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## APPENDIX

ศูนย์วิทยทรัพยากร  
จุฬาลงกรณ์มหาวิทยาลัย

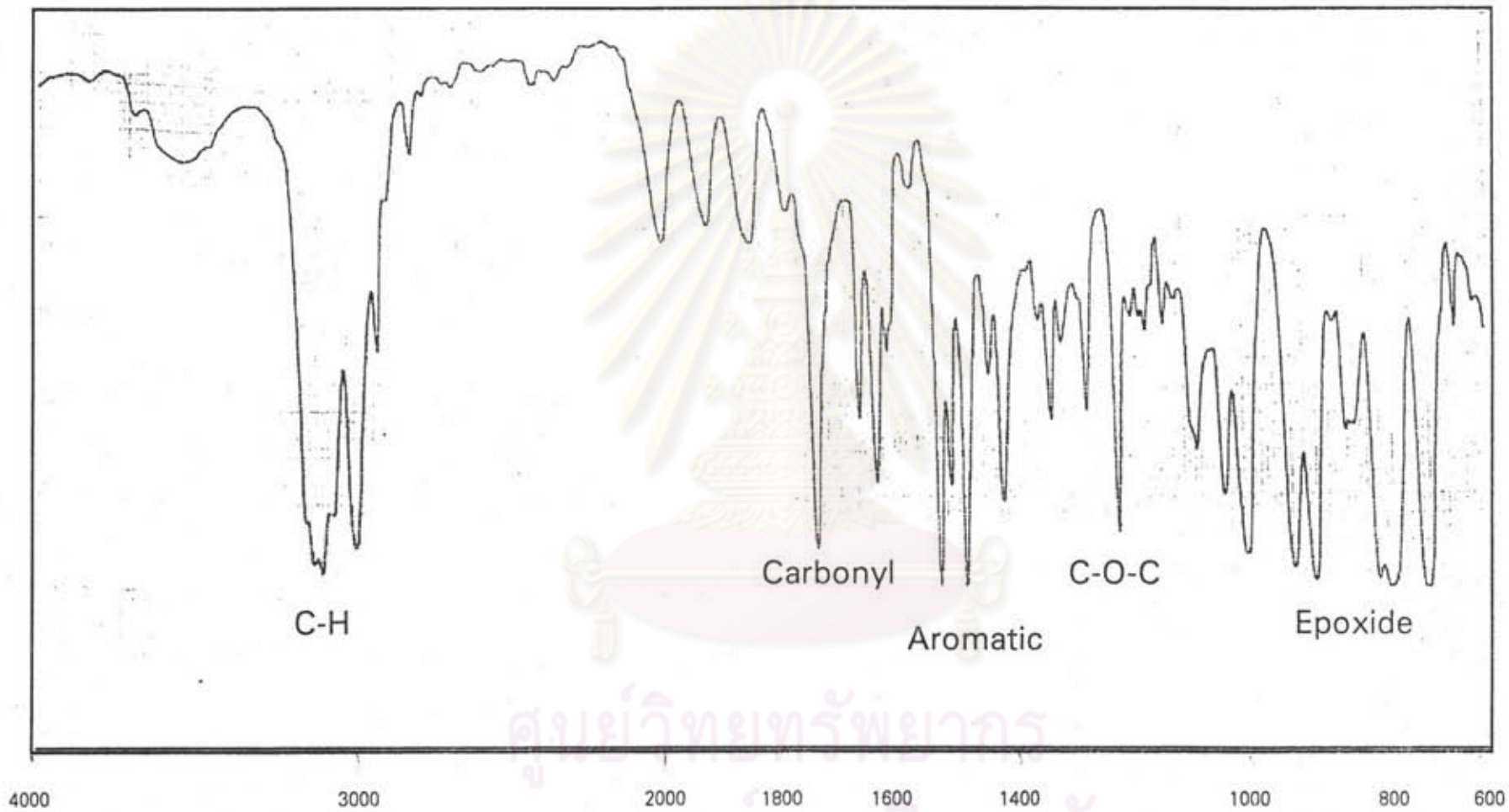
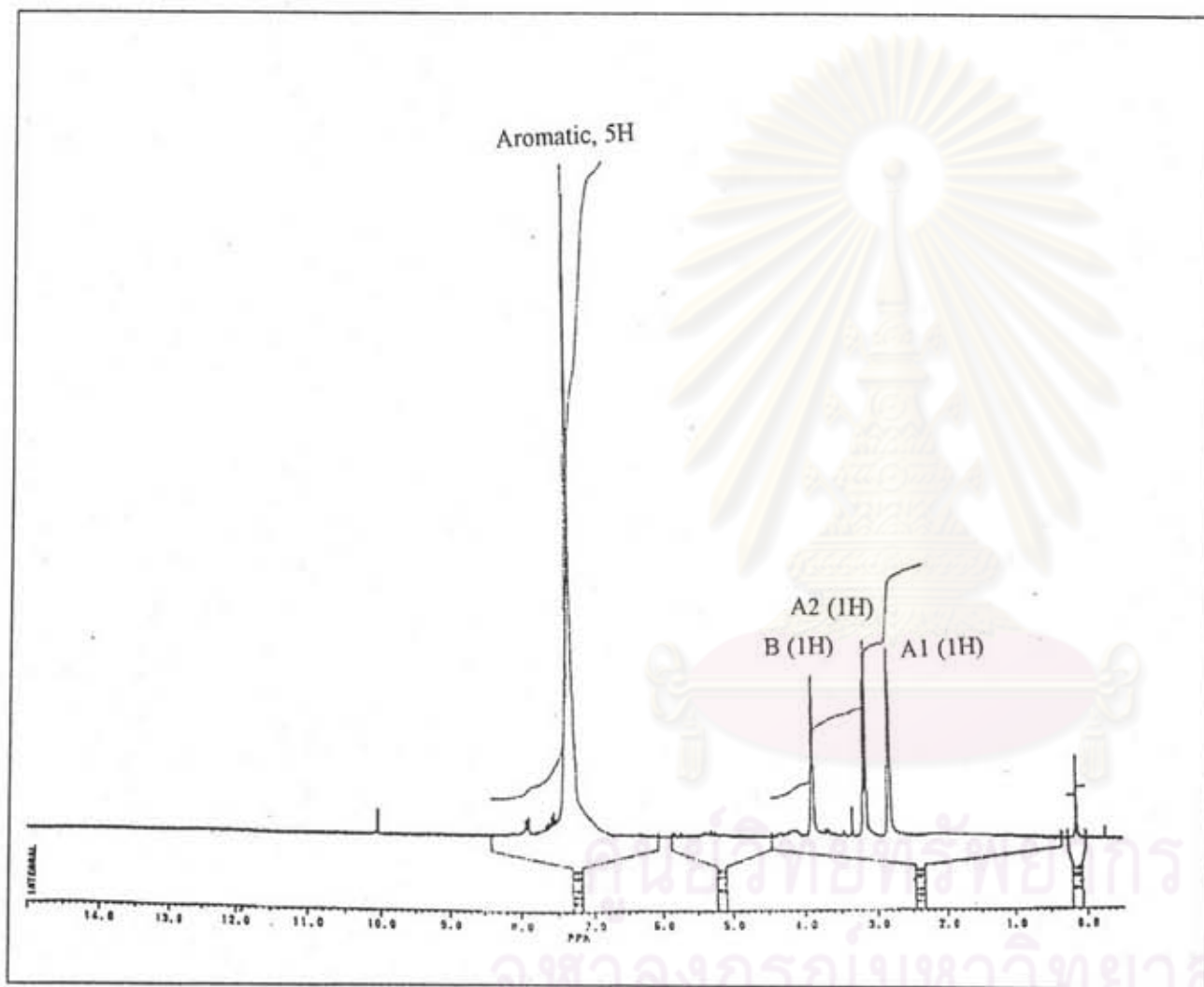


