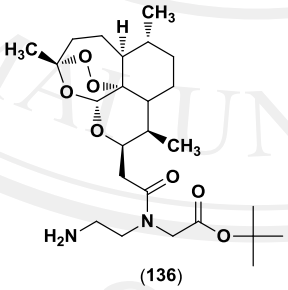
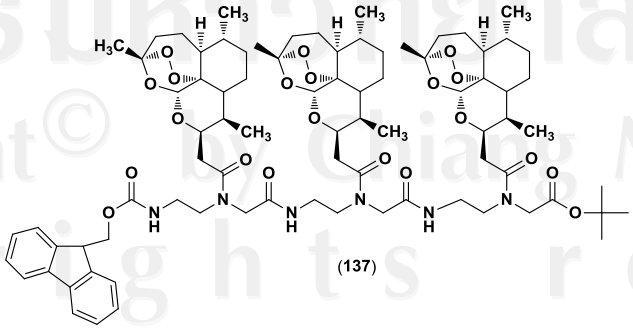
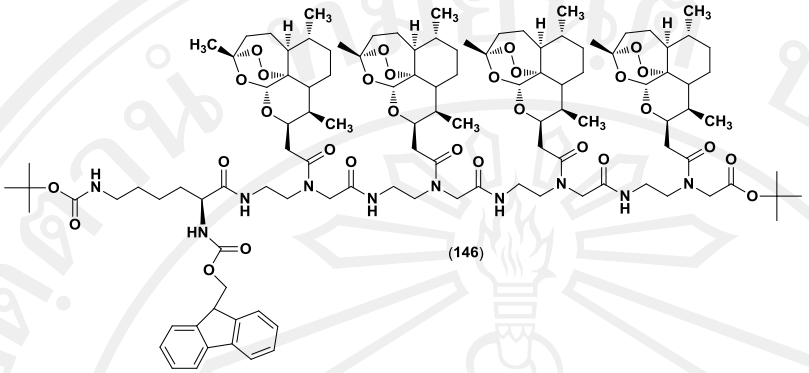
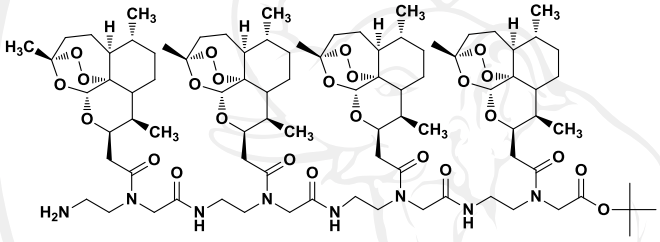
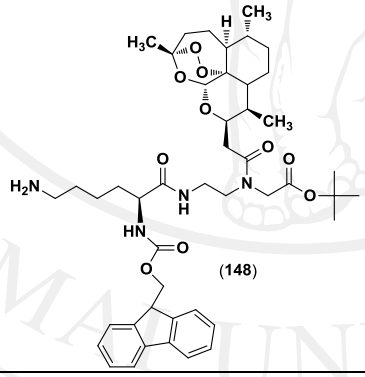
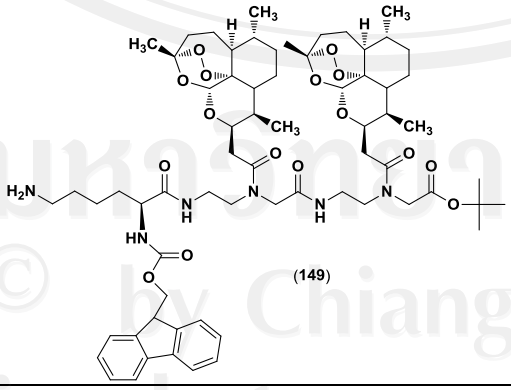
APPENDICES

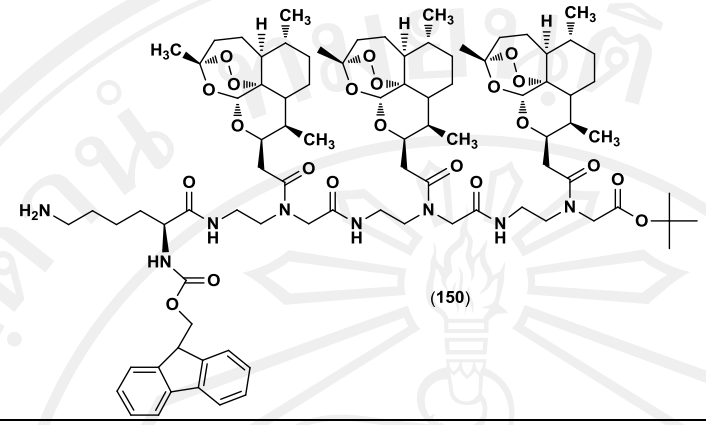
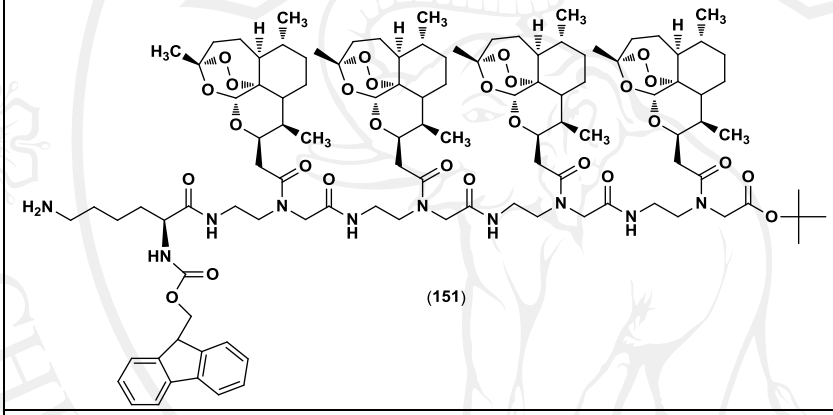
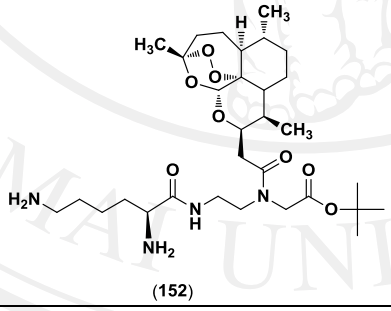
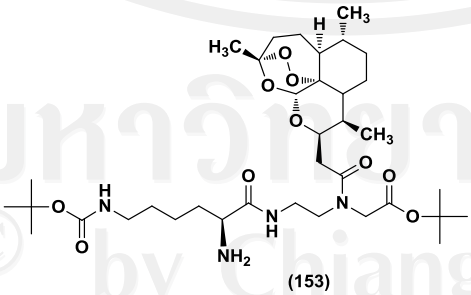
APPENDIX I

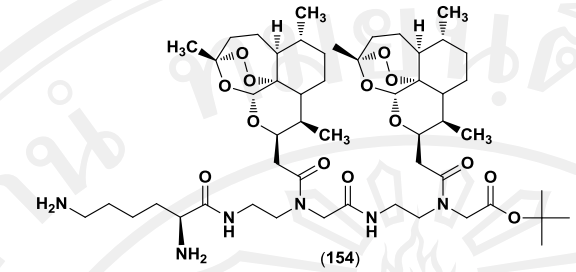
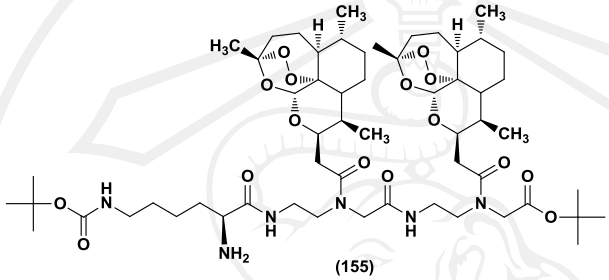
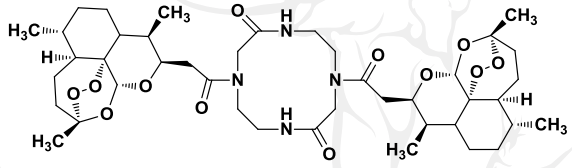
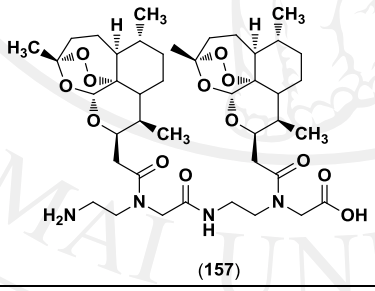
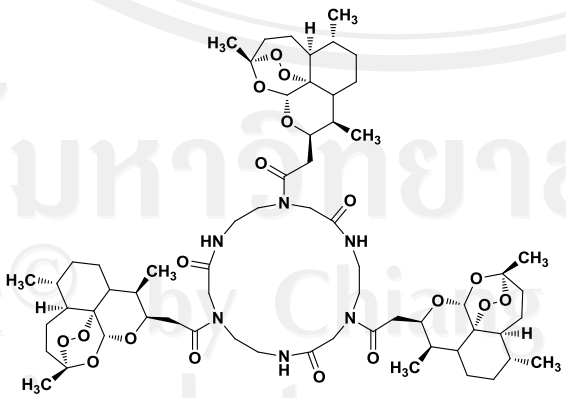
STRUCTURE

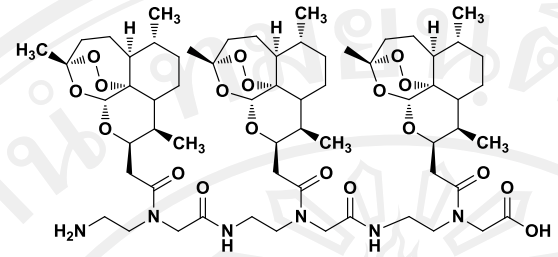
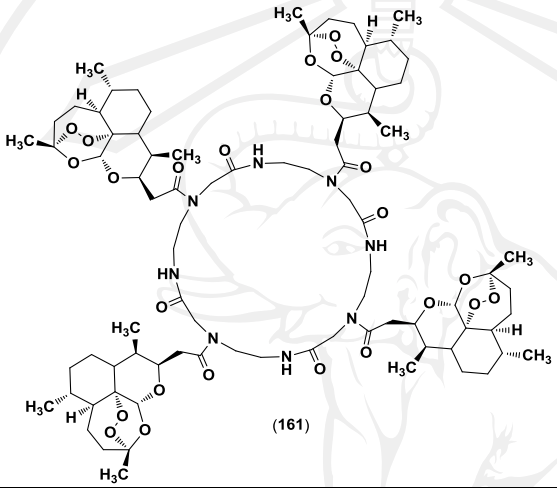
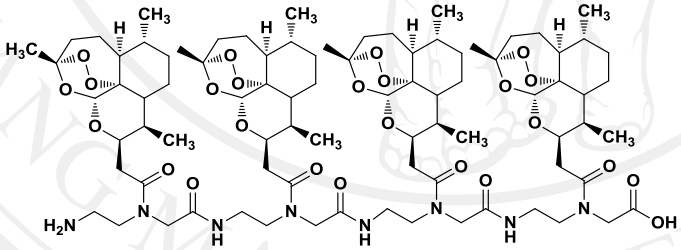
Structure	Name
 (**129**)	Dihydroartemisinin 10α-Benzoate
 (**130**)	10β-Allyldeoxoarte-misinin
 (**131**)	10β-Carboxylalkyl deoxoartemisinin
 (**132**)	Fmoc-aeg-deoxo artemisinin-*t*Bu monomer

 (133)	*tert*-butyl *N*-[2-(*N*-9-fluorenylmethoxycarbonyl) aminoethyl] glycinate hydrochloride
 (134)	Fmoc-aeg-deoxo artemisinin-*t*Bu dimer
 (135)	Fmoc-aeg-deoxo artemisinin-OH monomer
 (136)	NH_2-aeg-deoxo artemisinin-*t*Bu monomer
 (137)	Fmoc-aeg-deoxo artemisinin-*t*Bu trimer

 (146)	Fmoc-lys(Boc)-aeg-deoxoartemisinin-*t*Bu tetramer
 (147)	NH_2-aeg-deoxo artemisinin-*t*Bu tetramer
 (148)	Fmoc-lys-aeg-deoxo artemisinin-*t*Bu monomer
 (149)	Fmoc-lys-aeg-deoxo artemisinin-*t*Bu dimer

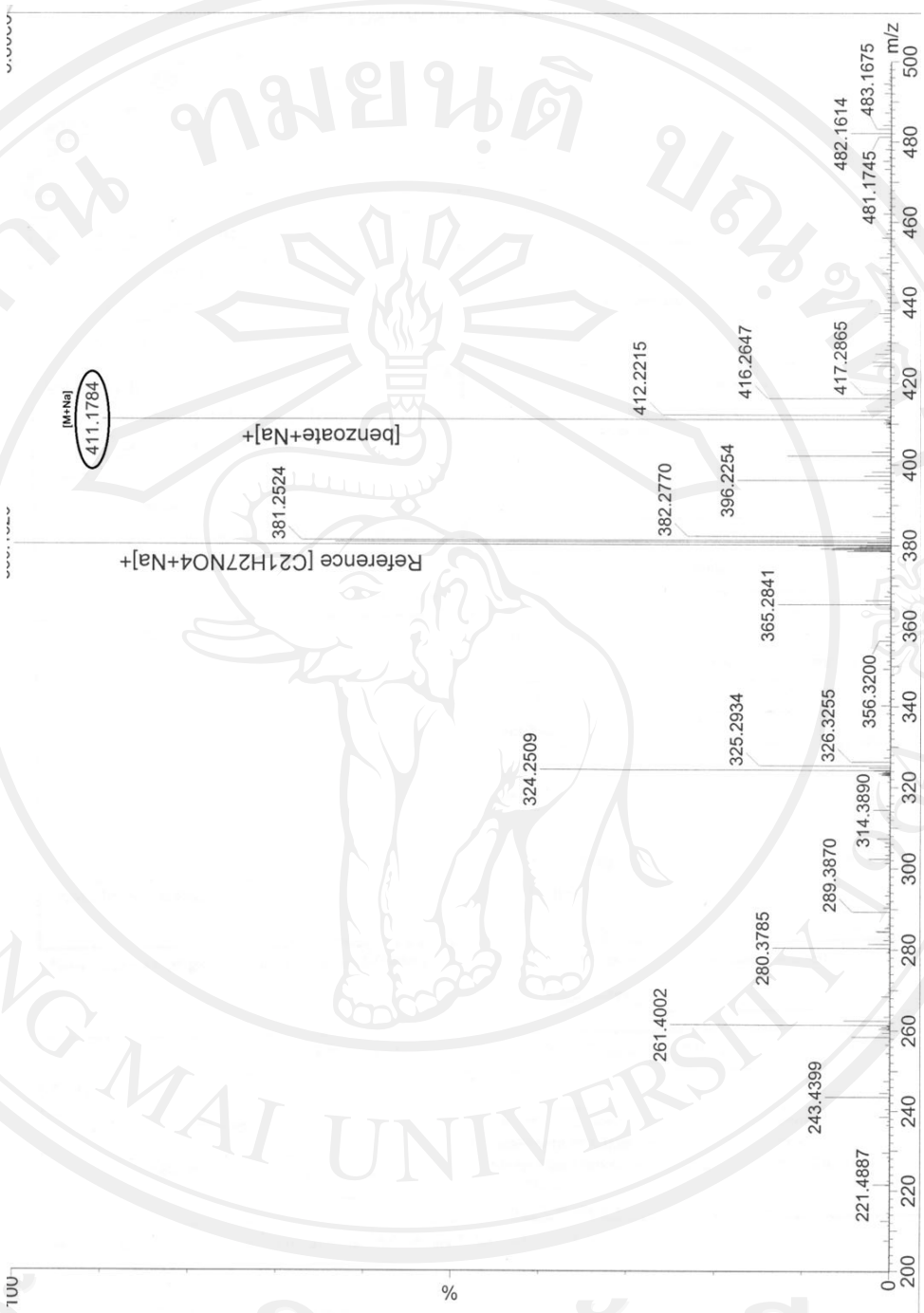
 (150)	Fmoc-lys-aeg-deoxo artemisinin-*t*Bu trimer
 (151)	Fmoc-lys-aeg-deoxo artemisinin-*t*Bu tetramer
 (152)	lys-aeg-deoxo artemisinin-*t*Bu monomer
 (153)	lys(Boc)-aeg-deoxo artemisinin-*t*Bu monomer

 (154)	lys-aeg-deoxo artemisinin-*t*Bu dimer
 (155)	lys(Boc)-aeg-deoxo artemisinin-*t*Bu dimer
 (156)	Cyclic-aeg-deoxoartemisinin-dimer
 (157)	NH_2-aeg-deoxo artemisinin-OH dimer
 (158)	Cyclic-aeg-deoxoartemisinin-trimer

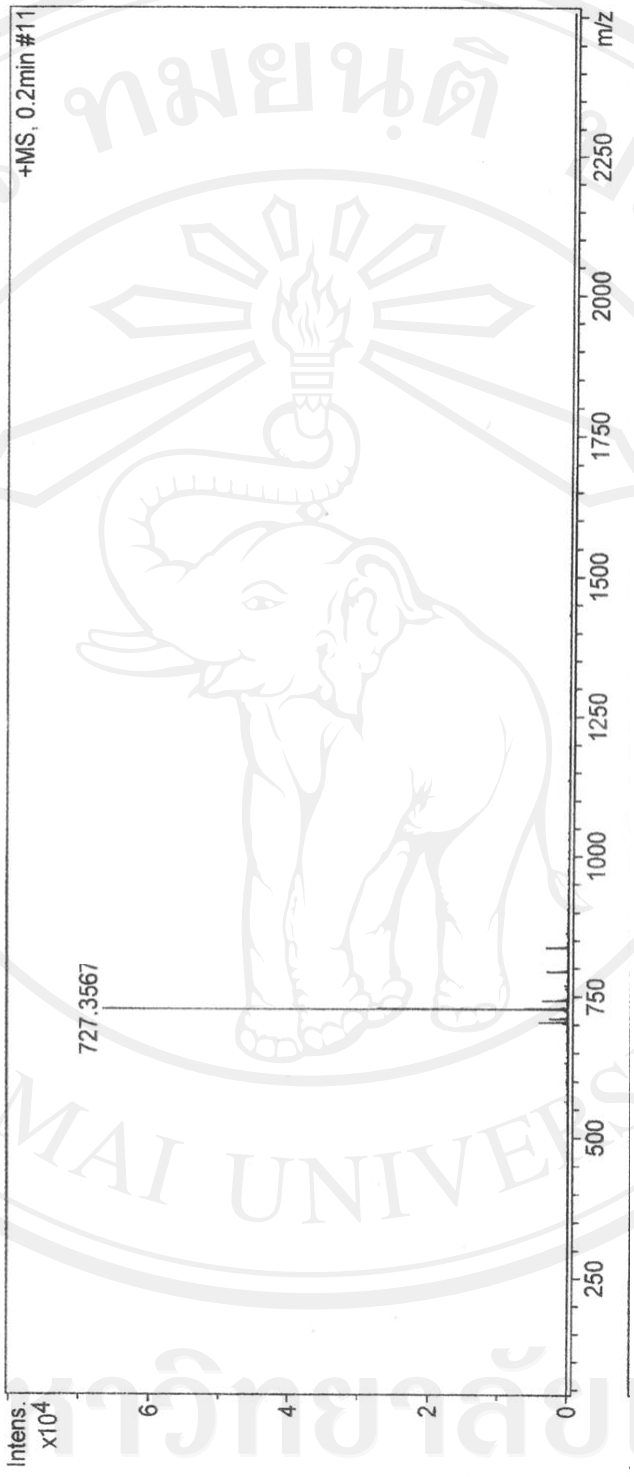
 (160)	NH_2-aeg-deoxo artemisinin-OH trimer
 (161)	Cyclic-aeg-deoxoartemisinin-tetramer
 (163)	NH_2-aeg-deoxo artemisinin-OH tetramer

APPENDIX II

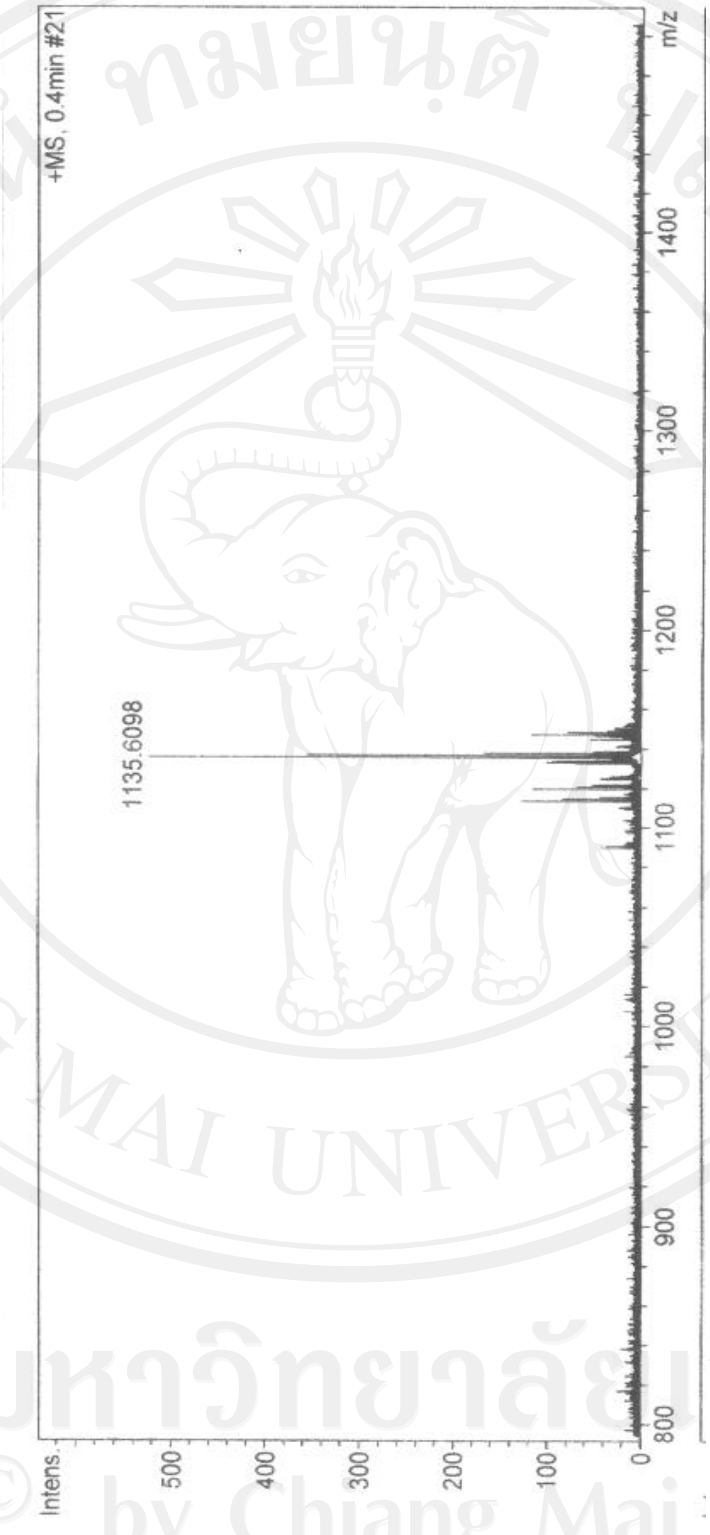
MASS SPECTRA



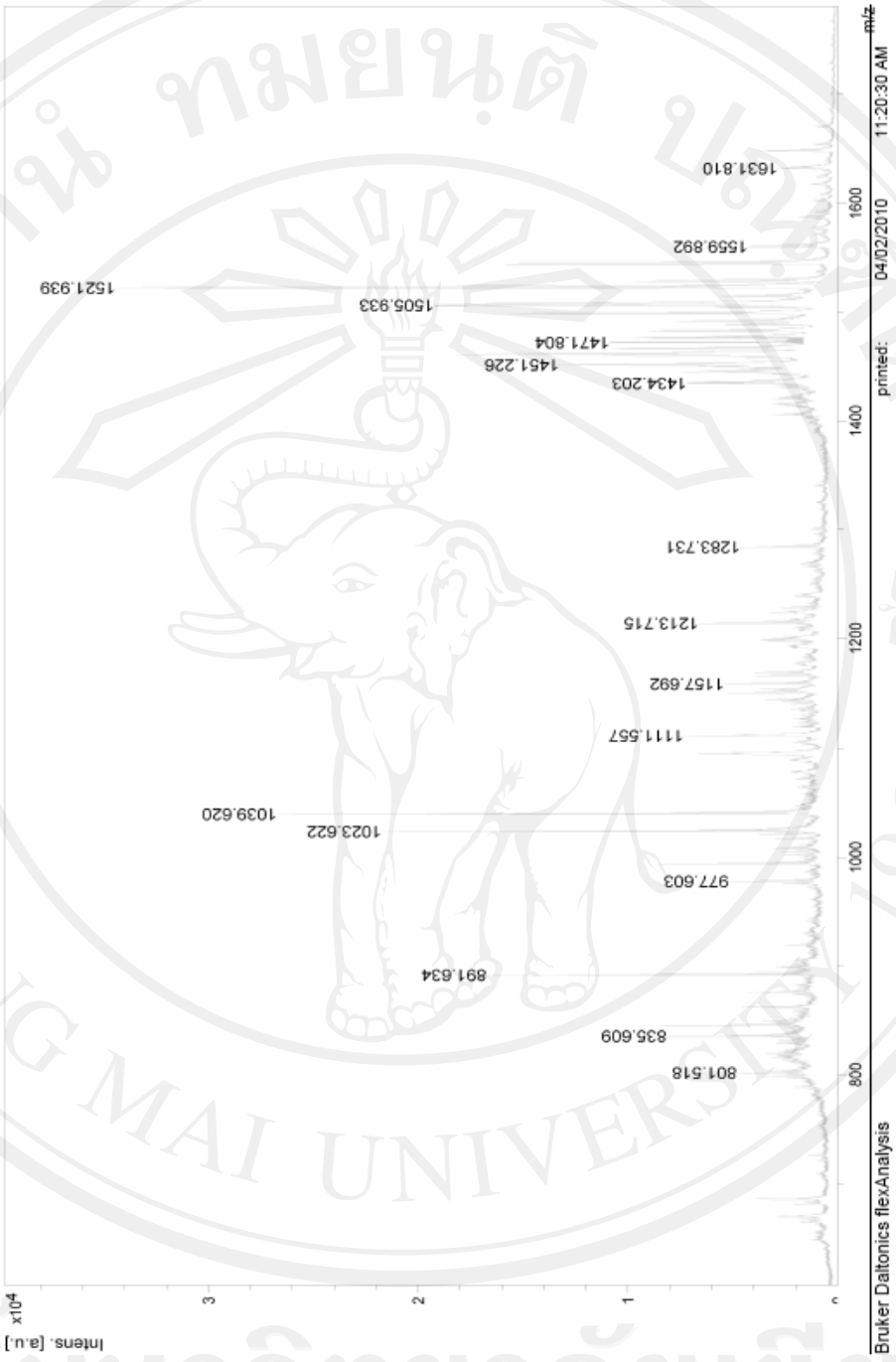
Mass spectrum of dihydroartemisinin 10α-benzoate (**129**)



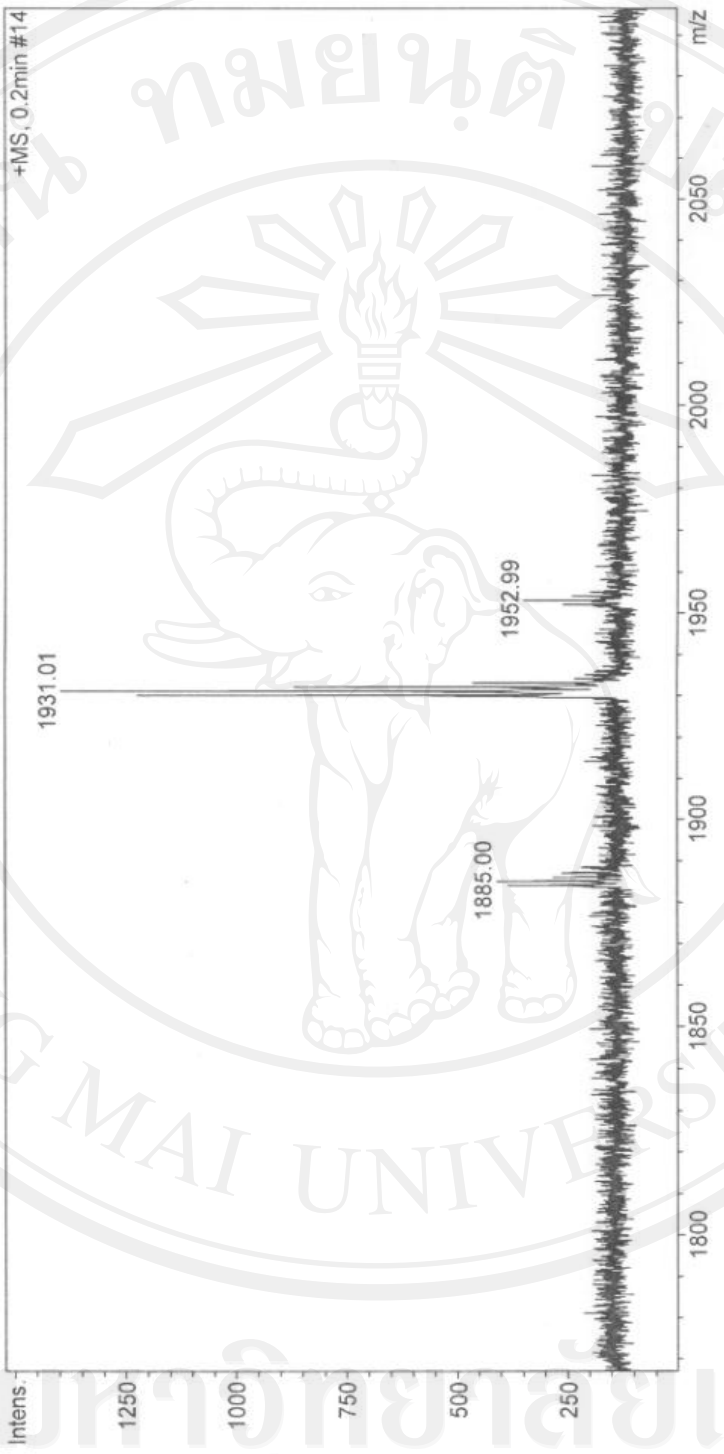
Mass spectrum of Fmoc-aeg-deoxoartemisinin-*t*Bu monomer (**132**)



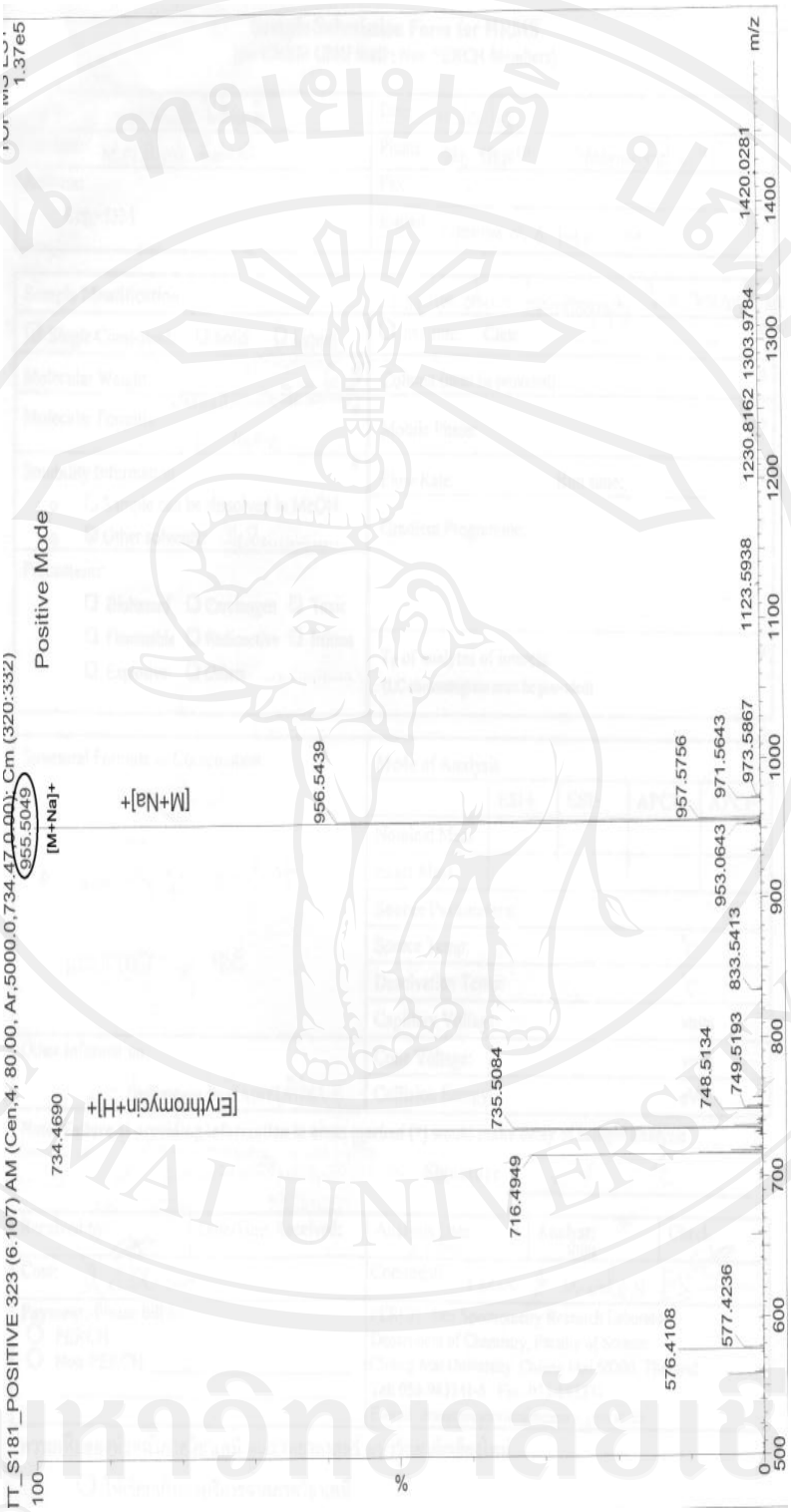
Mass spectrum of Fmoc-aeg-deoxoartemisinin-*t*Bu dimer (**134**)



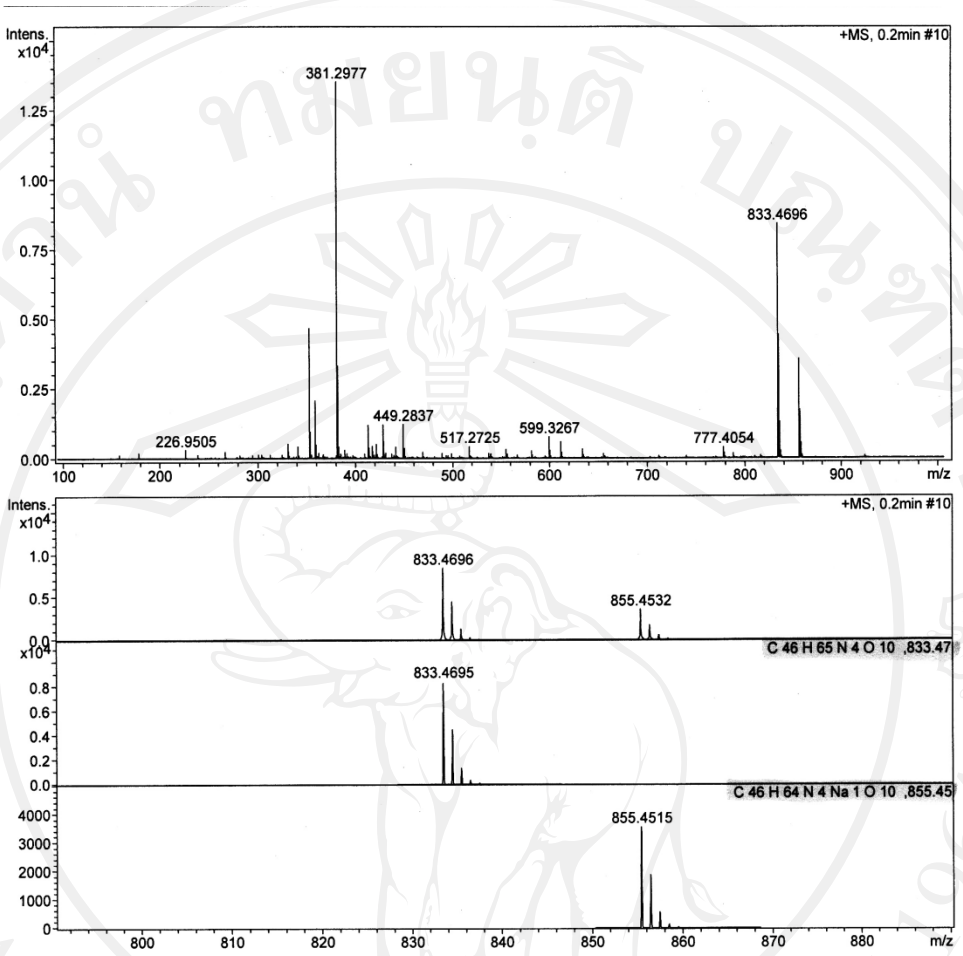
Mass spectrum of Fmoc-aeg-deoxoartemisinin-*t*Bu trimer (**137**)



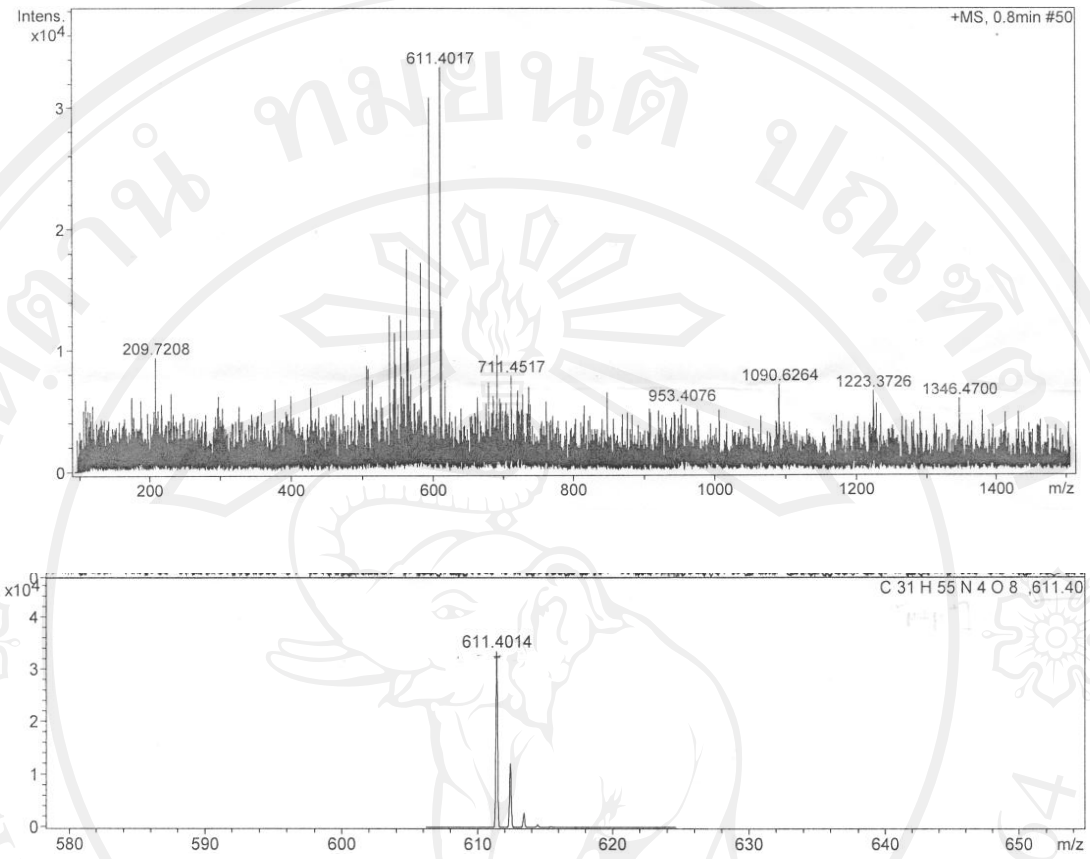
Mass spectrum of Fmoc-aeg-deoxoartemisinin-*t*Bu tetramer (**139**)



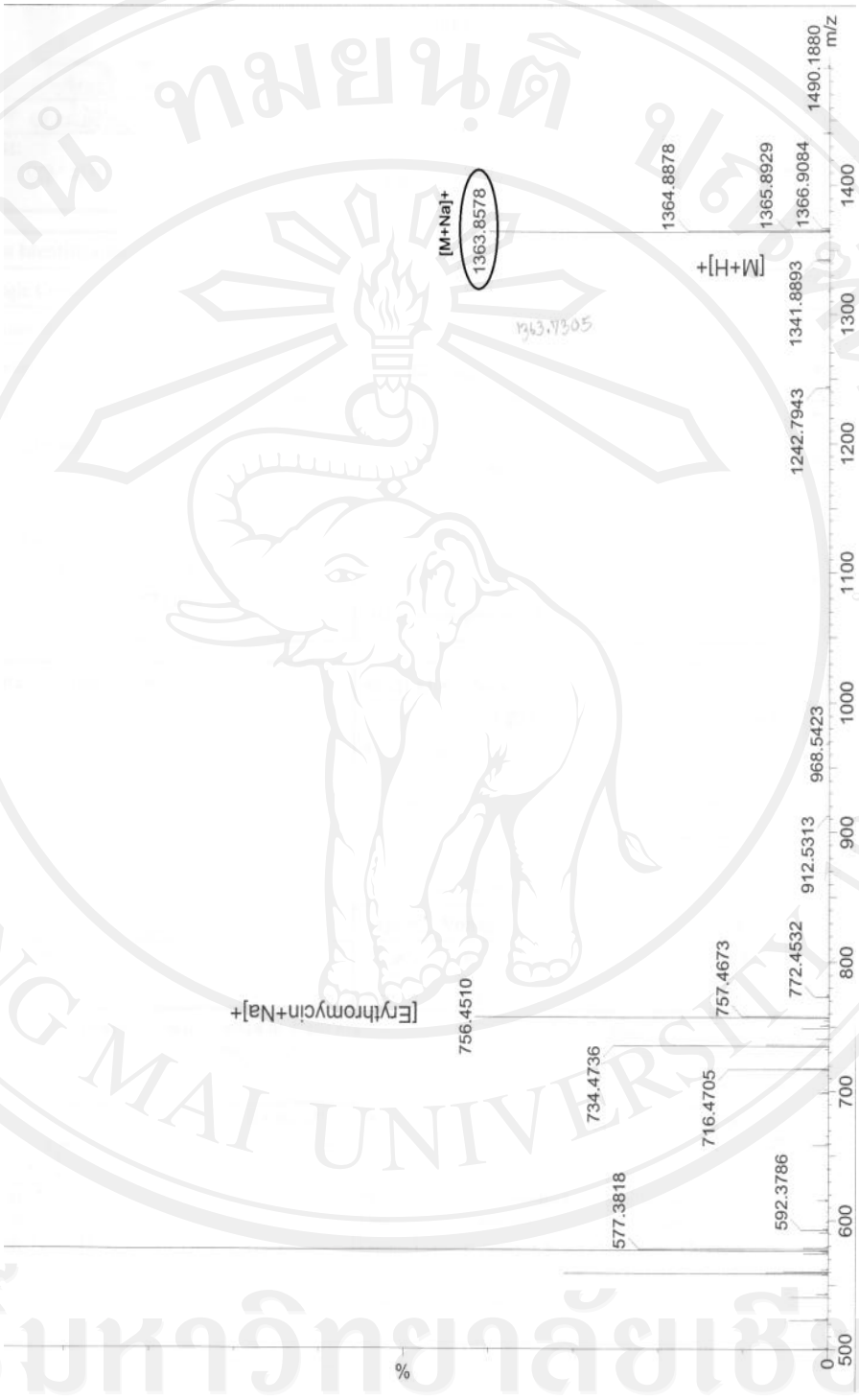
Mass spectrum of Fmoc-lys(Boc)-aeg-deoxoartemisinin-*t*Bu monomer (**141**)



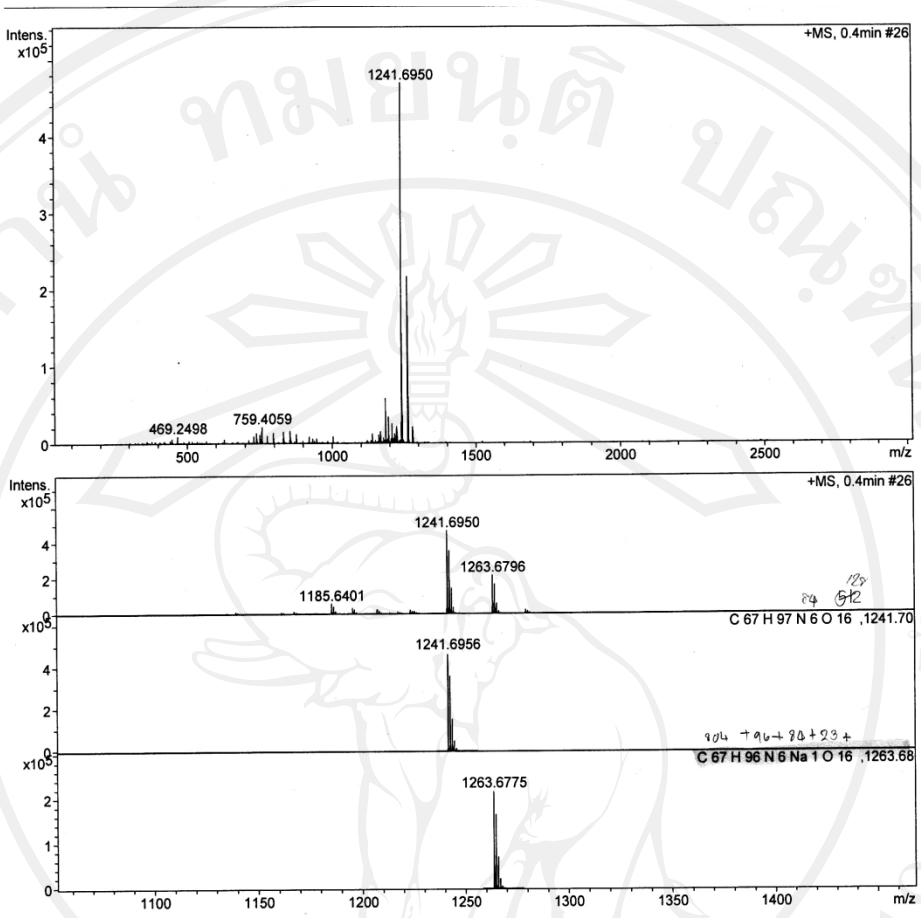
Mass spectrum of Fmoc-lys-aeg-deoxoartemisinin-*t*Bu monomer (**148**)