Fig 3.1 The IR spectrum of styrene oxide

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2.80-2.84 ppm (1H, $J_{A1}=2.8$ Hz)	A1
3.14-3.19 ppm (1H, $J_{A2}=2.75$ Hz)	A2
3.87-3.90 ppm (1H, $J_B=1.75$ Hz)	B
7.30-7.38 ppm (5H)	Aromatic

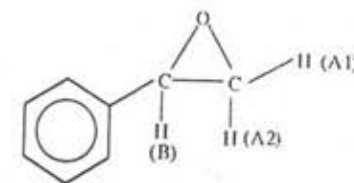
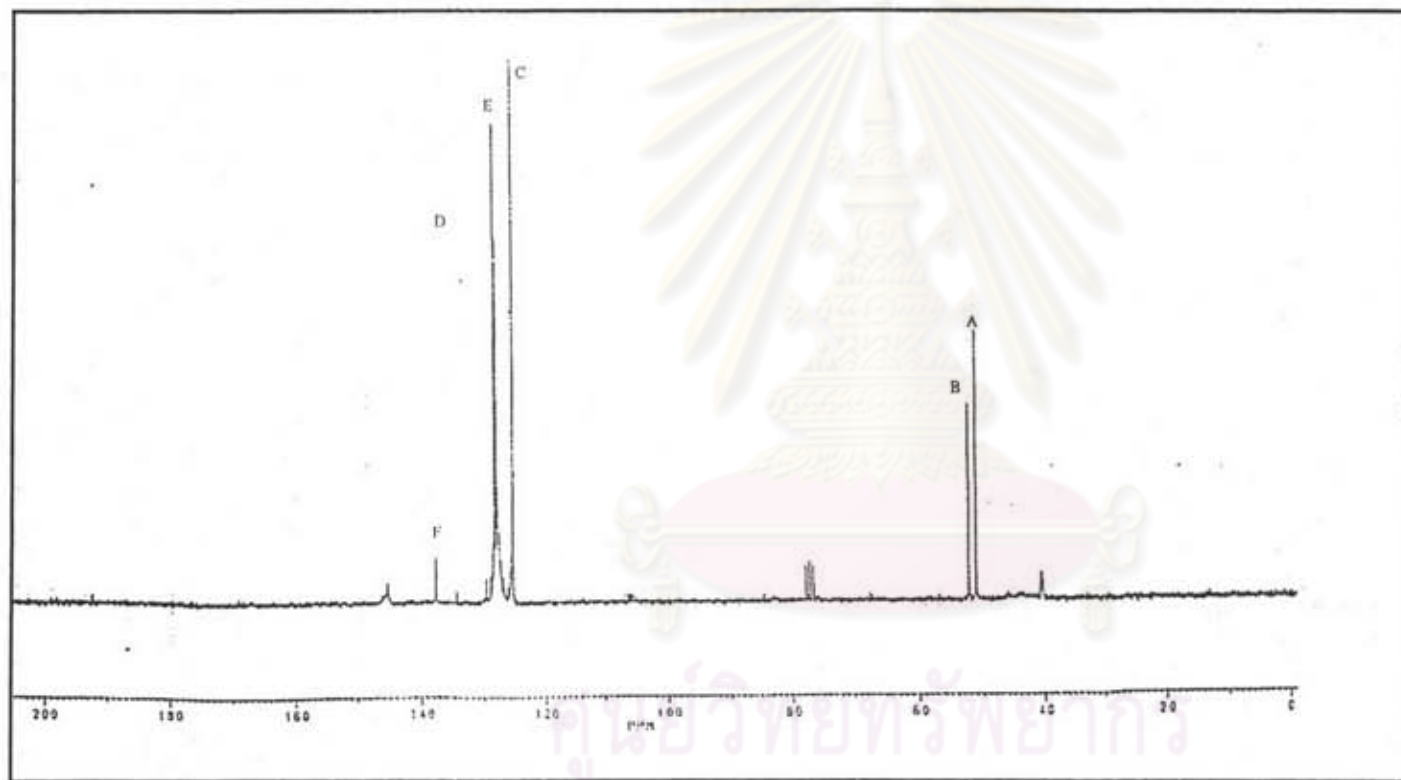


Fig 3.2 The PMR spectrum of styrene oxide in  $CDCl_3$



A =	51.17	ppm
B =	52.36	ppm
C =	125.55	ppm
D =	128.21	ppm
E =	128.54	ppm
F =	137.69	ppm