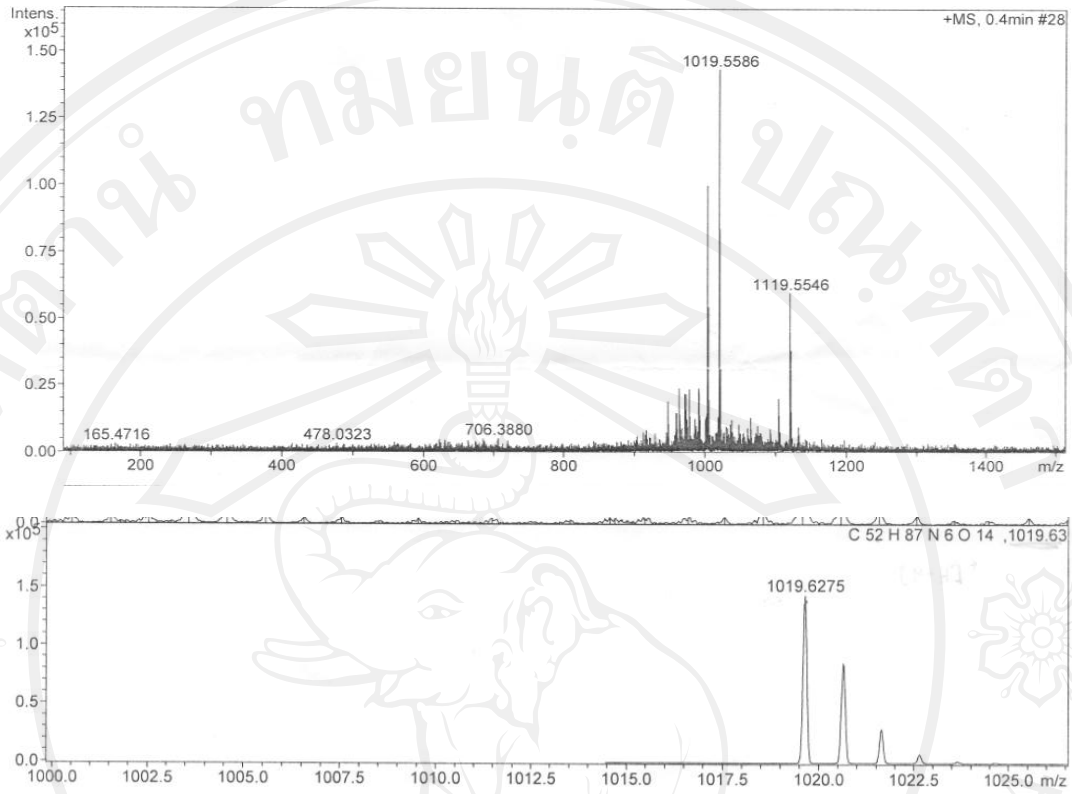
Mass spectrum of lys-aeg-deoxoartemisinin-*t*Bu monomer (**152**)



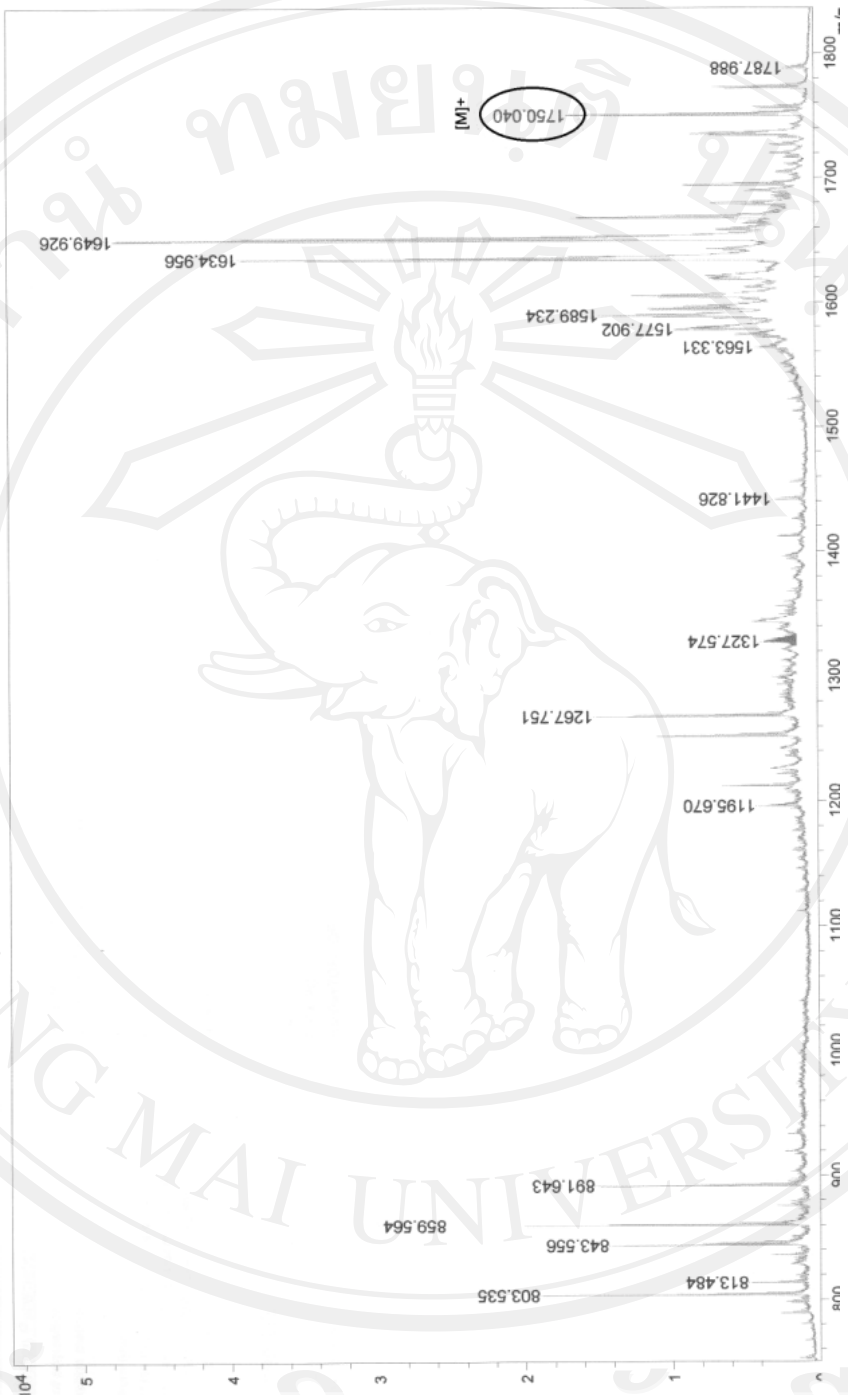
Mass spectrum of Fmoc-lys(Boc)-aeg-deoxoartemisinin-*t*Bu dimer (**143**)



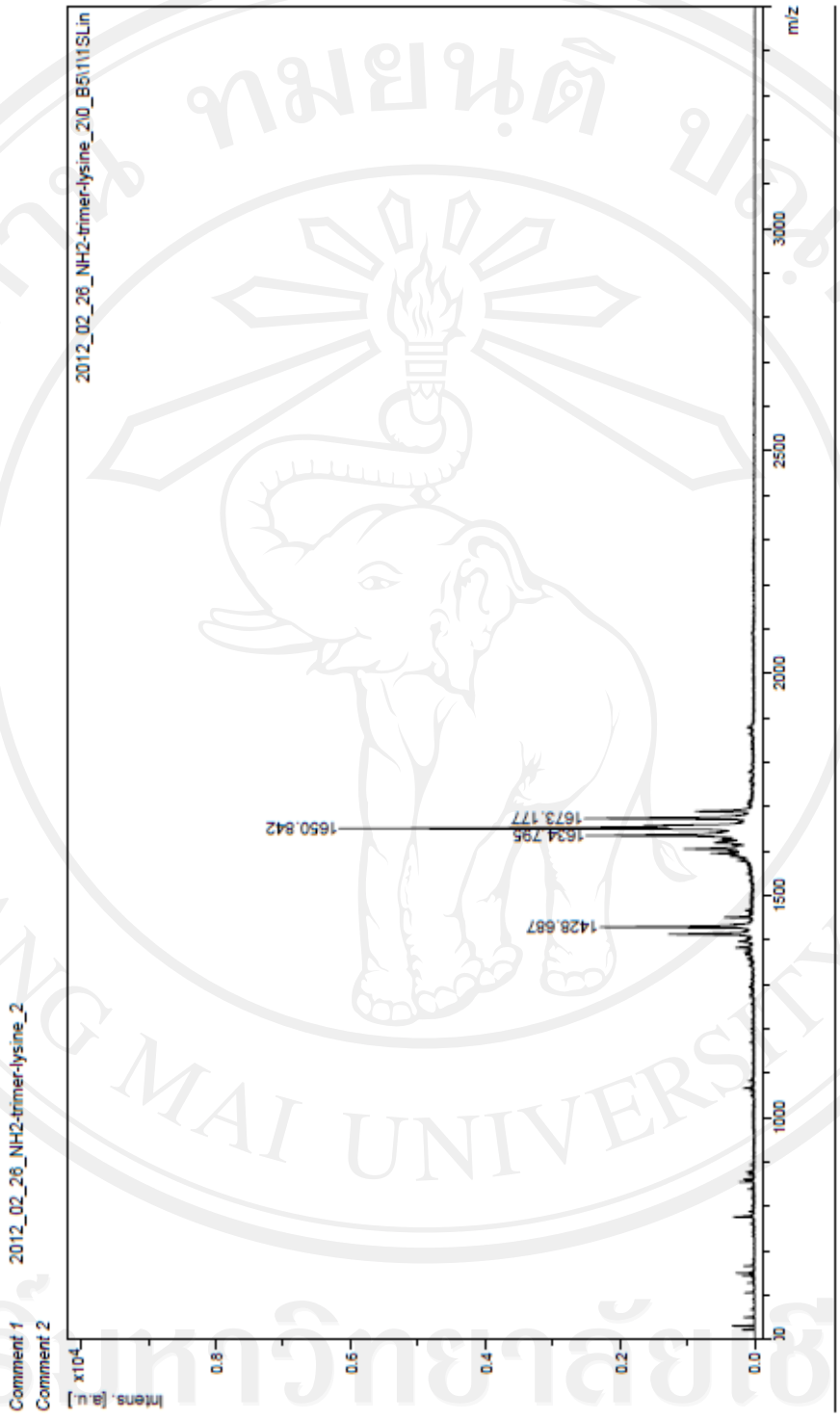
Mass spectrum of Fmoc-lys-aeg-deoxoartemisinin-*t*Bu dimer (**149**)



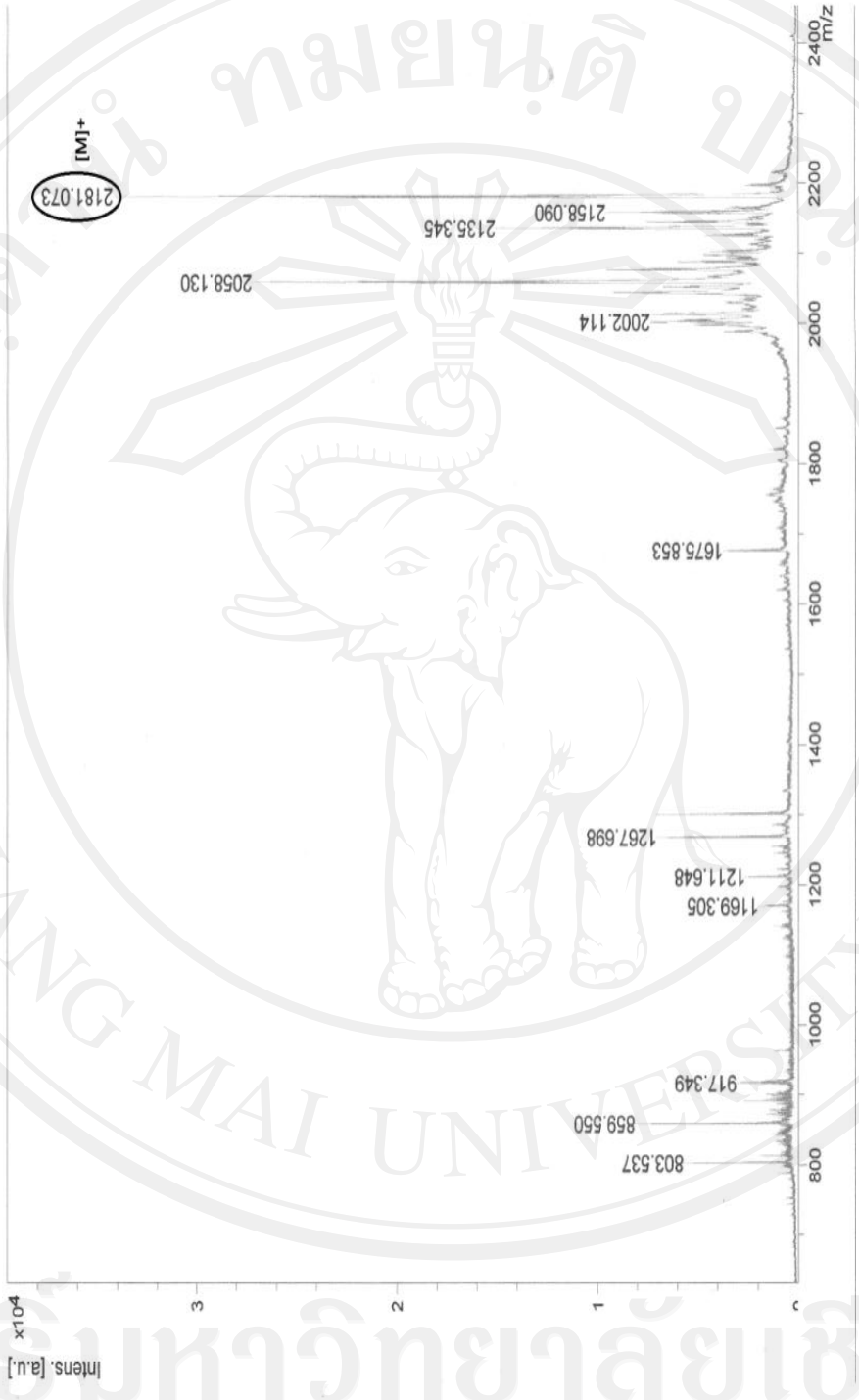
Mass spectrum of lys-aeg-deoxoartemisinin-*t*Bu dimer (**154**)



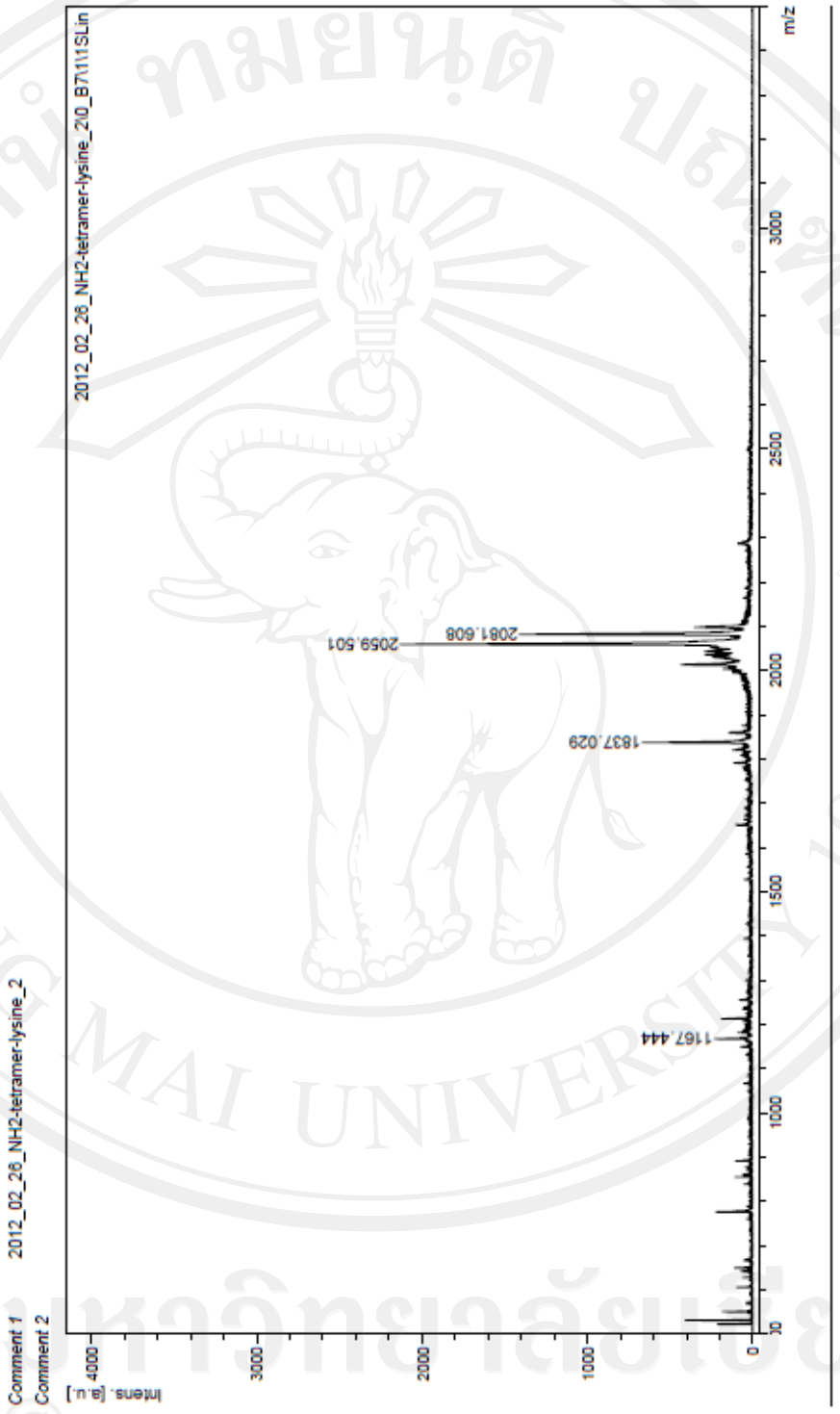
Mass spectrum of Fmoc-lys(Boc)-aeg-deoxoartemisinin-*t*Bu trimer (**144**)



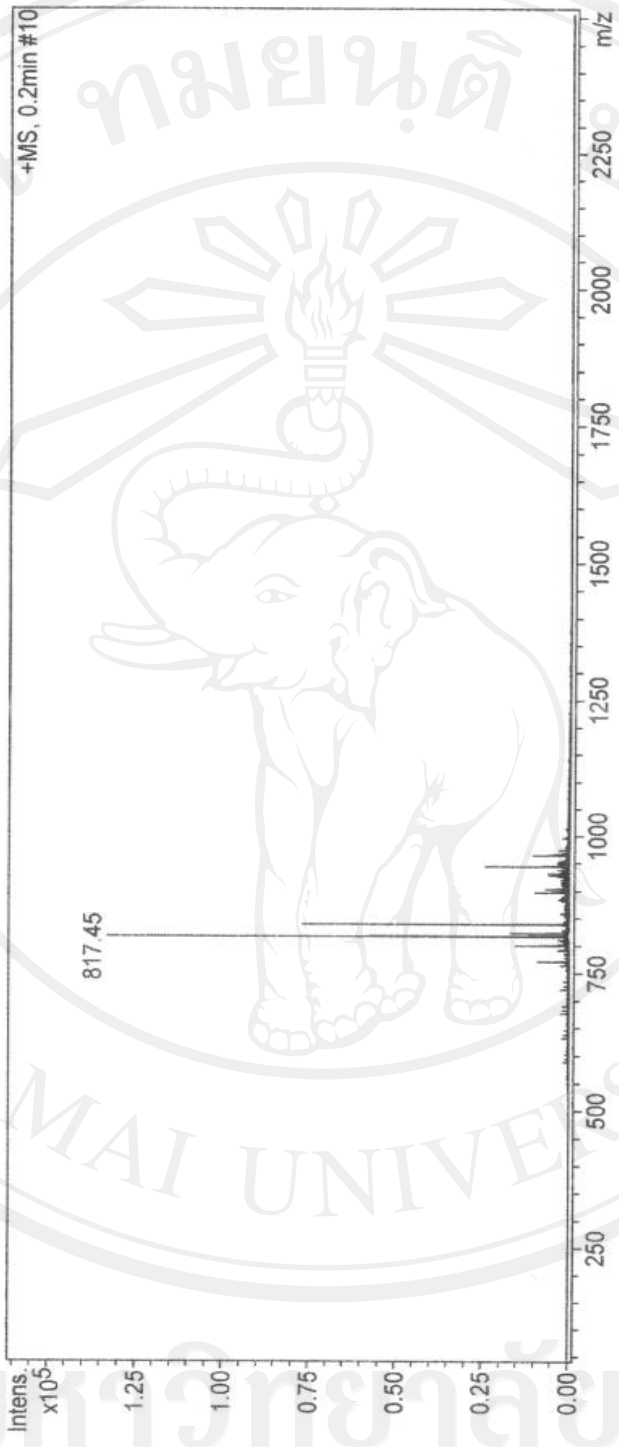
Mass spectrum of Fmoc-lys-deoxoartemisinin-*t*Bu trimer (**150**)



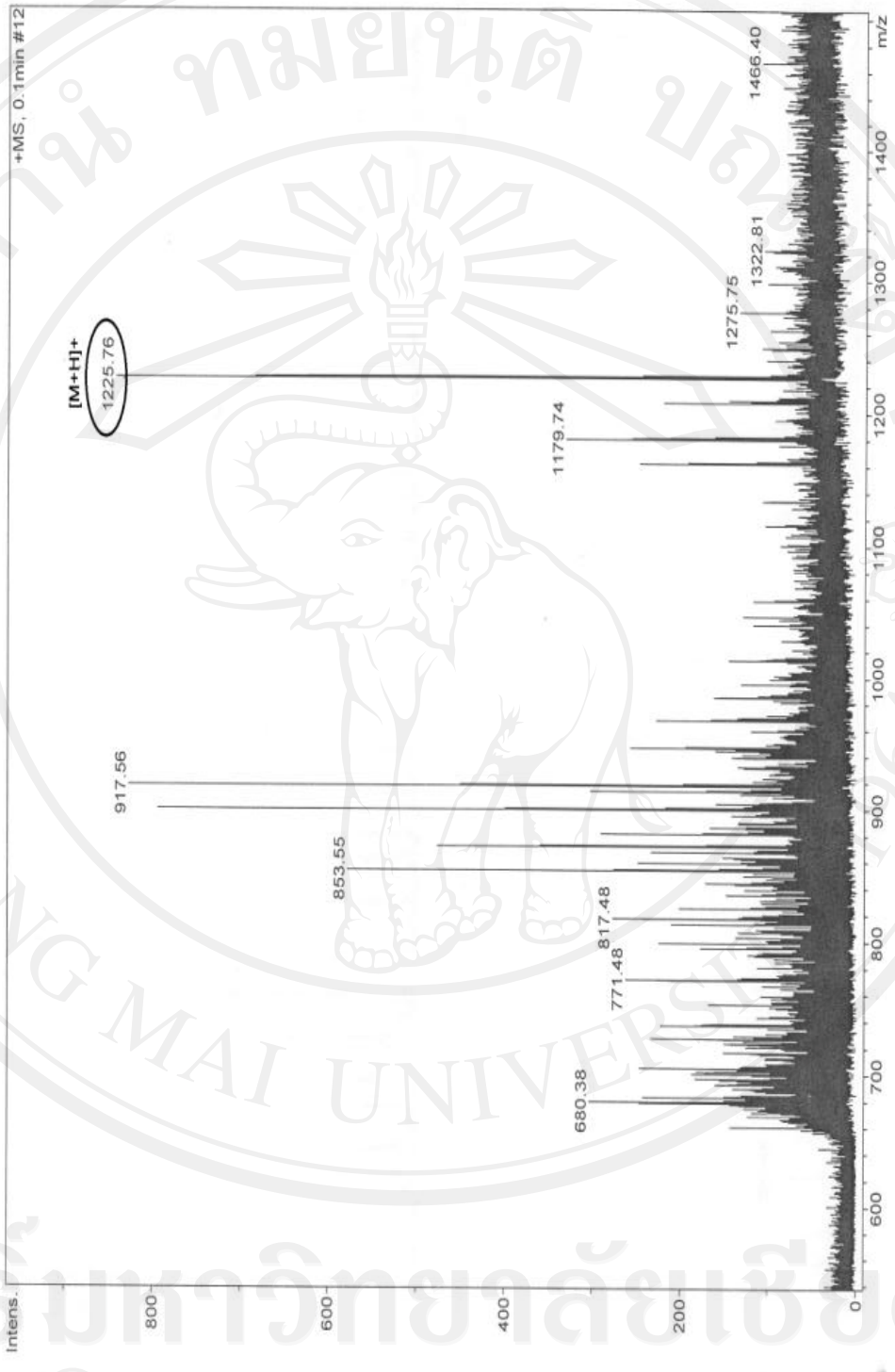
Mass spectrum of Fmoc-lys(Boc)-aeg-deoxoartemisinin-*t*Bu tetramer (**146**)



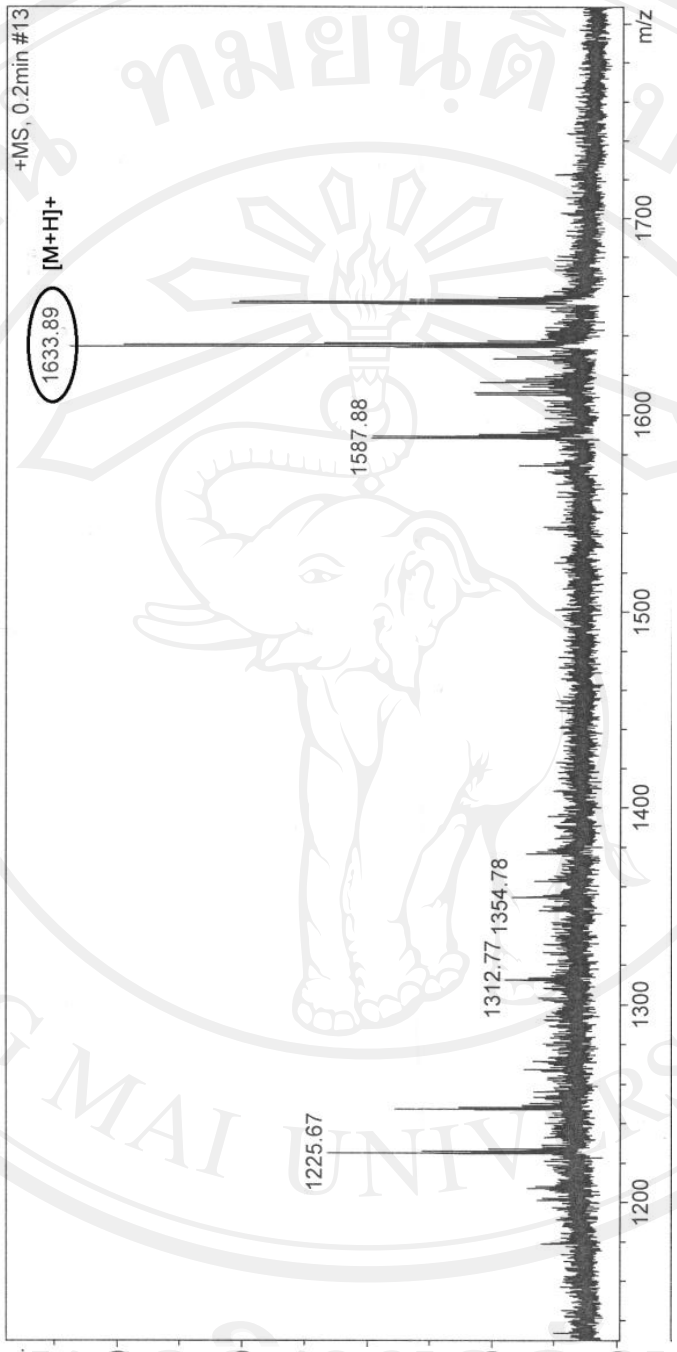
Mass spectrum of Fmoc-lys-aeg-deoxoartemisinin-*t*Bu tetramer (**151**)



Mass spectrum of Cyclic-aeg-deoxoartemisinin-dimer (**156**)



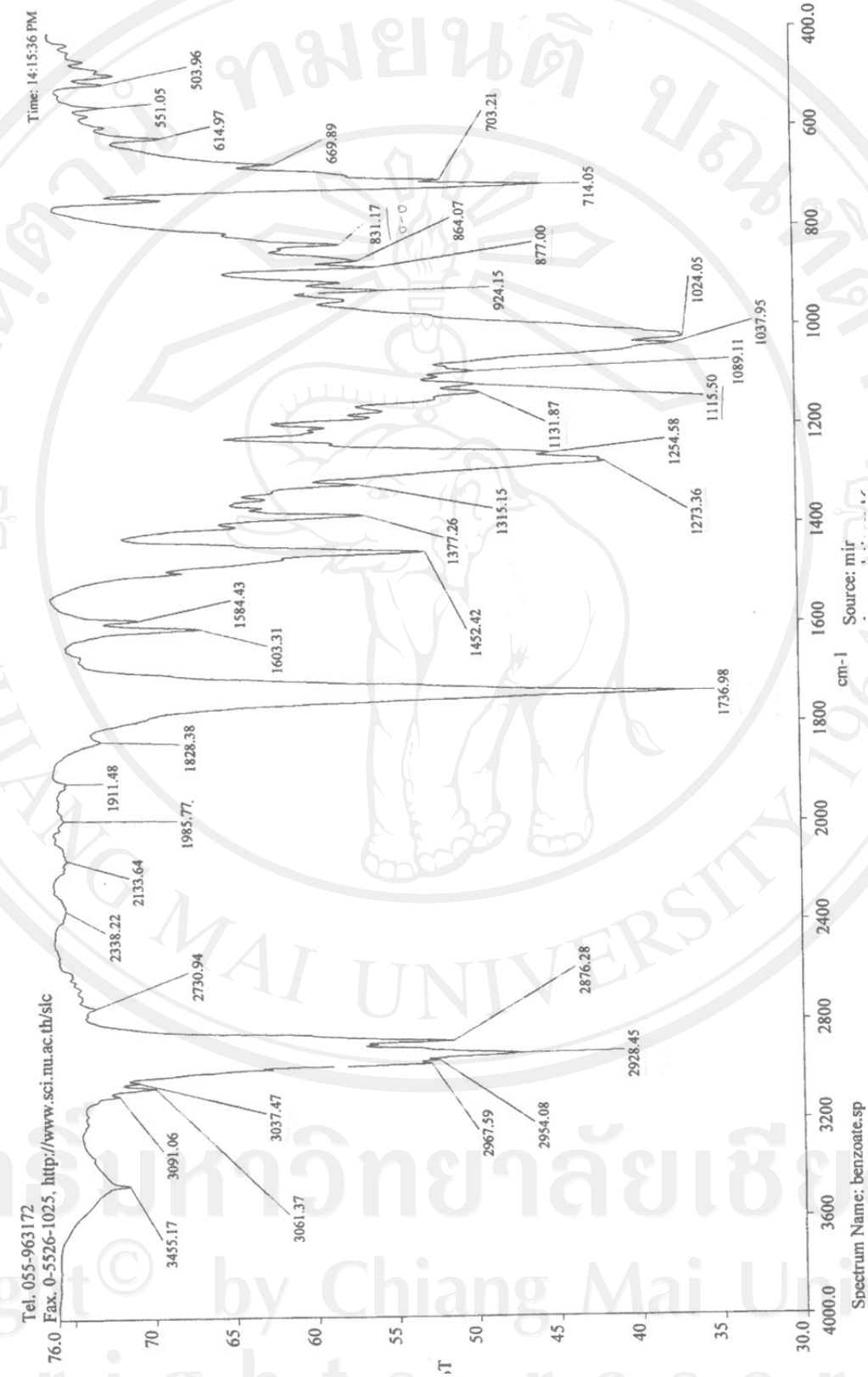
Mass spectrum of Cyclic-aeg-deoxoartemisinin-trimer (**158**)



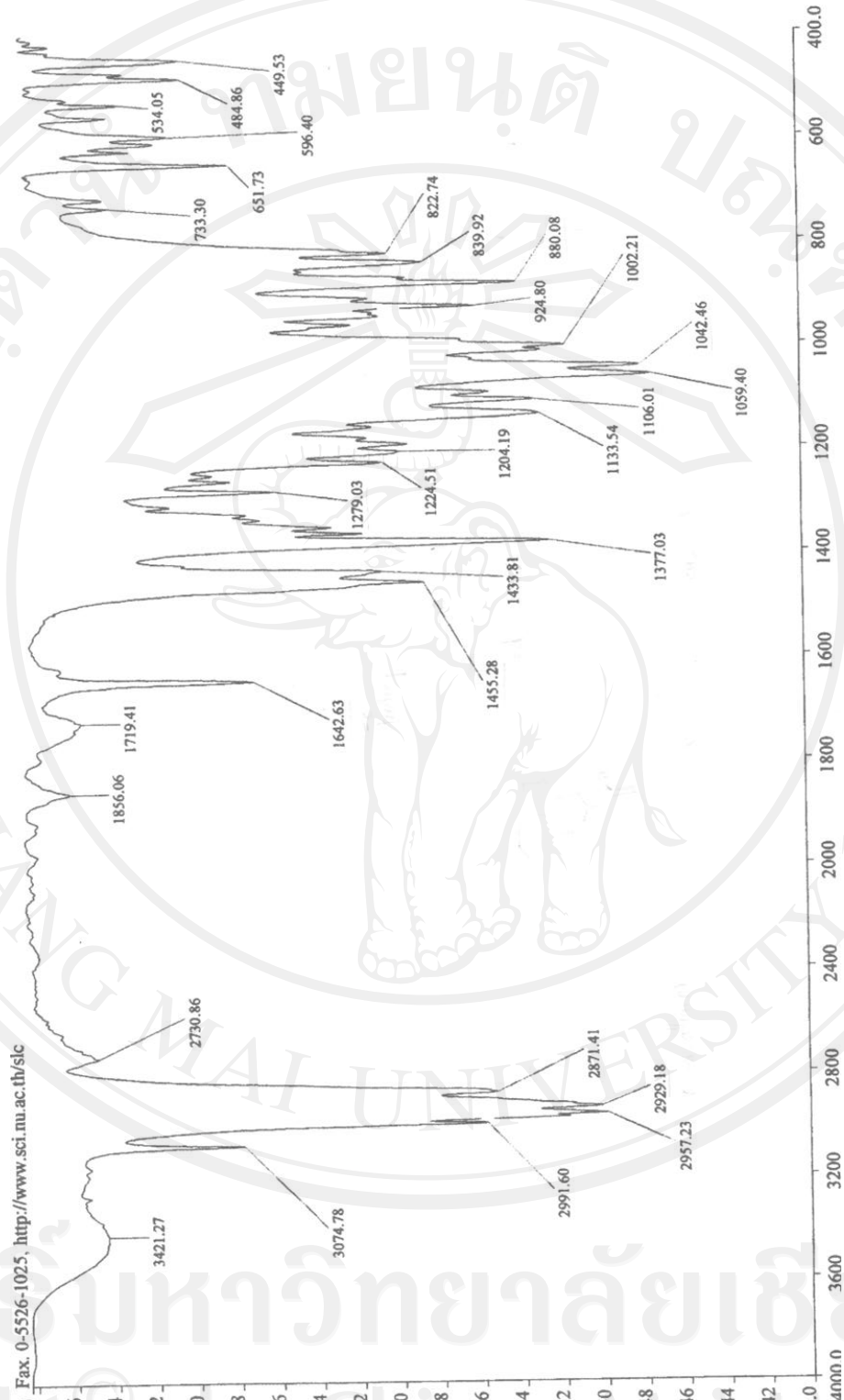
Mass spectrum of Cyclic-aeg-deoxoartemisinin-tetramer (**161**)

APPENDIX III

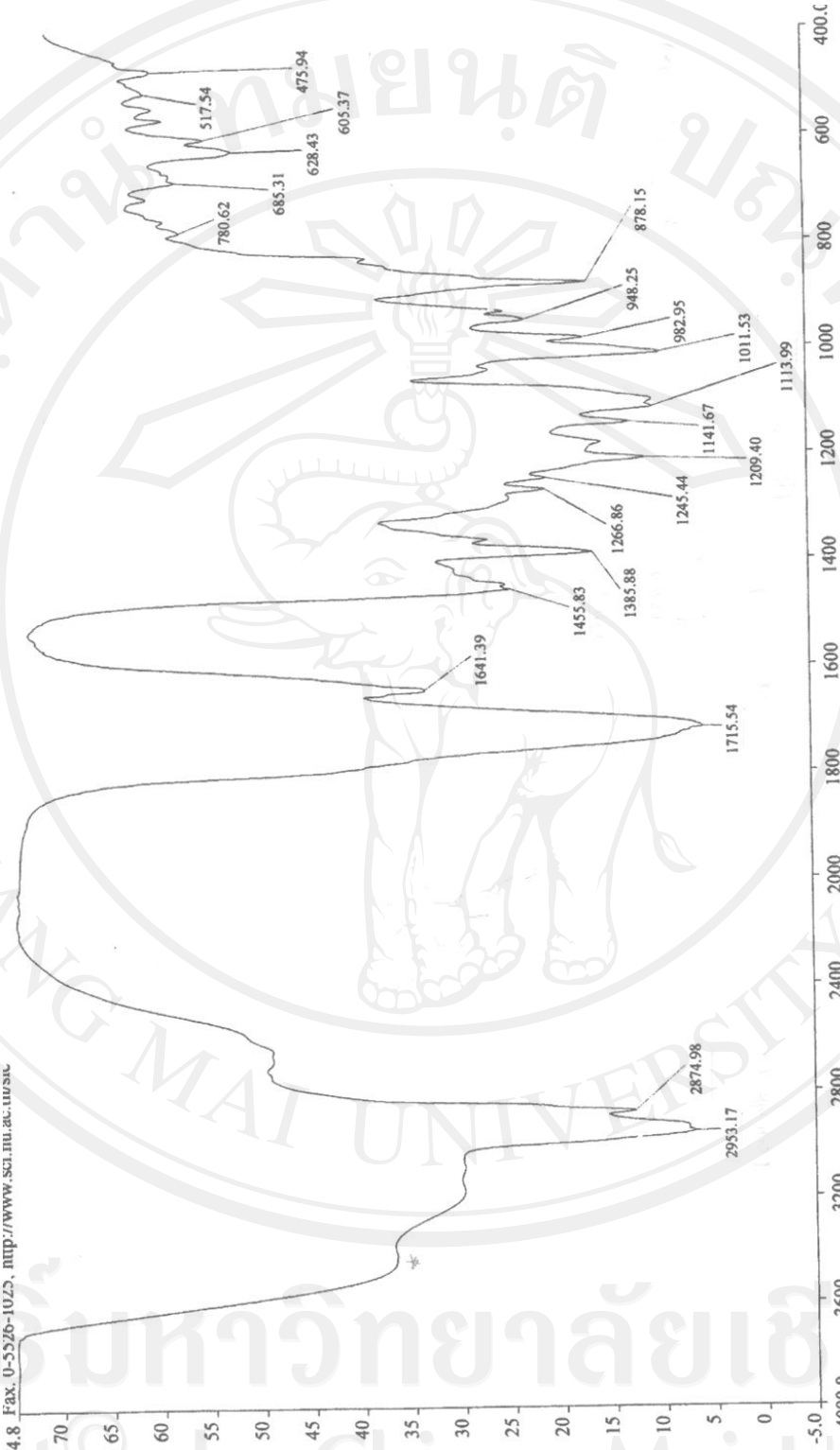
IR SPECTRA



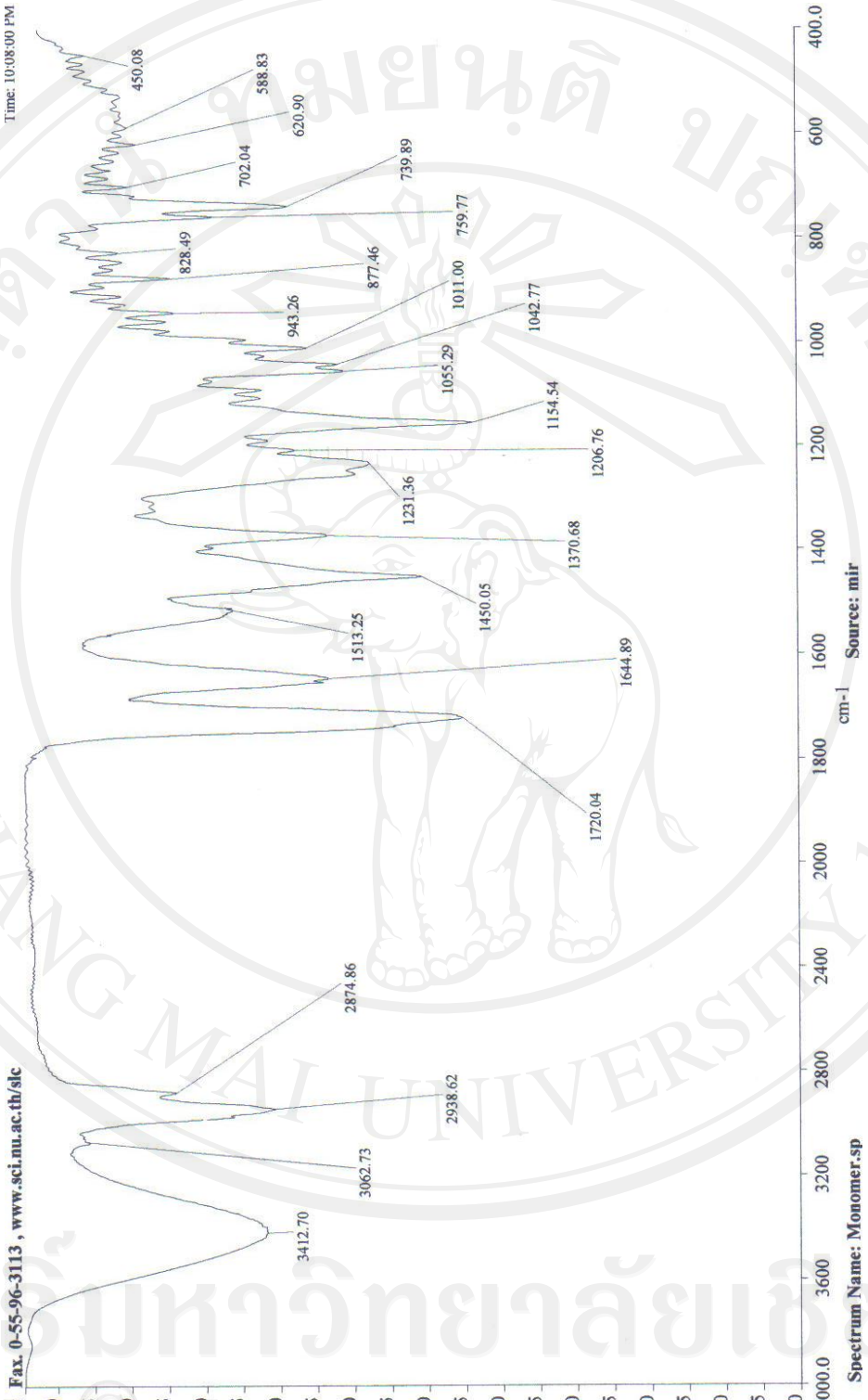
IR spectrum of Dihydroartemisinin 10α-benzoate (**129**)



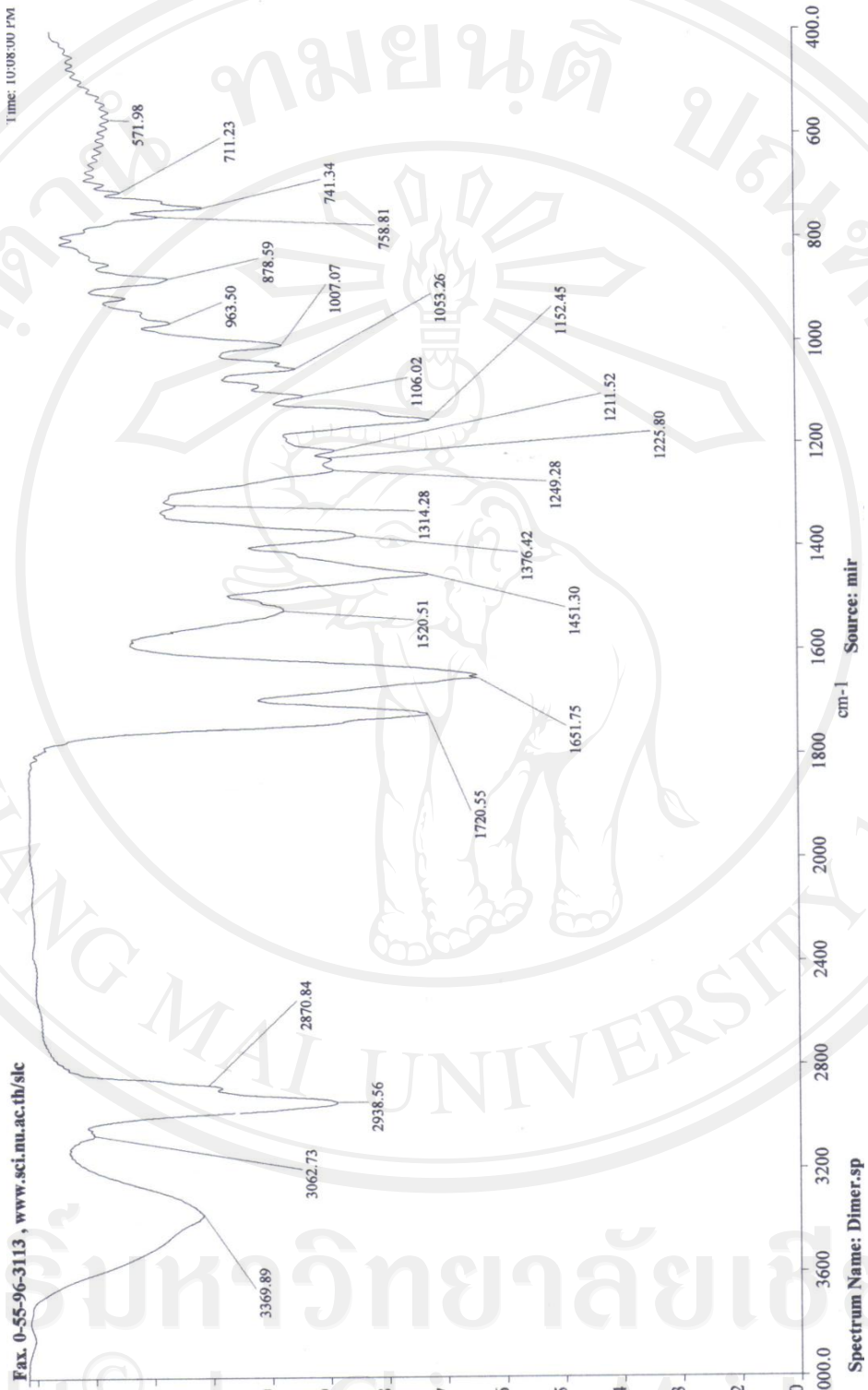
IR spectrum of 10β-Allyldeoxoartemisinin (**130**)



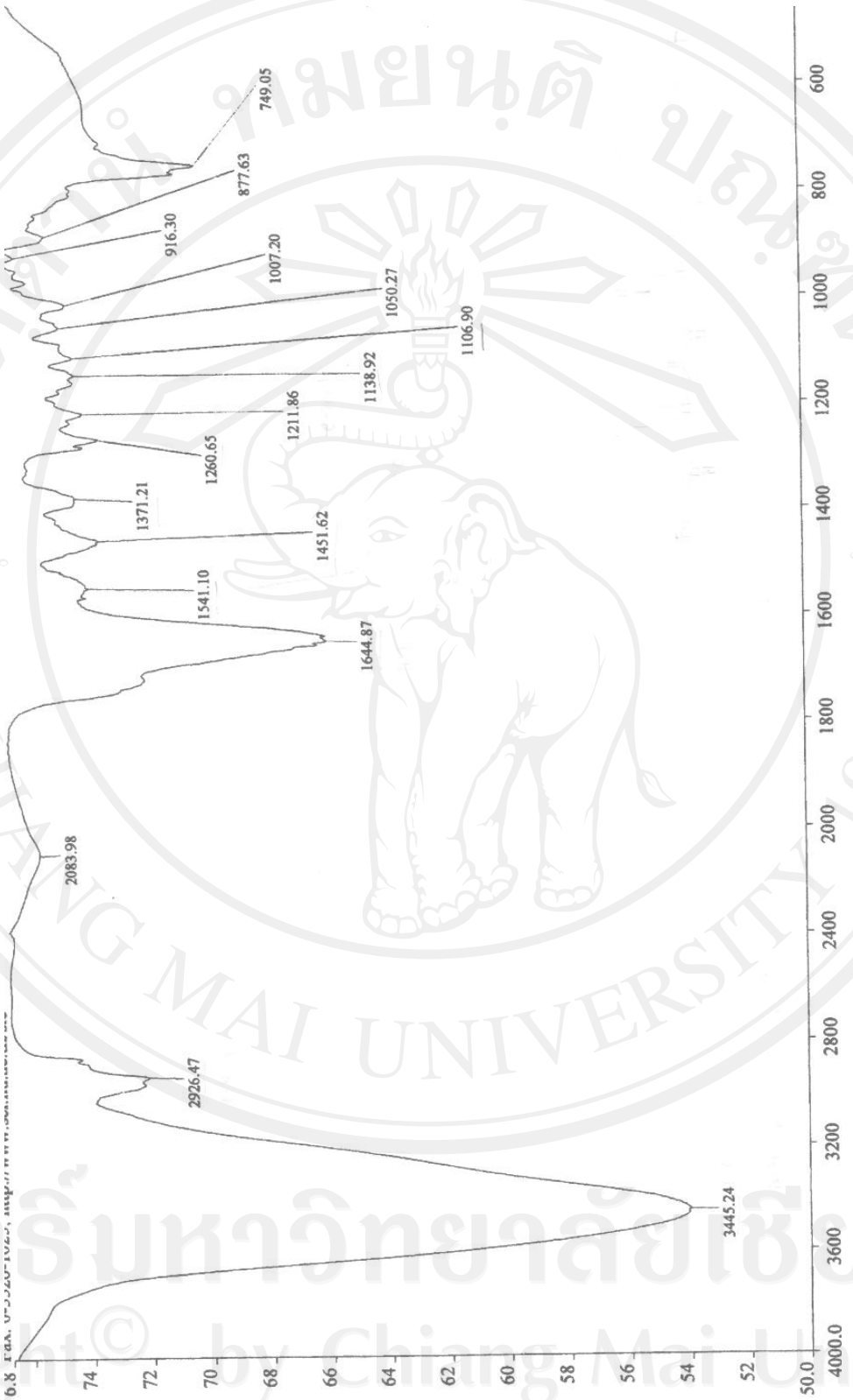
IR spectrum of 10β-Carboxylallyldeoxoartemisinin (**131**)