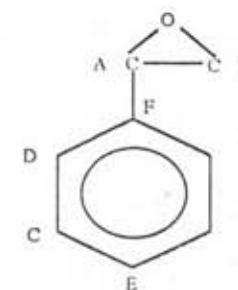


Fig 3.3 The CMR spectrum of styrene oxide



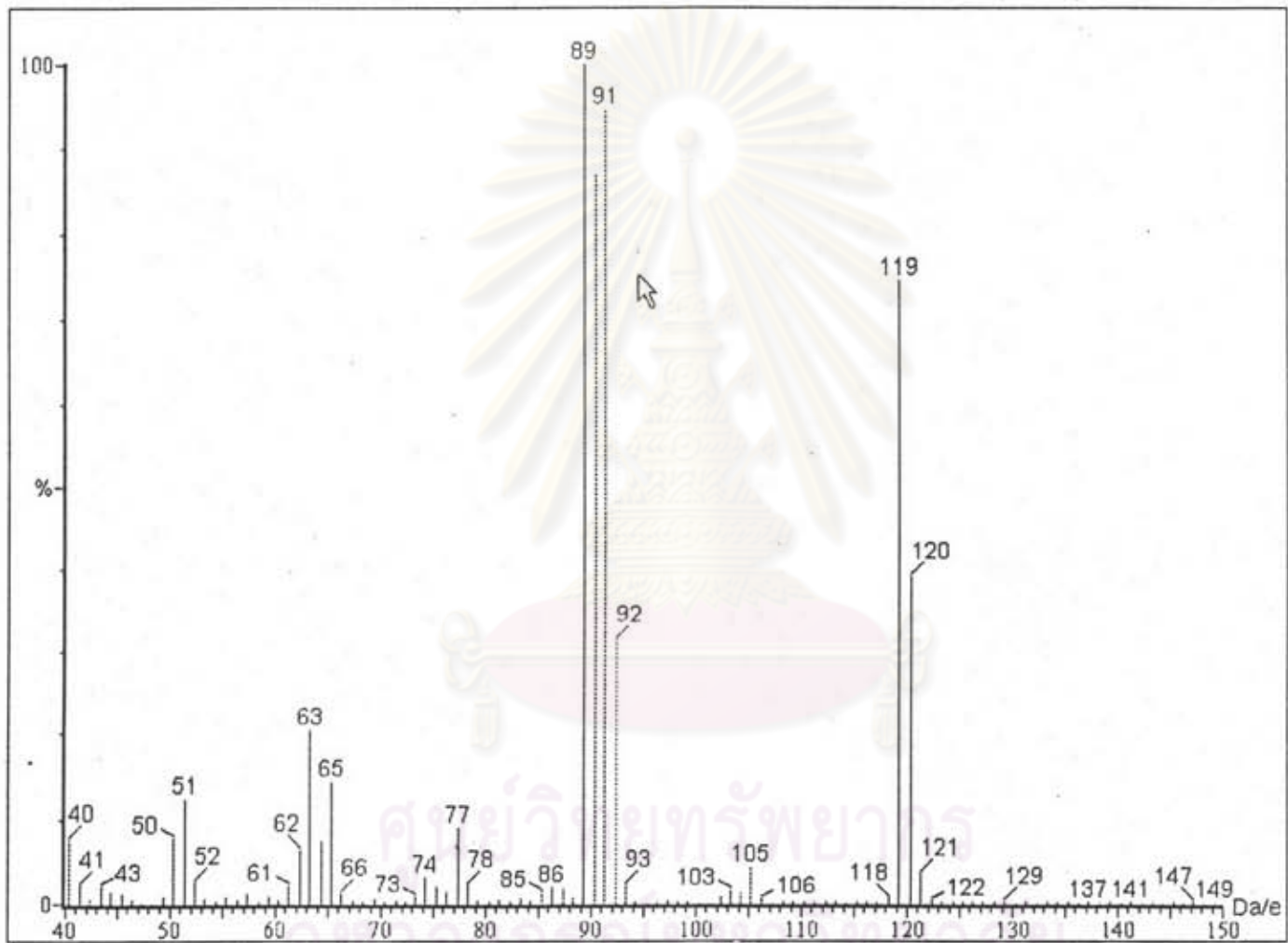


Fig 3.4 The Mass spectrum of styrene oxide from GC/MS