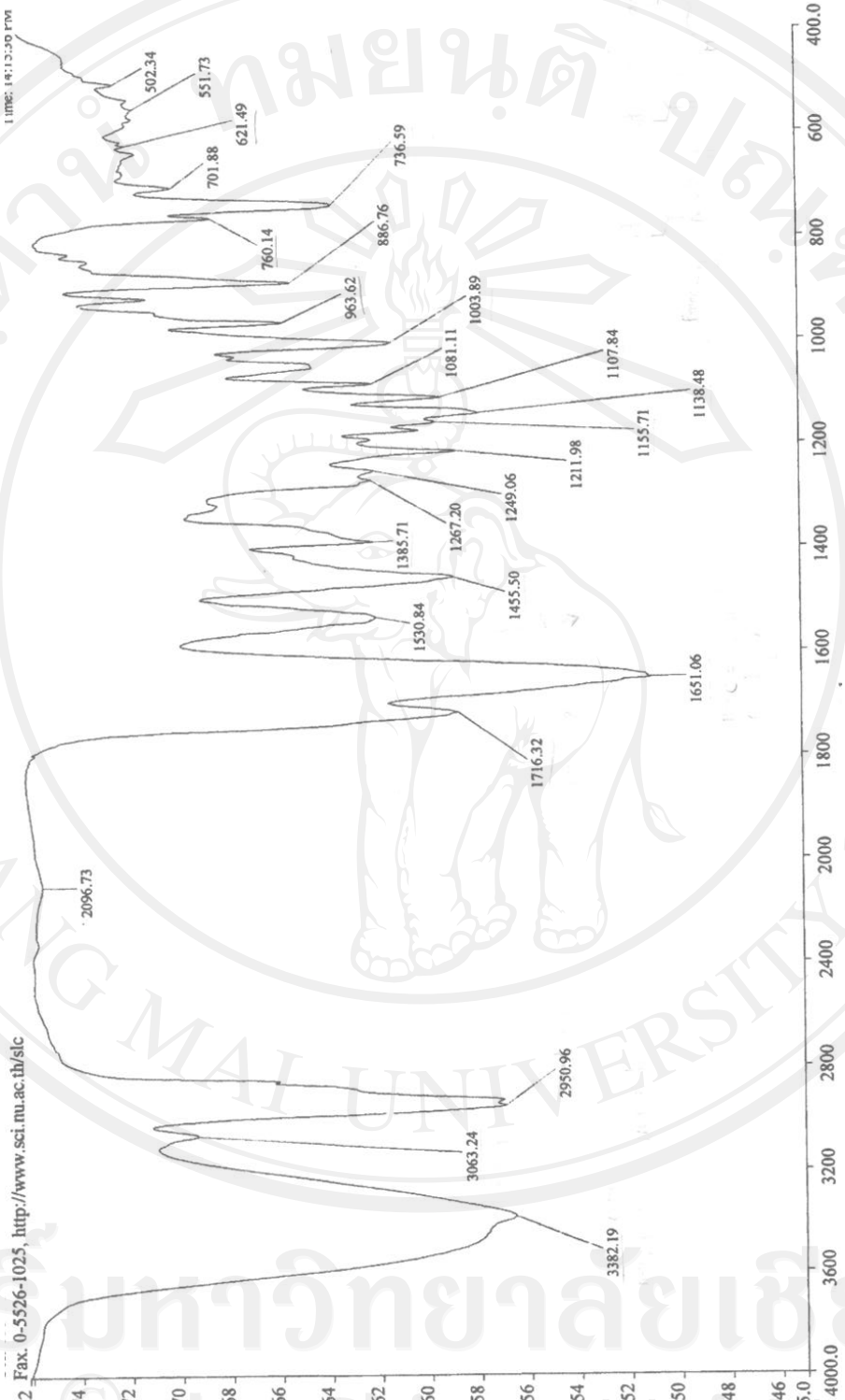
IR spectrum of Fmoc-aeg-deoxoartemisinin-*t*Bu monomer (**132**)



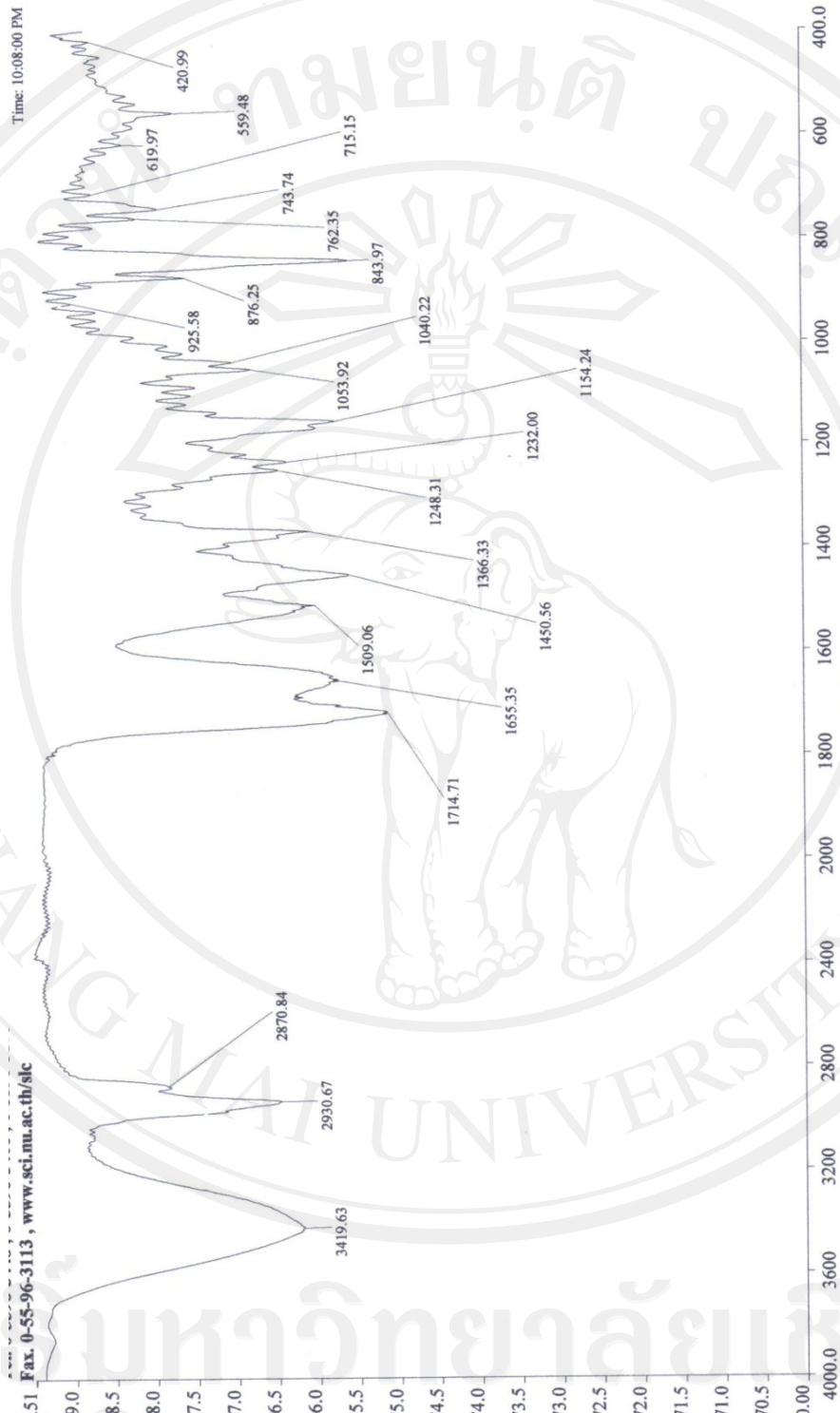
IR spectrum of Fmoc-aeg-deoxoartemisinin-*t*Bu dimer (**134**)



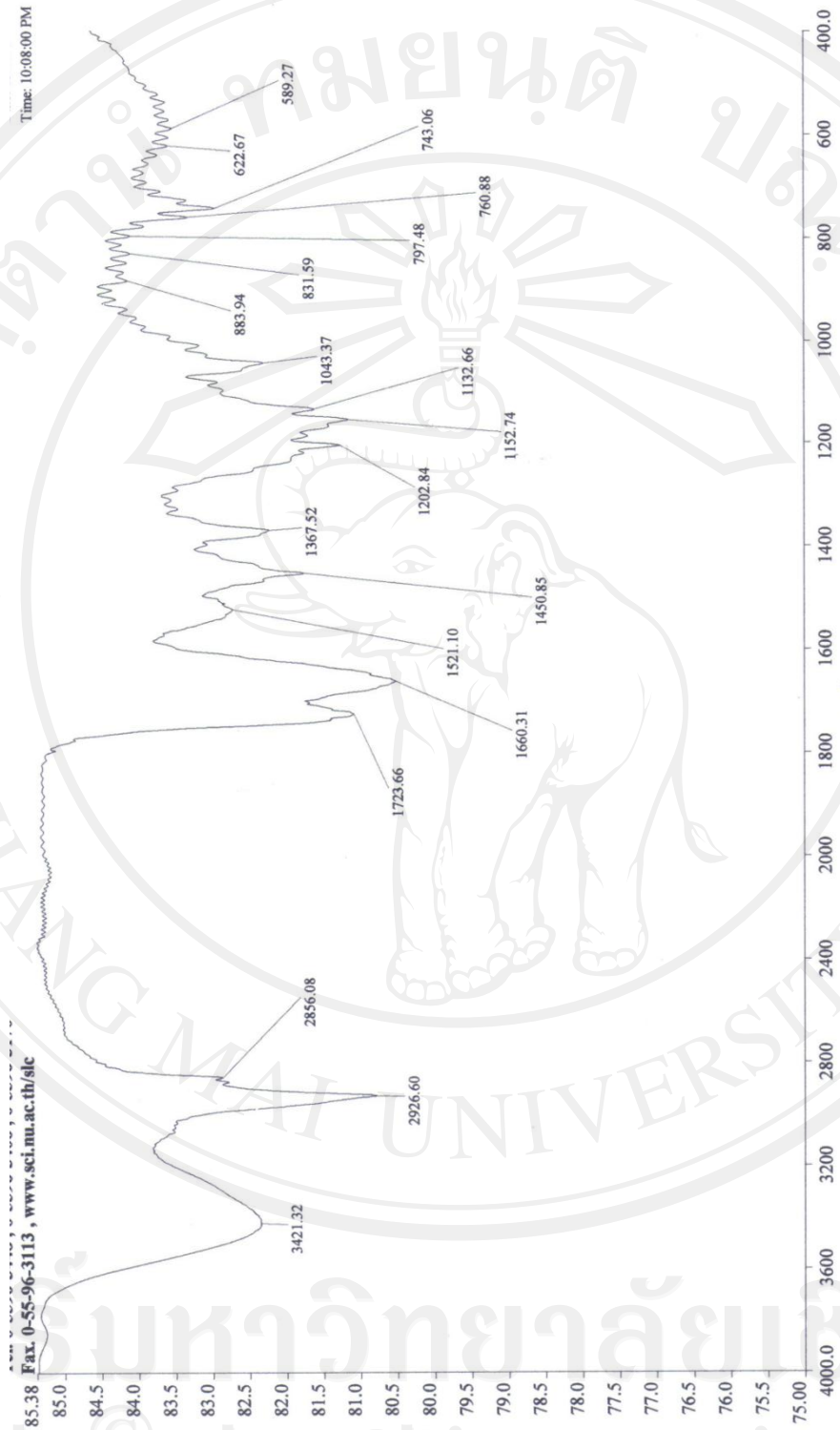
IR spectrum of Fmoc-aeg-deoxoartemisinin-*t*Bu trimer (**137**)



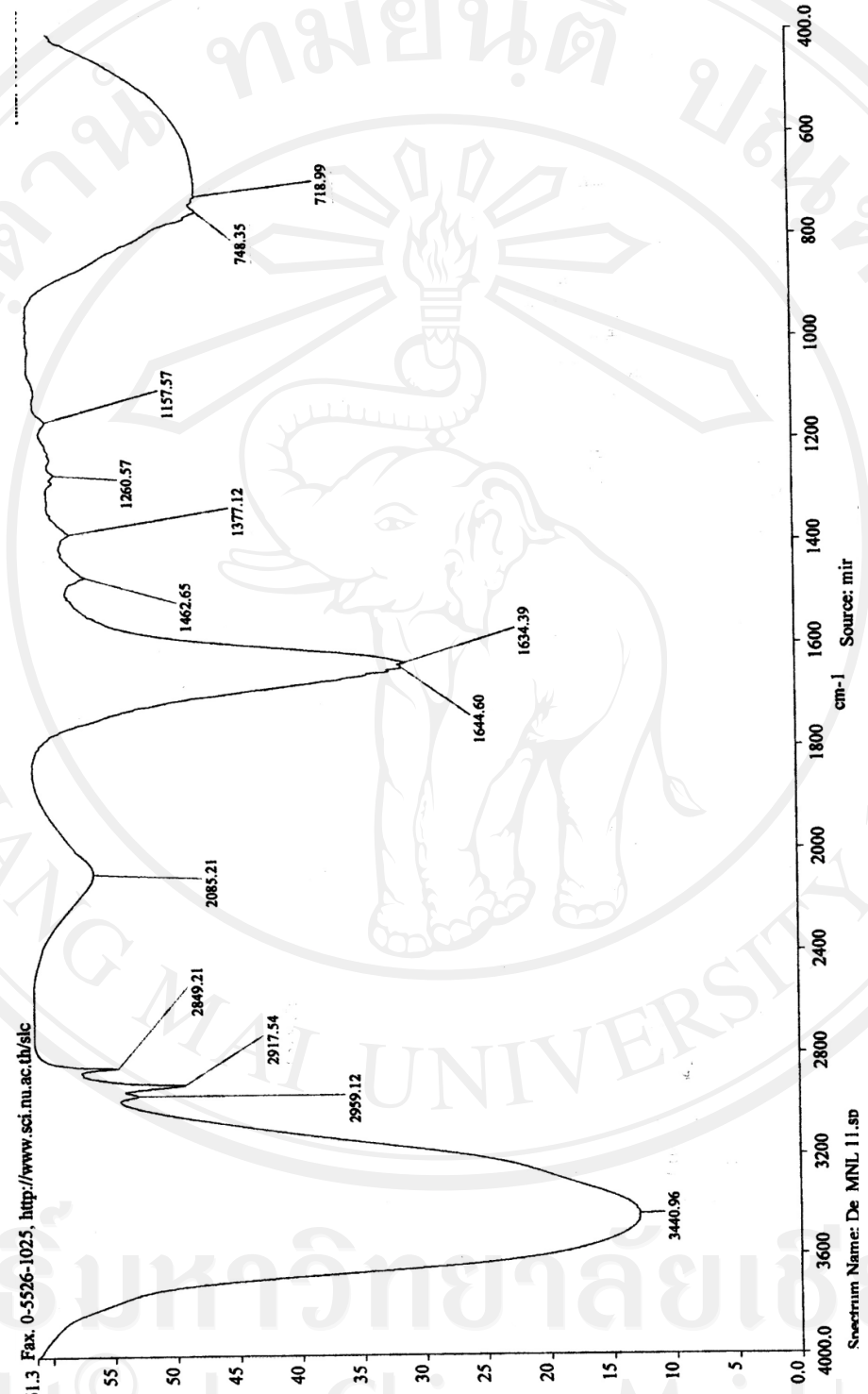
IR spectrum of Fmoc-aeg-deoxoartemisinin-*t*Bu tetramer (**139**)



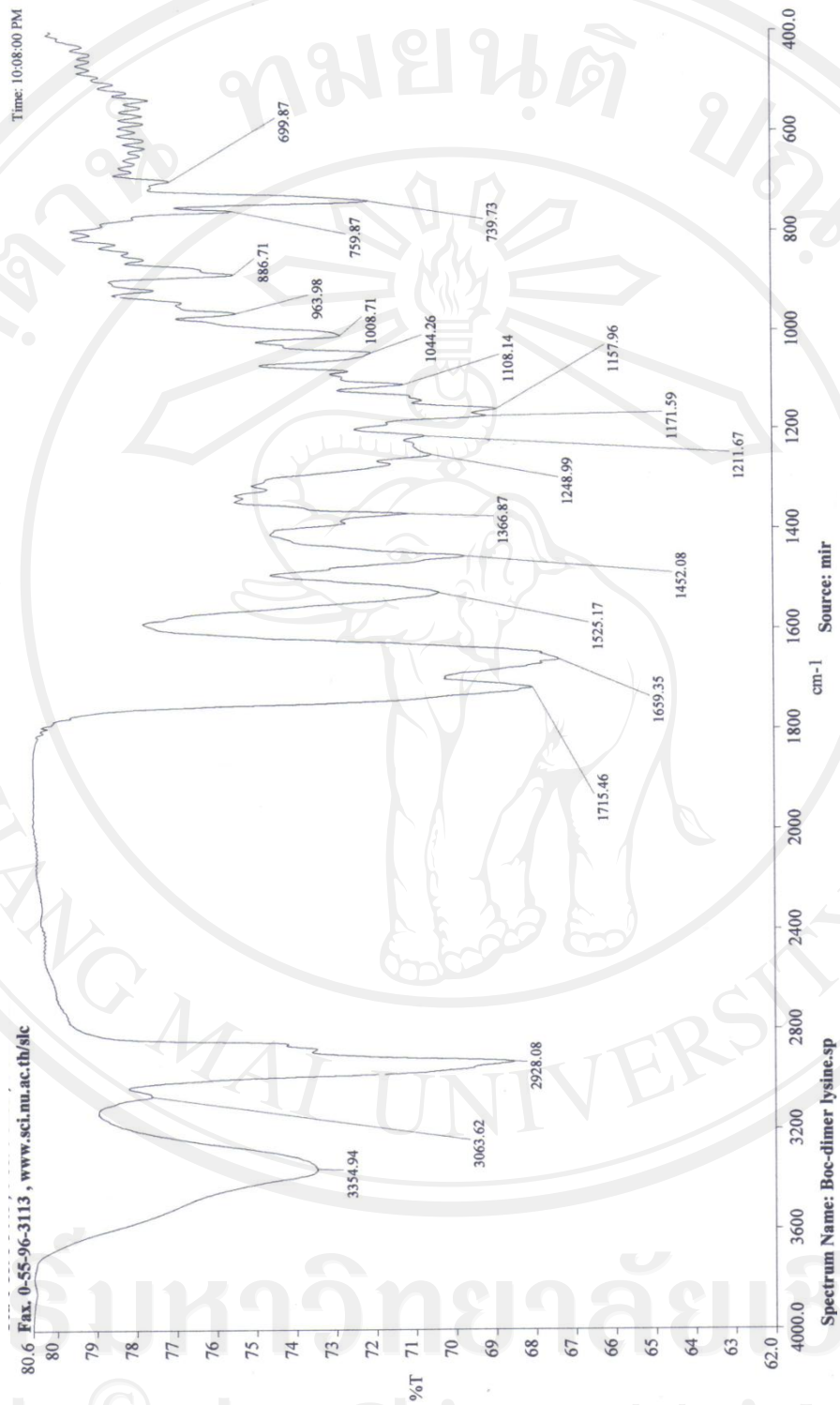
IR spectrum of Fmoc-lys(Boc)-aeg-deoxoartemisinin-*t*Bu monomer (**141**)



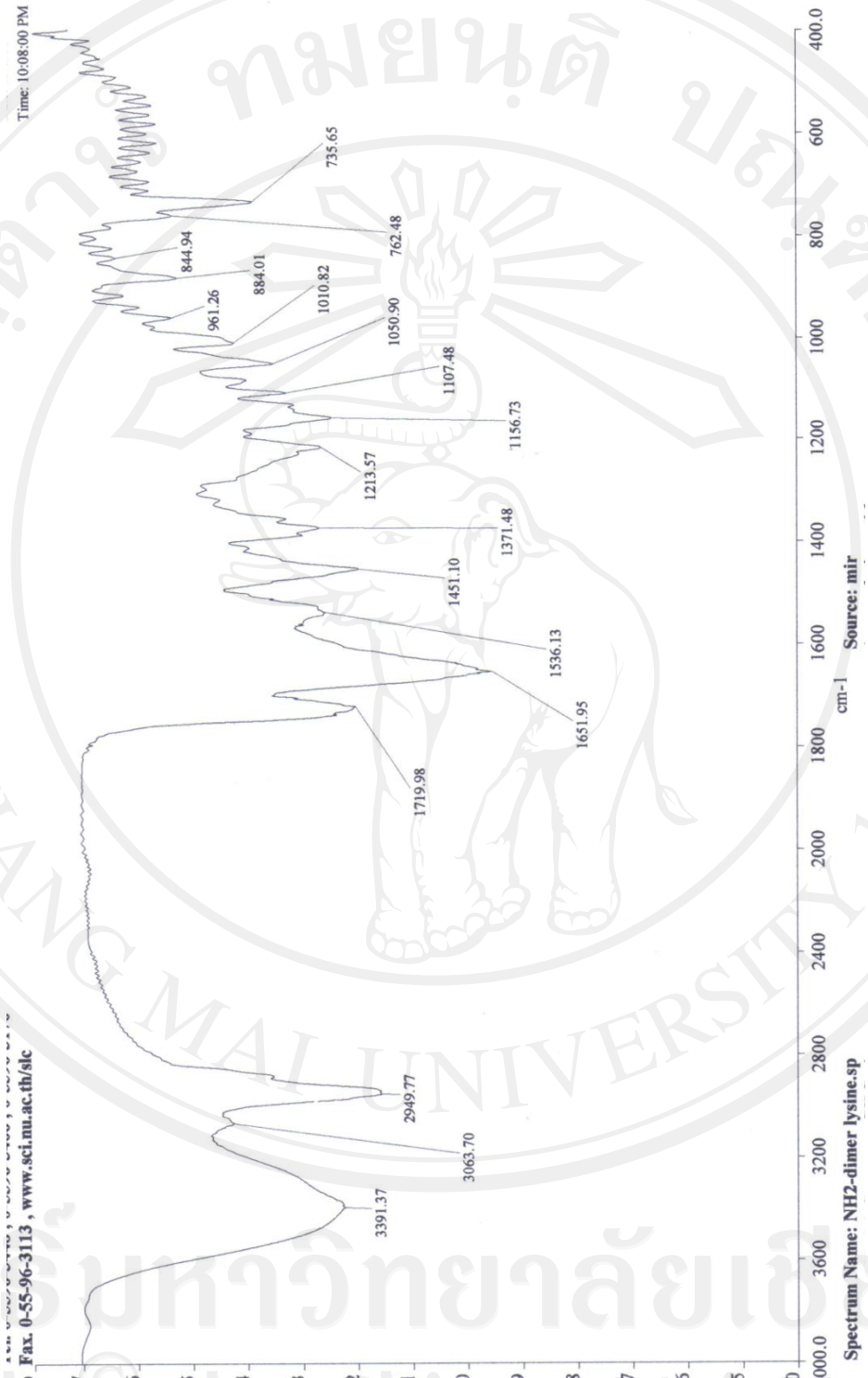
IR spectrum of Fmoc-lys-aeg-deoxoartemisinin-*t*Bu monomer (**148**)



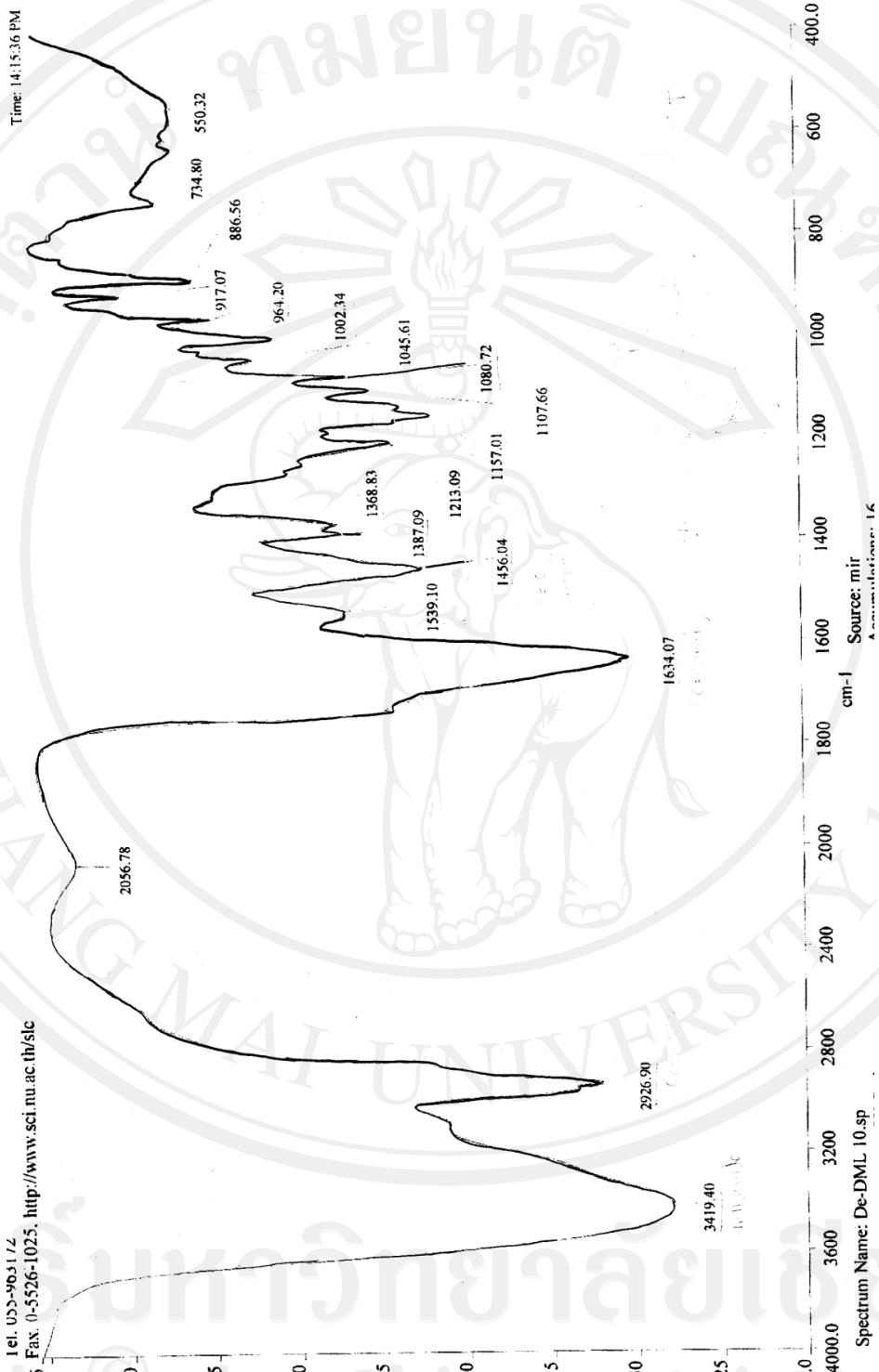
IR spectrum of lys-aeg-deoxoartemisinin-*t*Bu monomer (**152**)



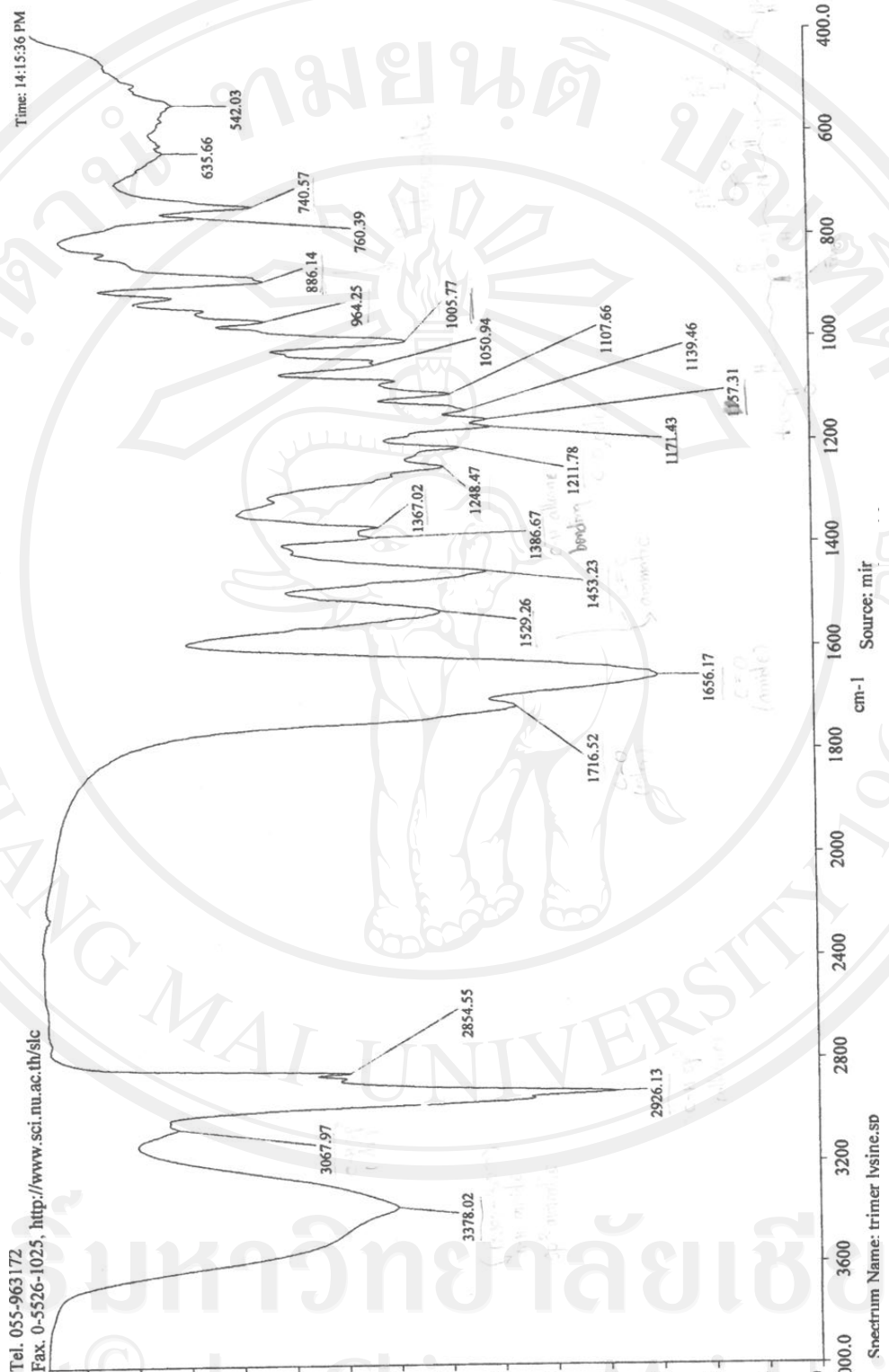
IR spectrum of Fmoc-lys(Boc)-aeg-deoxoartemisinin-*t*Bu dimer (**143**)



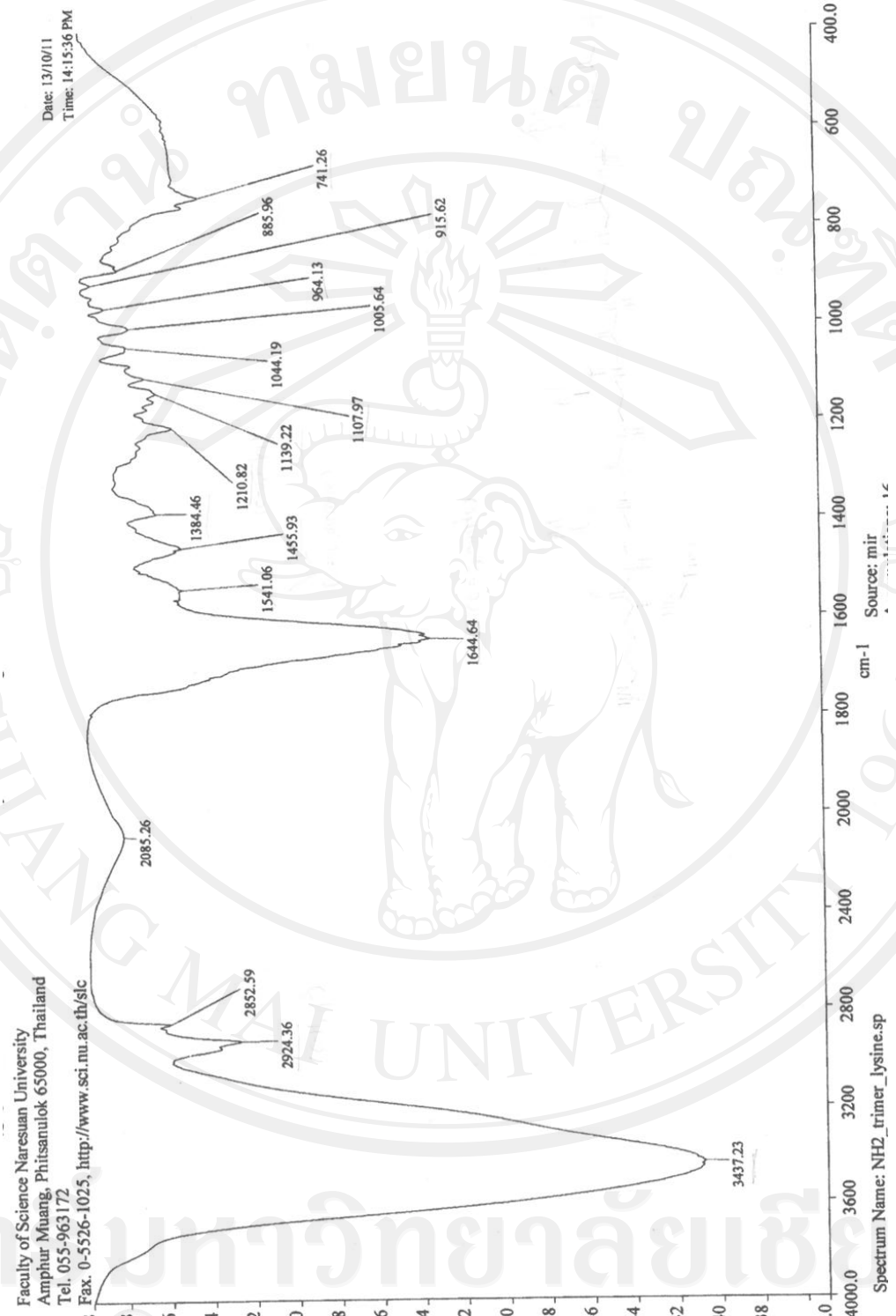
IR spectrum of Fmoc-lys-aeg-deoxoartemisinin-*t*Bu dimer (**149**)



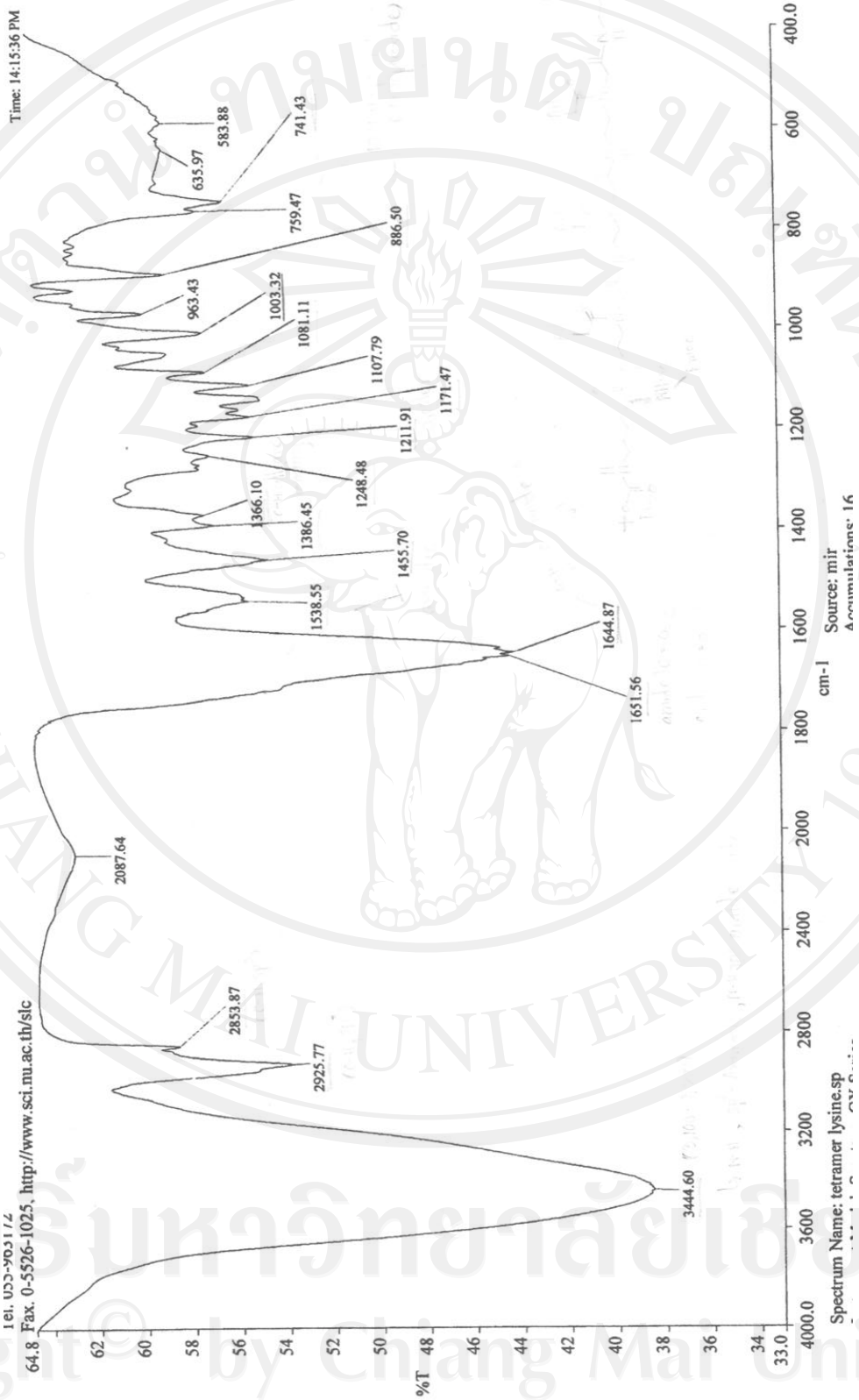
IR spectrum of lys-aeg-deoxoartemisinin-*t*Bu dimer (**154**)



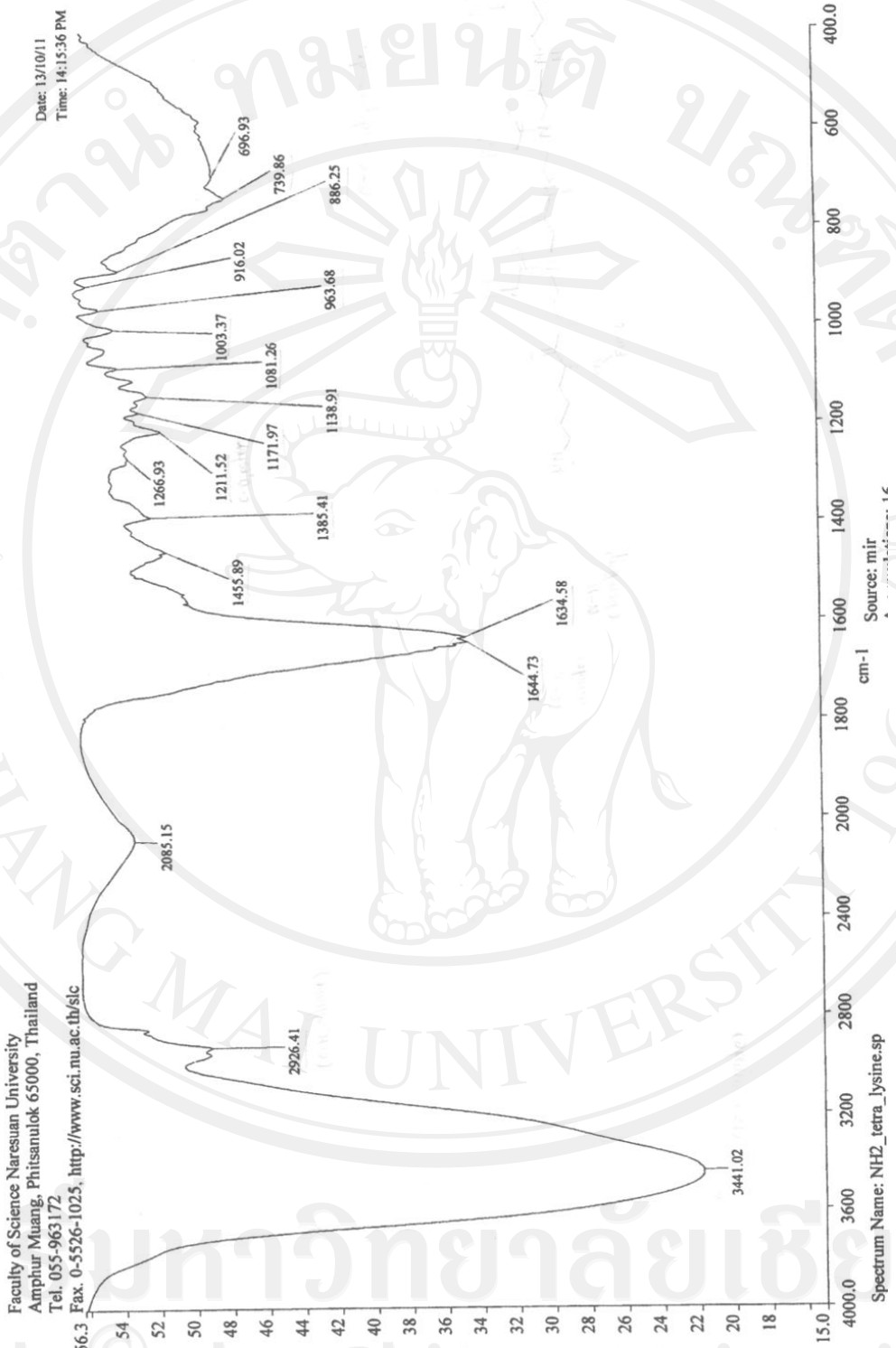
IR spectrum of Fmoc-lys(Boc)-aeg-deoxoartemisinin-*t*Bu trimer (**144**)



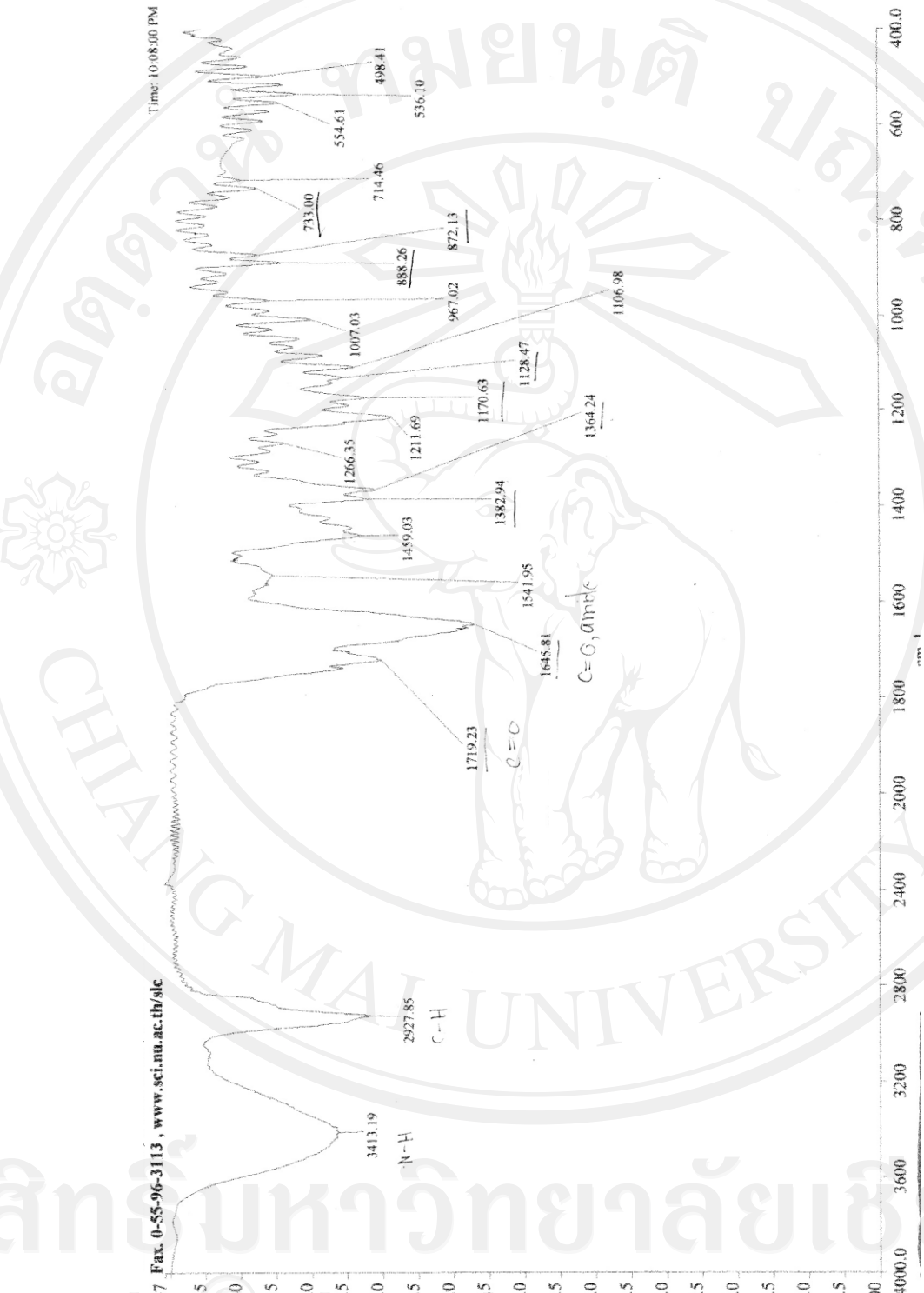
IR spectrum of Fmoc-lys-aeg-deoxoartemisinin-*t*Bu trimer (**150**)



IR spectrum of Fmoc-lys(Boc)-aeg-deoxoartemisinin-*t*Bu tetramer (**146**)