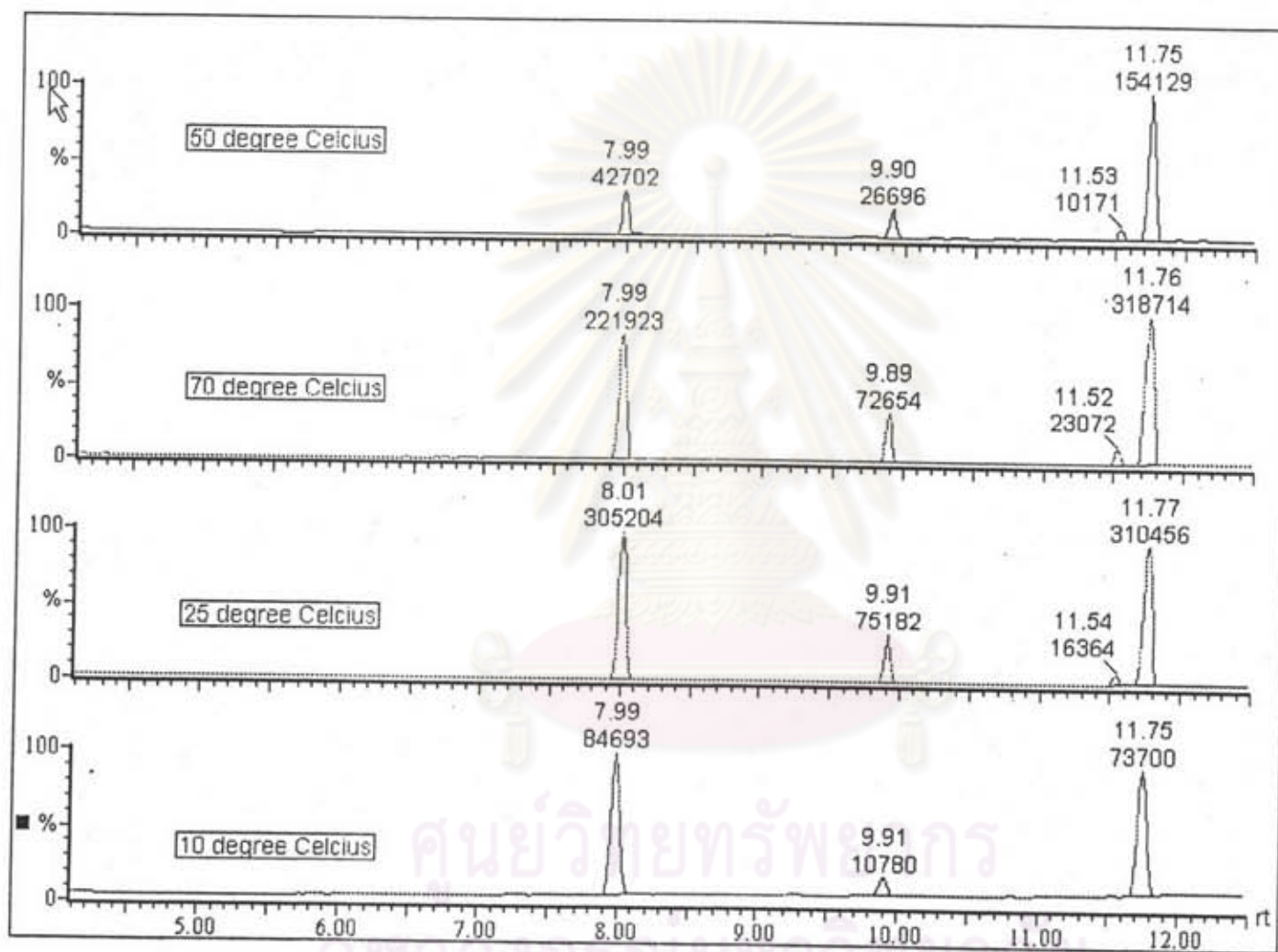


Fig 3.5 The GC/MS chromatogram of products from epoxidation reaction with various temperature