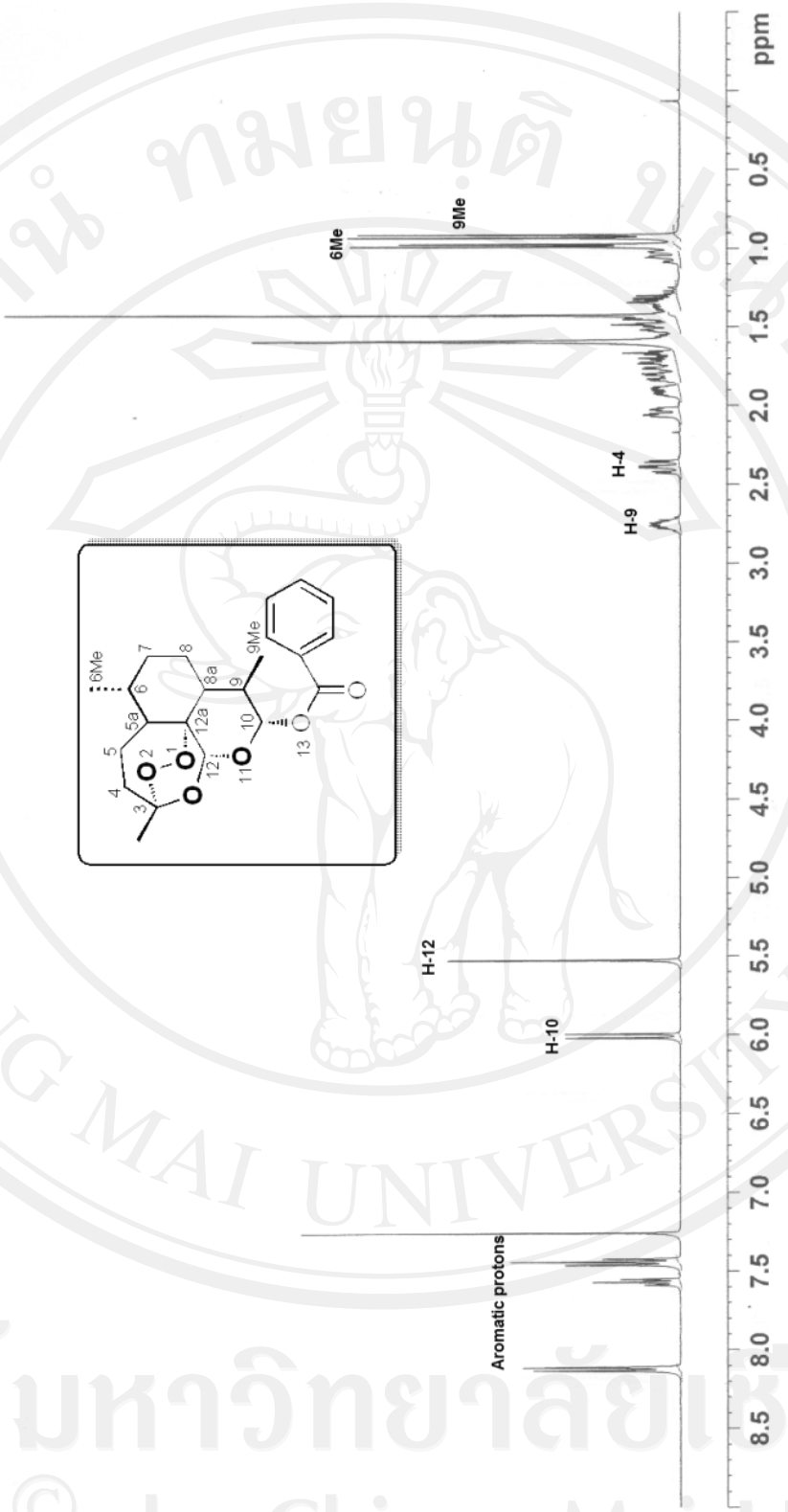
IR spectrum of Fmoc-lys-aeg-deoxoartemisinin-*t*Bu tetramer (**151**)



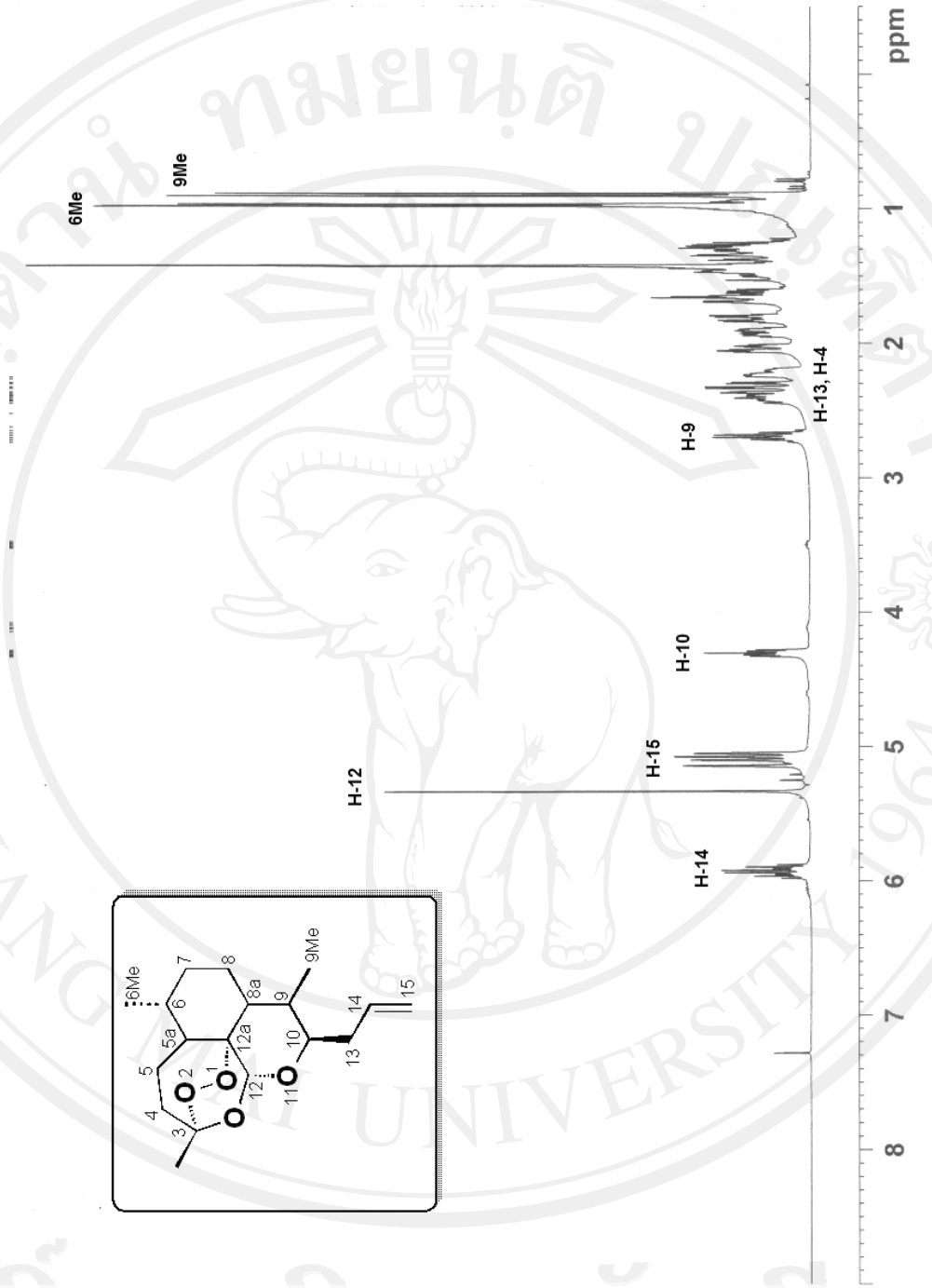
IR spectrum of Cyclic-aeg-deoxoartemisinin-*t*Bu dimer (**156**)

APPENDIX IV

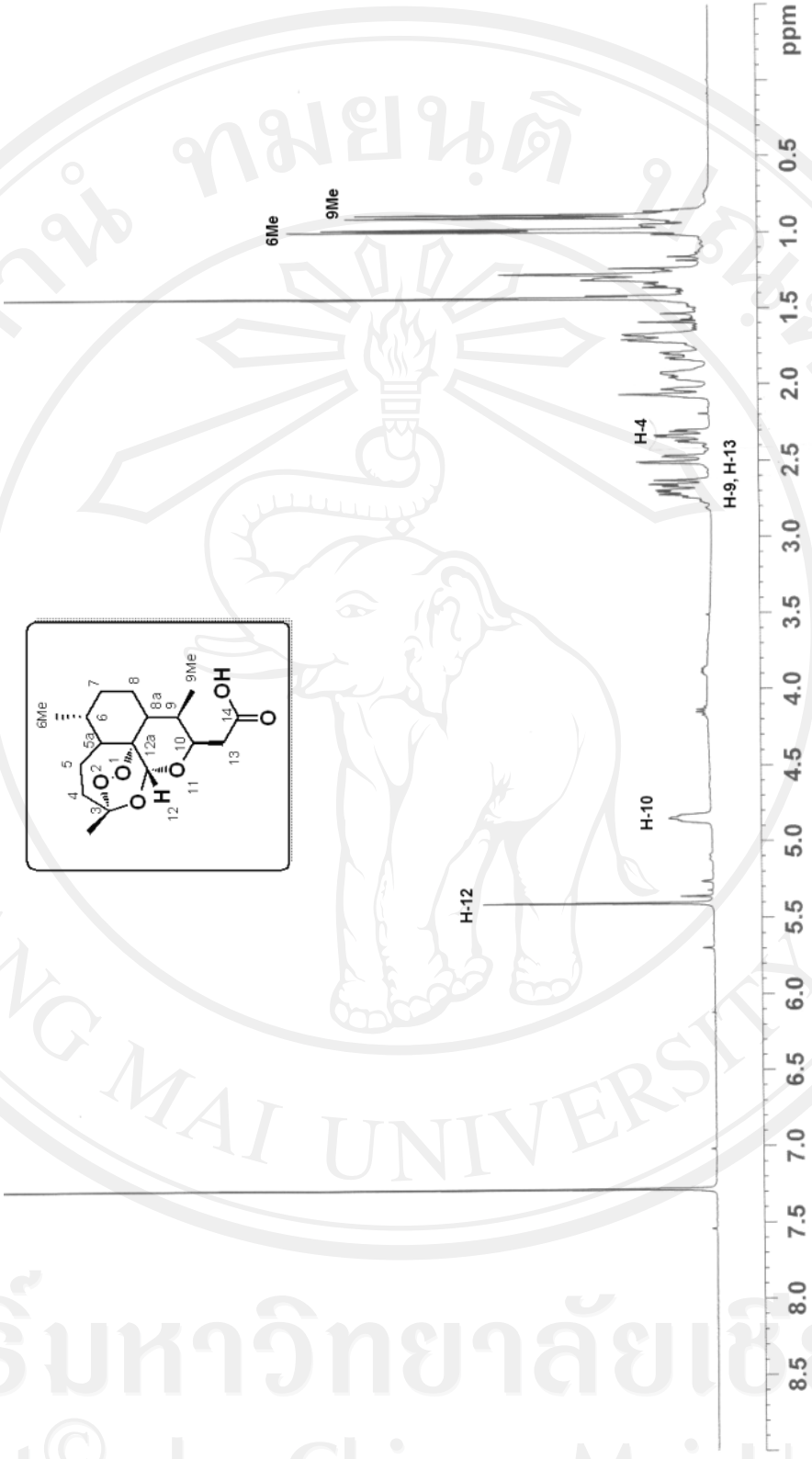
NMR SPECTRA



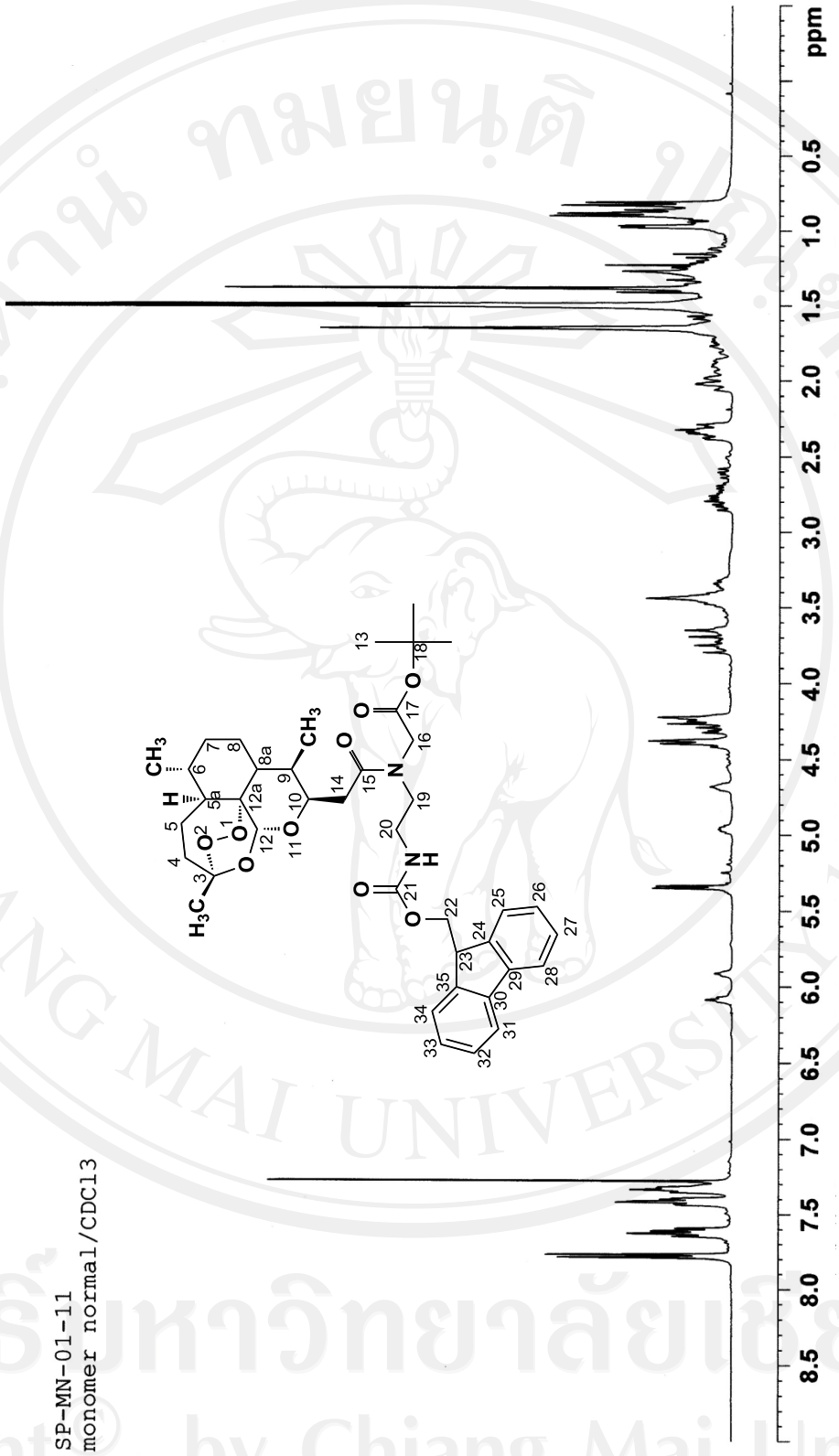
^{1}H-NMR spectrum of Dihydroartemisinin 10α-benzoate (**129**)



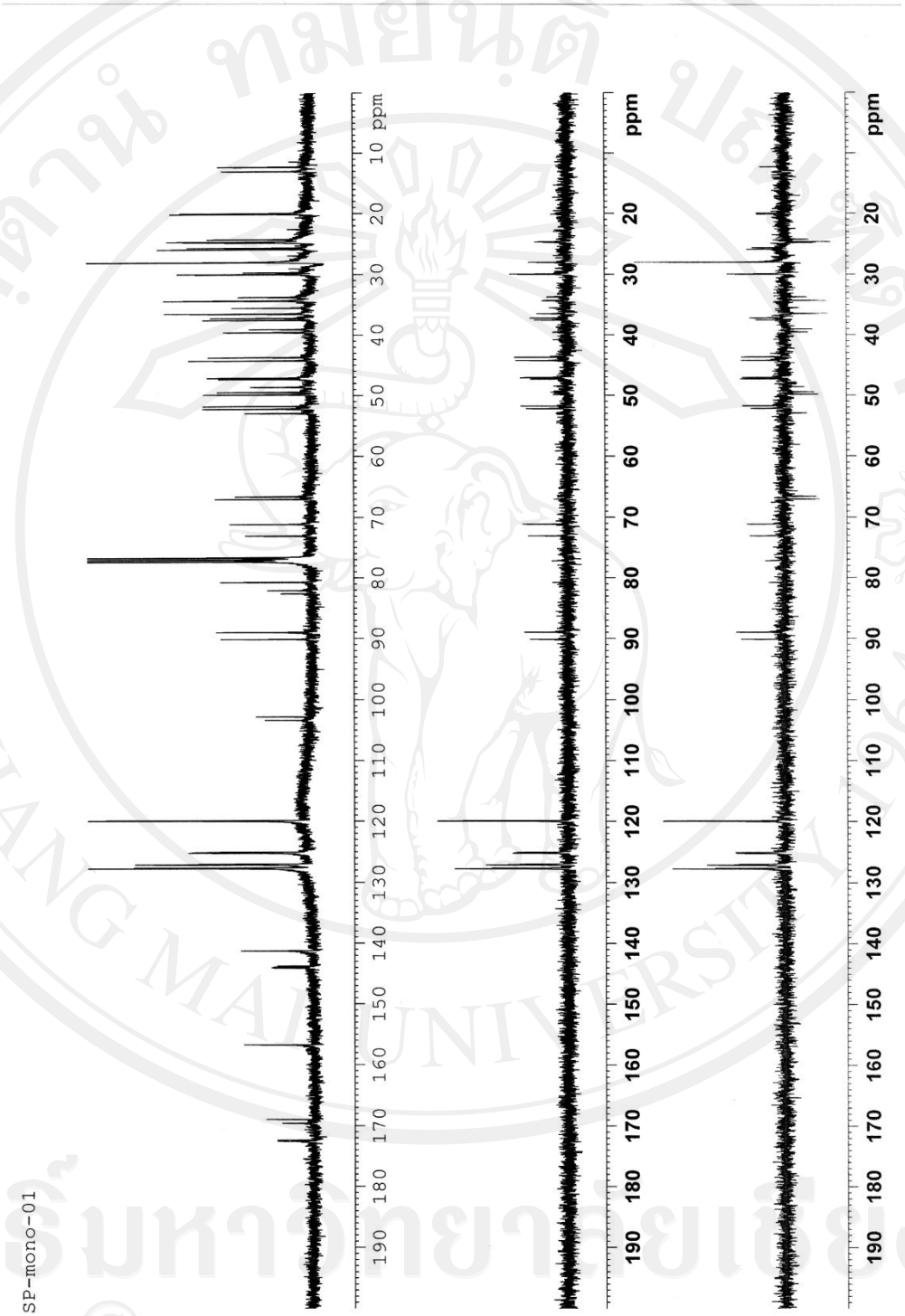
^{1}H-NMR spectrum of 10β-Allyldeoxoartemisinin (**130**)



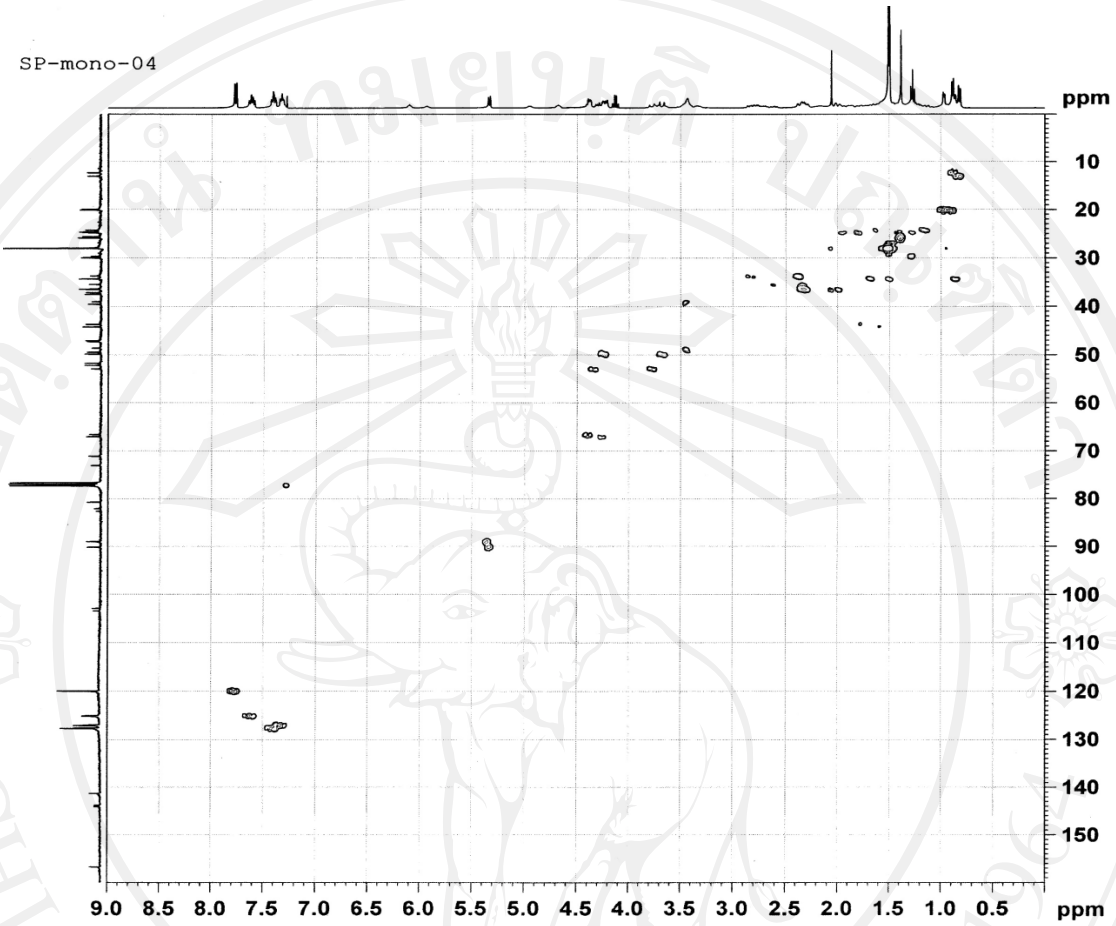
^{1}H-NMR spectrum of 10β-Carboxylallyldeoxoartemisinin (**131**)



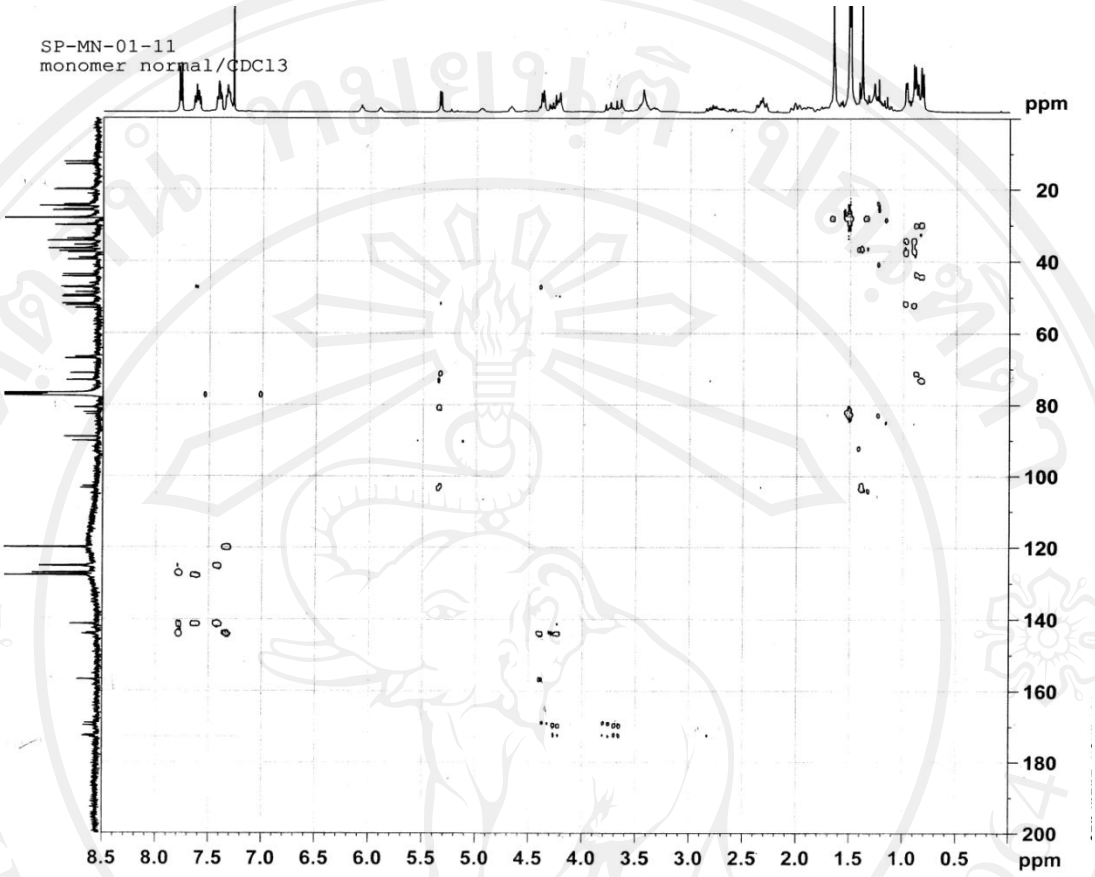
^{1}H-NMR spectrum of Fmoc-aeg-deoxoartemisinin-*t*Bu monomer (**132**)