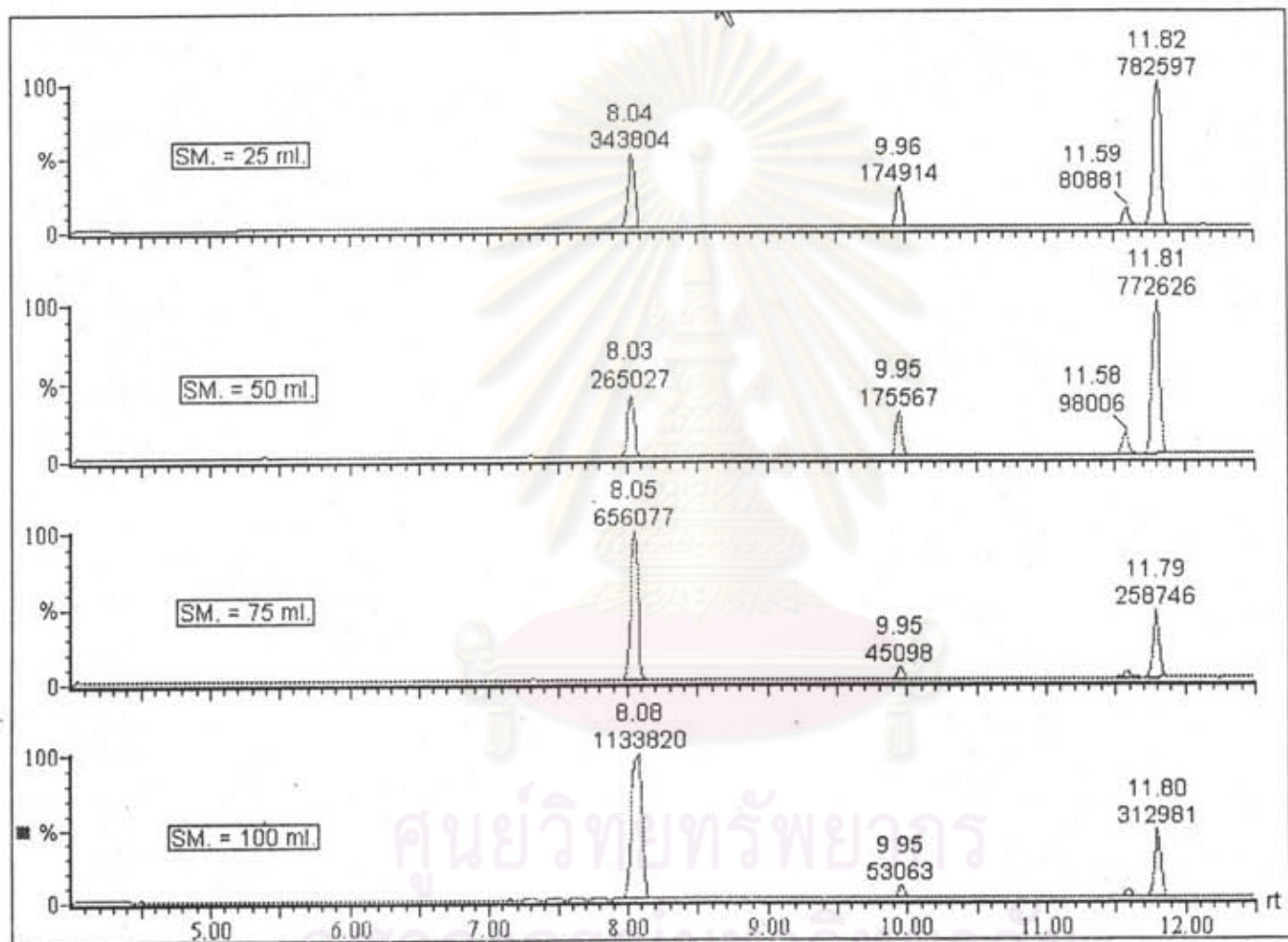


Fig 3.6 The GC/MS chromatogram of products from epoxidation reaction with various amount of styrene

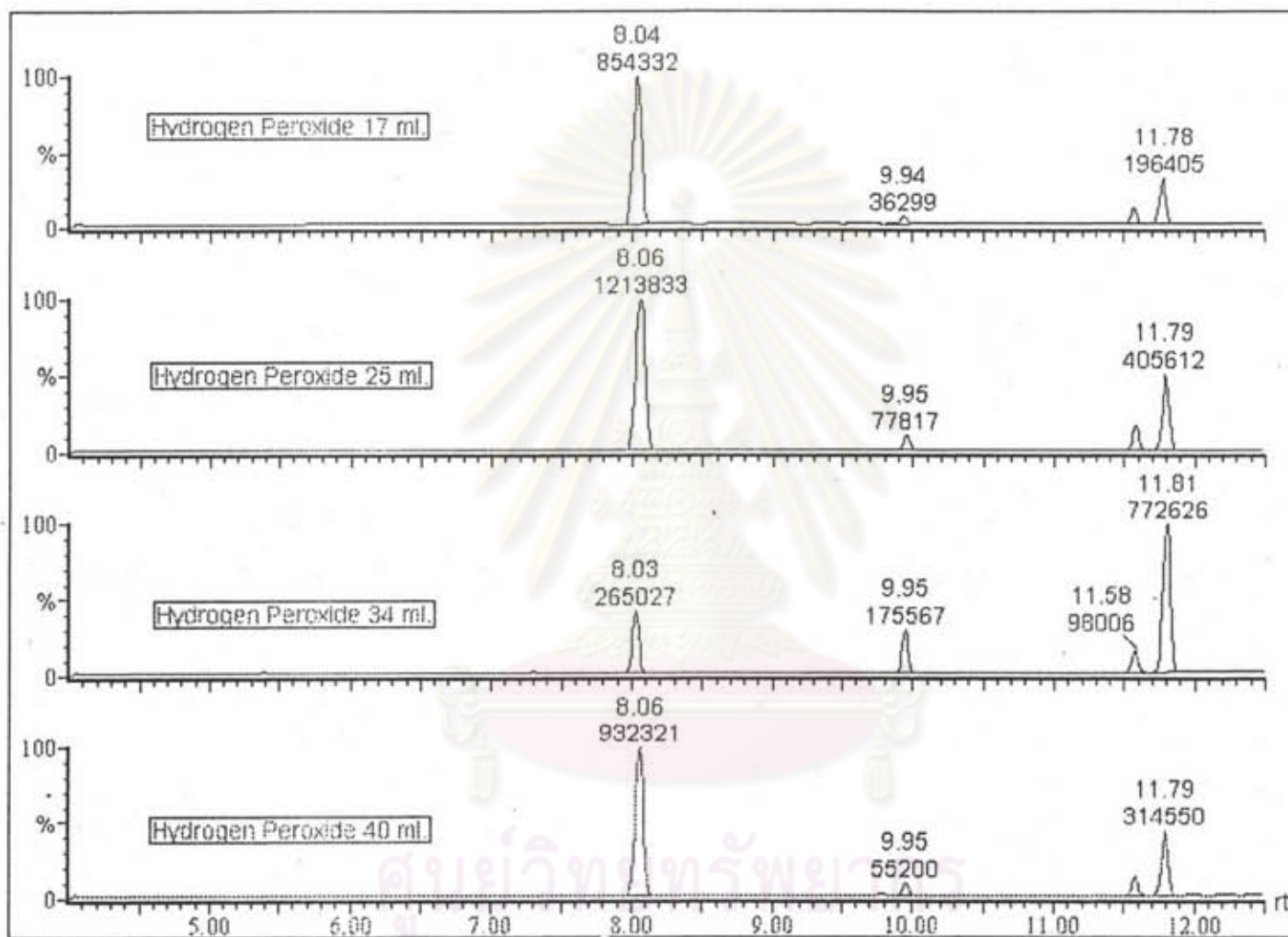


Fig 3.7 The GC/MS chromatogram of products from epoxidation reaction with various amount of hydrogen peroxide