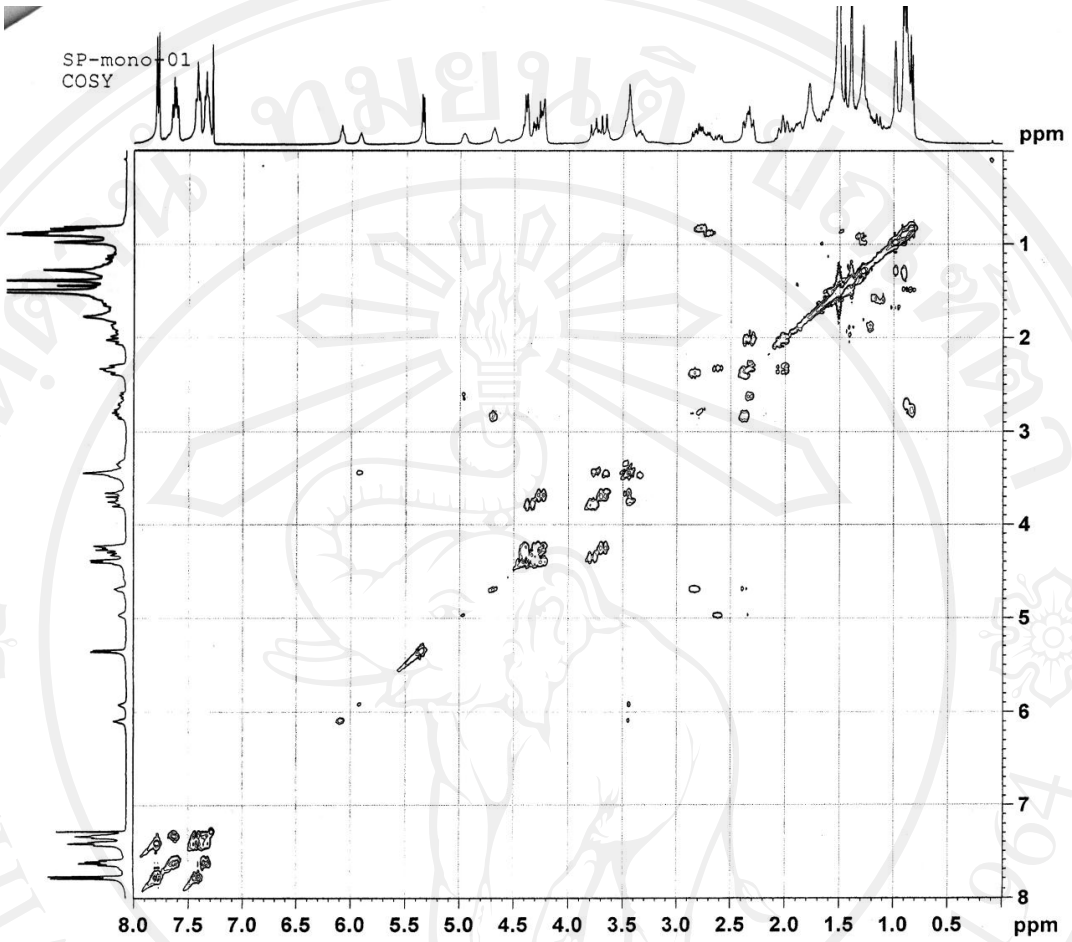
^{13}C-NMR spectrum of Fmoc-aeg-deoxoartemisinin-*t*Bu monomer (**132**)



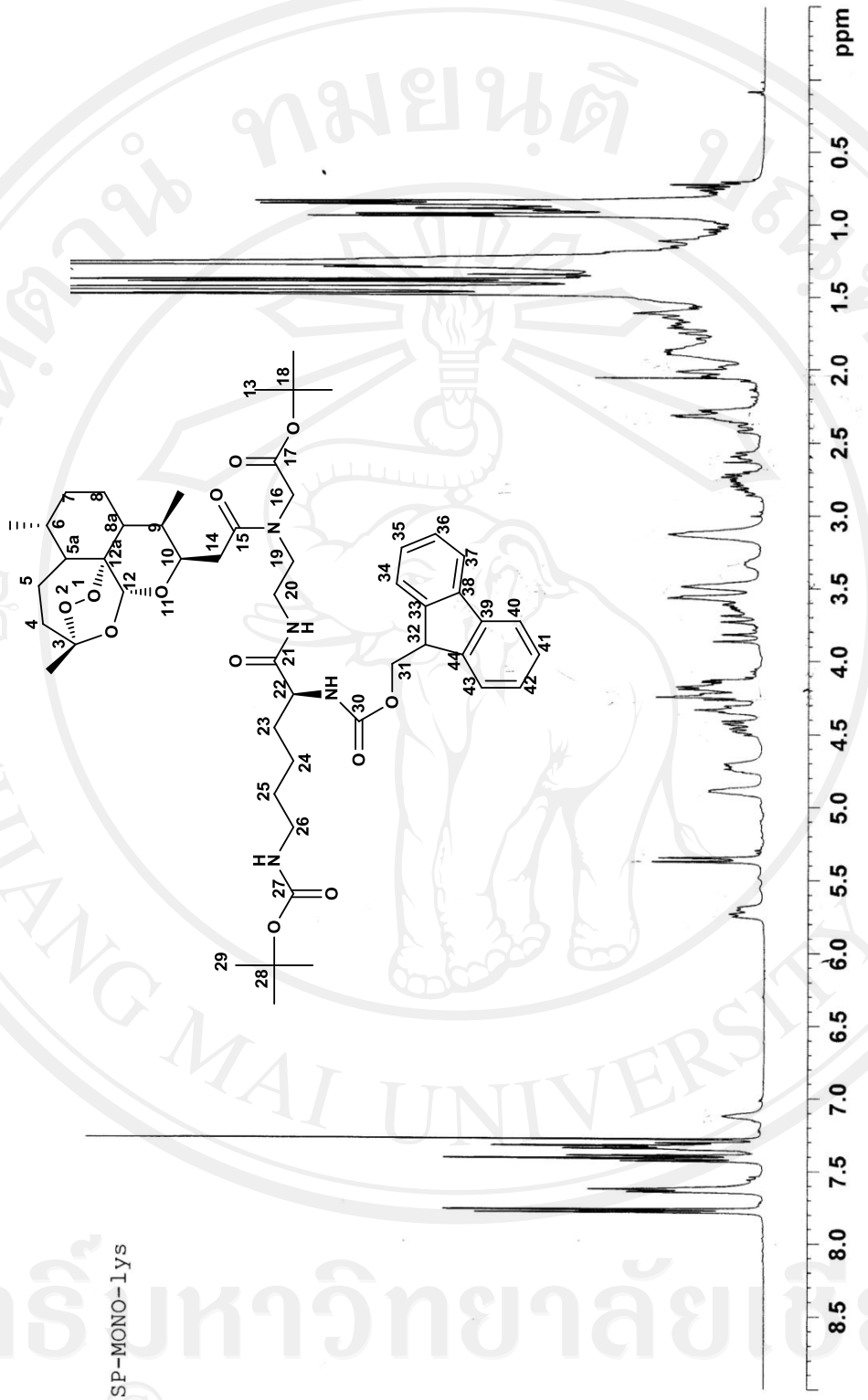
2D NMR (HMQC) spectrum of Fmoc-aeg-deoxoartemisinin-*t*Bu monomer (**132**)



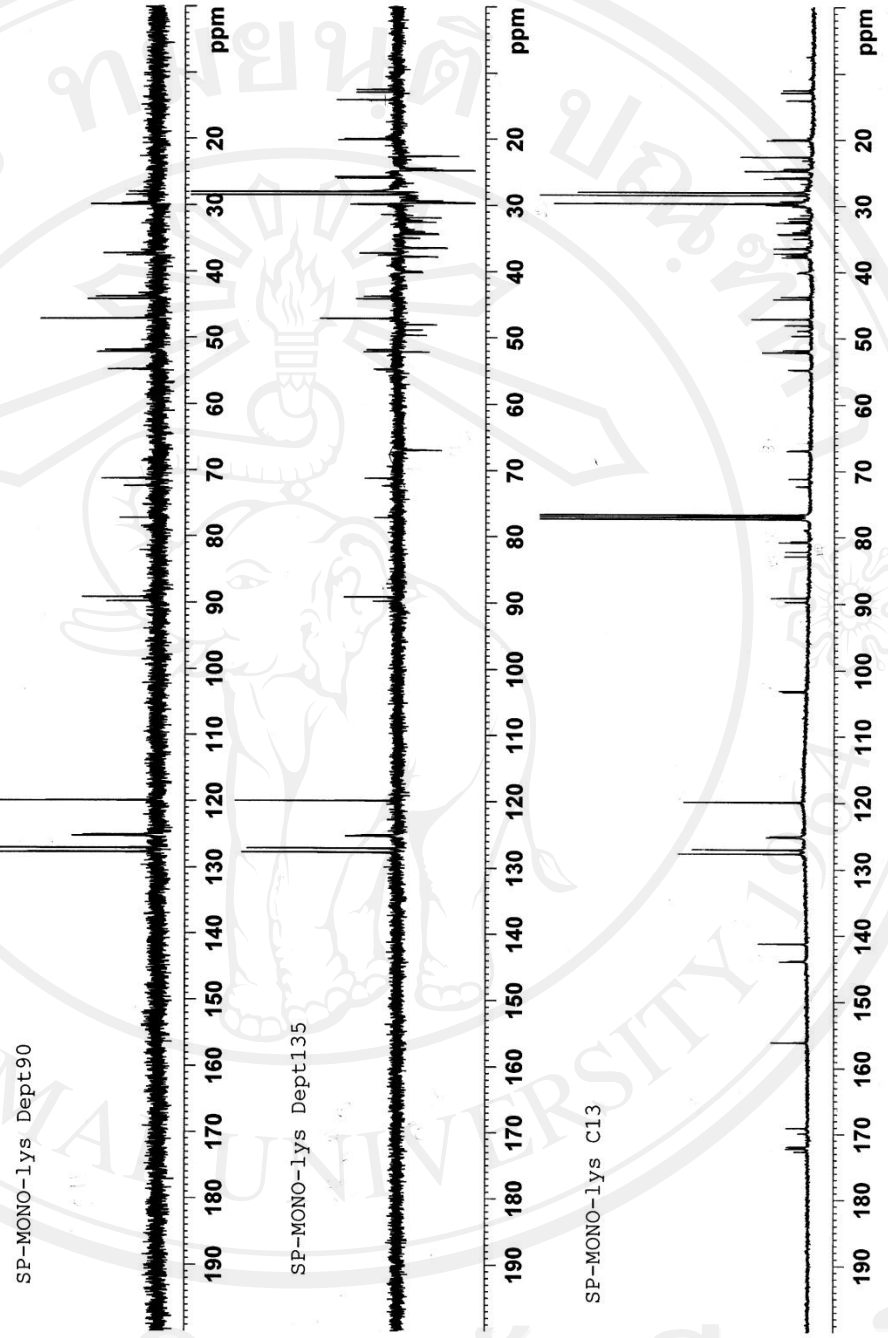
2D NMR (HMBC) spectrum of Fmoc-aeg-deoxoartemisinin-*t*Bu monomer (**132**)



2D NMR (COSY) spectrum of Fmoc-aeg-deoxoartemisinin-*t*Bu monomer (**132**)

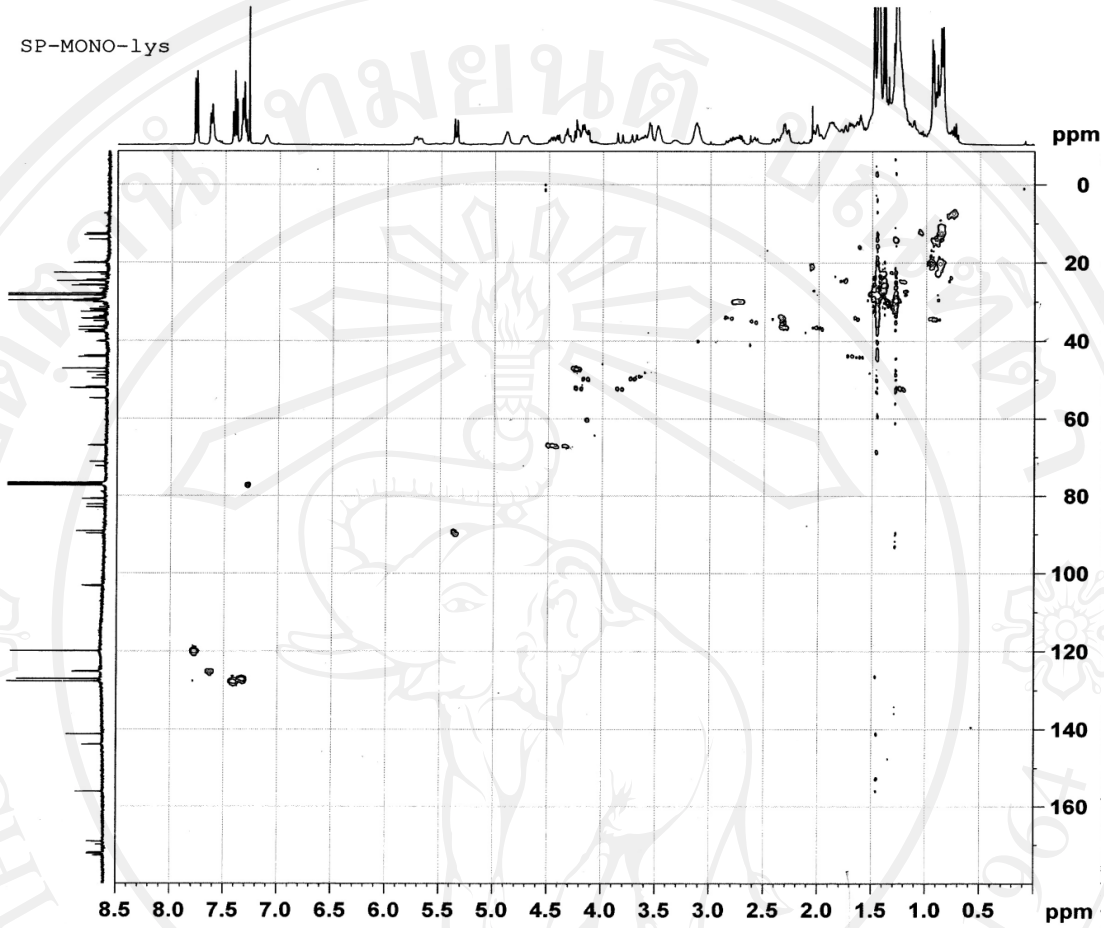


^{1}H-NMR spectrum of Fmoc-lys(Boc)-aeg-deoxoartemisinin-*t*Bu monomer (**141**)



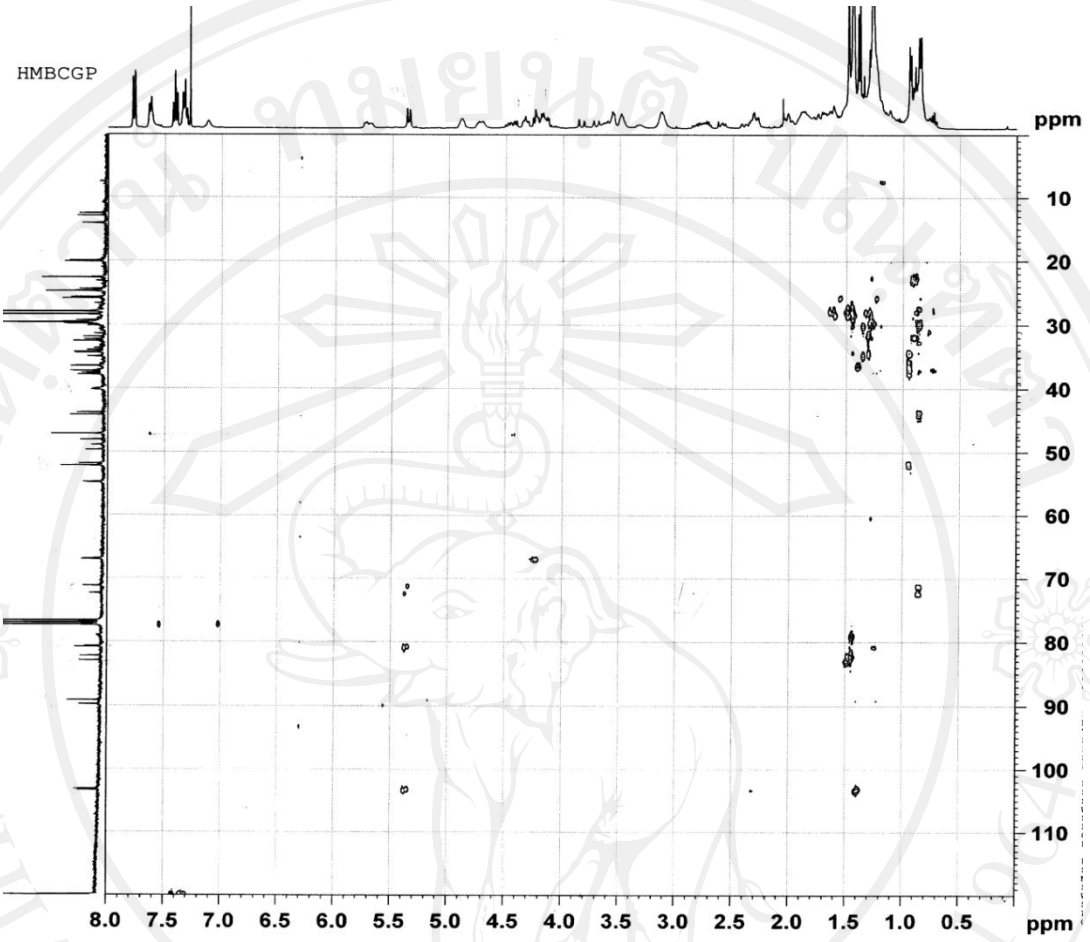
^{13}C-NMR spectrum of Fmoc-lys(Boc)-aeg-deoxoartemisinin-*t*Bu monomer

(**141**)



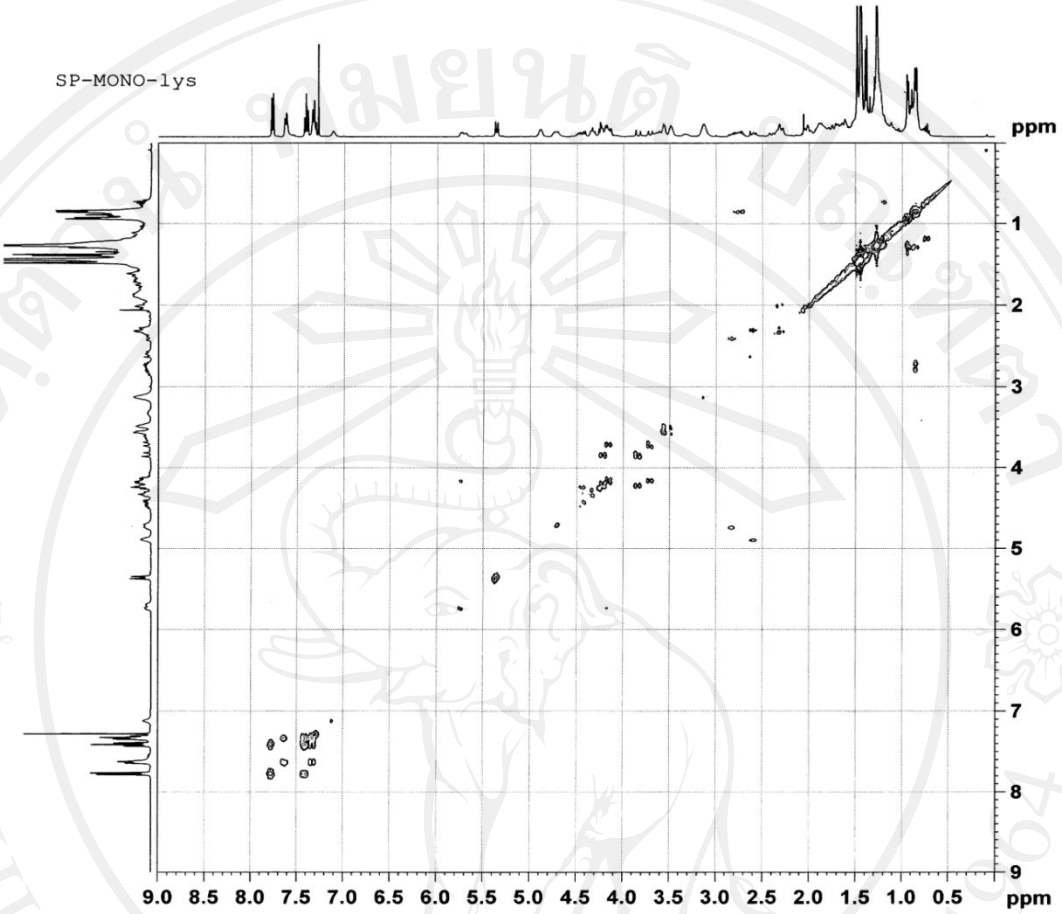
2D NMR (HMQC) spectrum of Fmoc-lys(Boc)-aeg-deoxoartemisinin-*t*Bu monomer

(**141**)



2D NMR (HMBC) spectrum of Fmoc-lys(Boc)-aeg-deoxoartemisinin-*t*Bu monomer

(**141**)



2D NMR (COSY) spectrum of Fmoc-lys(Boc)-aeg-deoxoartemisinin-*t*Bu monomer

(**141**)

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Oral & Poster Presentation and Proceeding Conference

- Phothongkam, S.; Chancharunee, S.; Wichai, U.; Pohmakotr, M. "Synthesis of Dihydroartemisinin dimer and Cyclic dihydroartemisinin-PNA dimer" 33rd Congress on Science and Technology of Thailand STT.33
- Phothongkam, S.; Chancharunee, S.; Wichai, U.; Pohmakotr, M. "Synthesis of Artemisinin-PNA Oligomer and Cyclic Artemisinin-PNA Oligomer" 34th Congress on Science and Technology of Thailand STT.34 (Oral presentation)

National Conference

- Phothongkam, S.; Chancharunee, S.; Wichai, U.; Pohmakotr, M. “Solution phase synthesis of Artemisinin-PNA Oligomers and Cyclic Artemisinin-PNA Oligomers” Pure and Applied Chemistry International Conference (PACCON 2009) (Proceeding)
- Phothongkam, S.; Chancharunee, S.; Wichai, U.; Pohmakotr, M. “Synthesis of Artemisinin-PNA Oligomer and Cyclic Artemisinin-PNA Oligomer” PERCH Meeting “ The International Congress for Innovation in Chemistry (PERCH-CIC Congress VI)
- Phothongkam, S.; Saovapakhiran, A.; Chancharunee, S.; Wichai, U.; Pohmakotr, M. “Synthesis and Cytotoxicity of Fmoc-aeg-artemisinin-O*t*Bu Oligomers in HT-29 cells” PERCH Meeting “The International Congress for Innocation in Chemistry” (PERCH-CIC Congress VII)