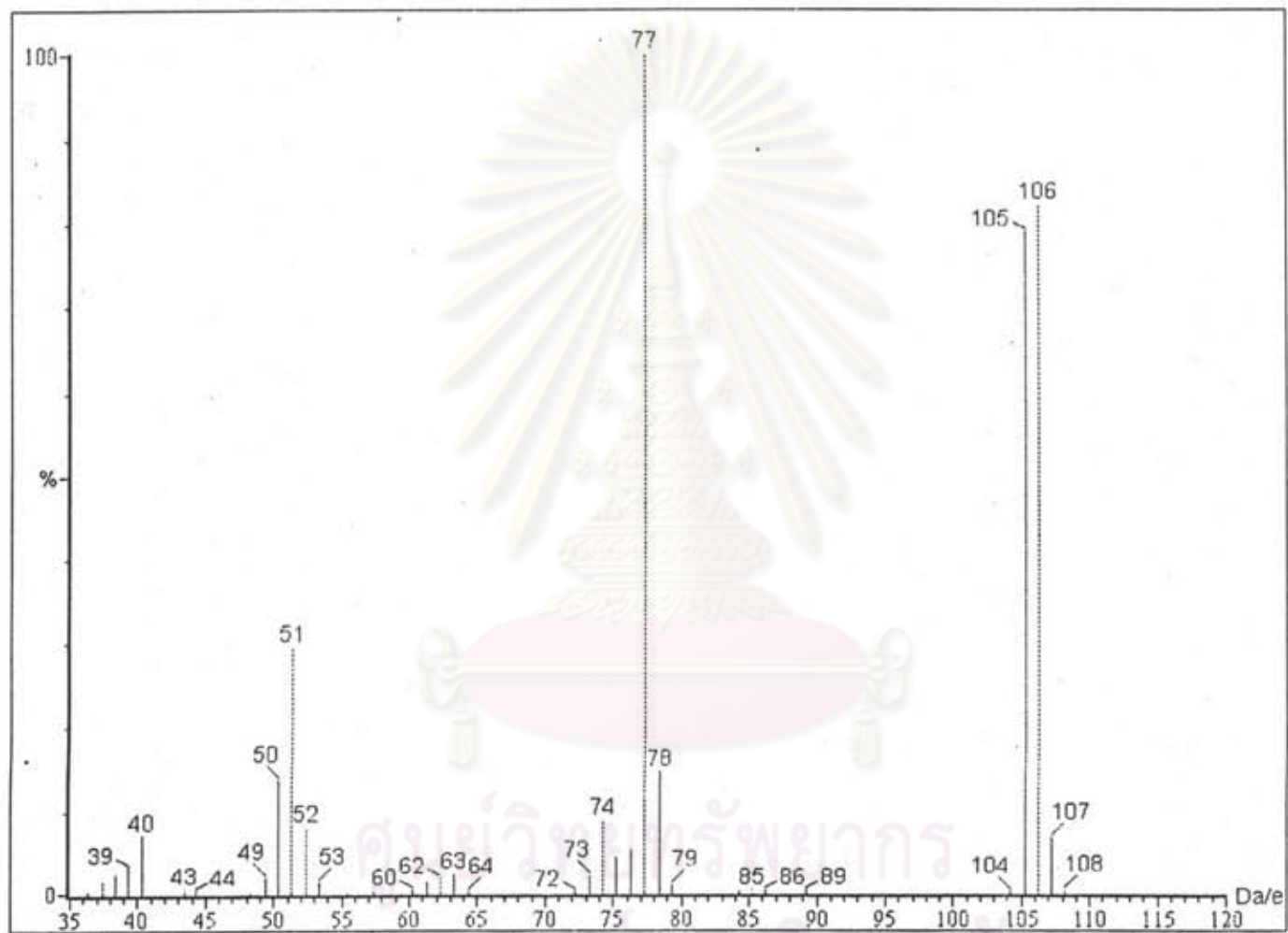


Fig 3.8 The Mass spectrum of benzaldehyde from GC/MS

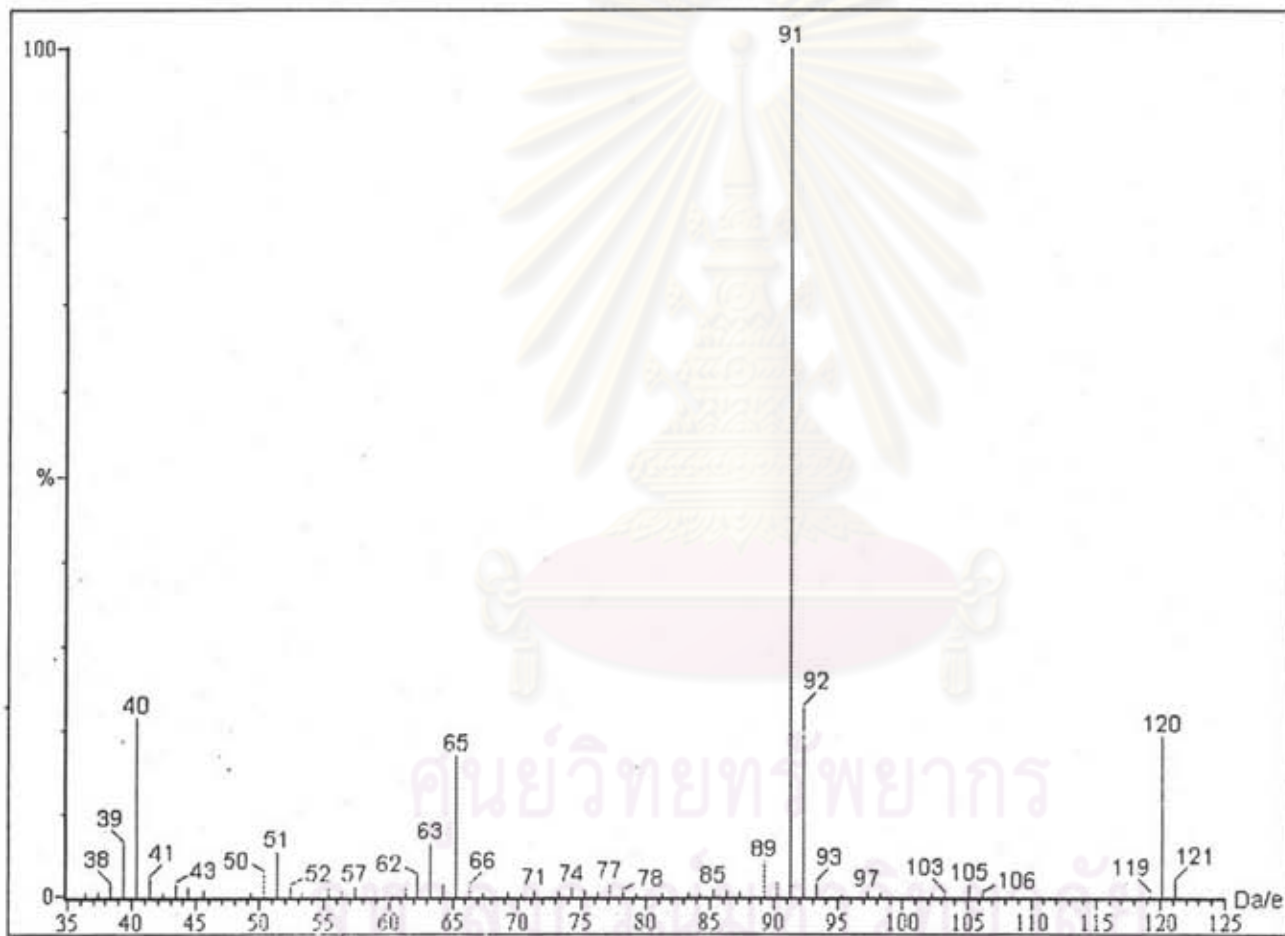


Fig 3.9 The Mass spectrum of benzeneacetaldehyde from GC/MS

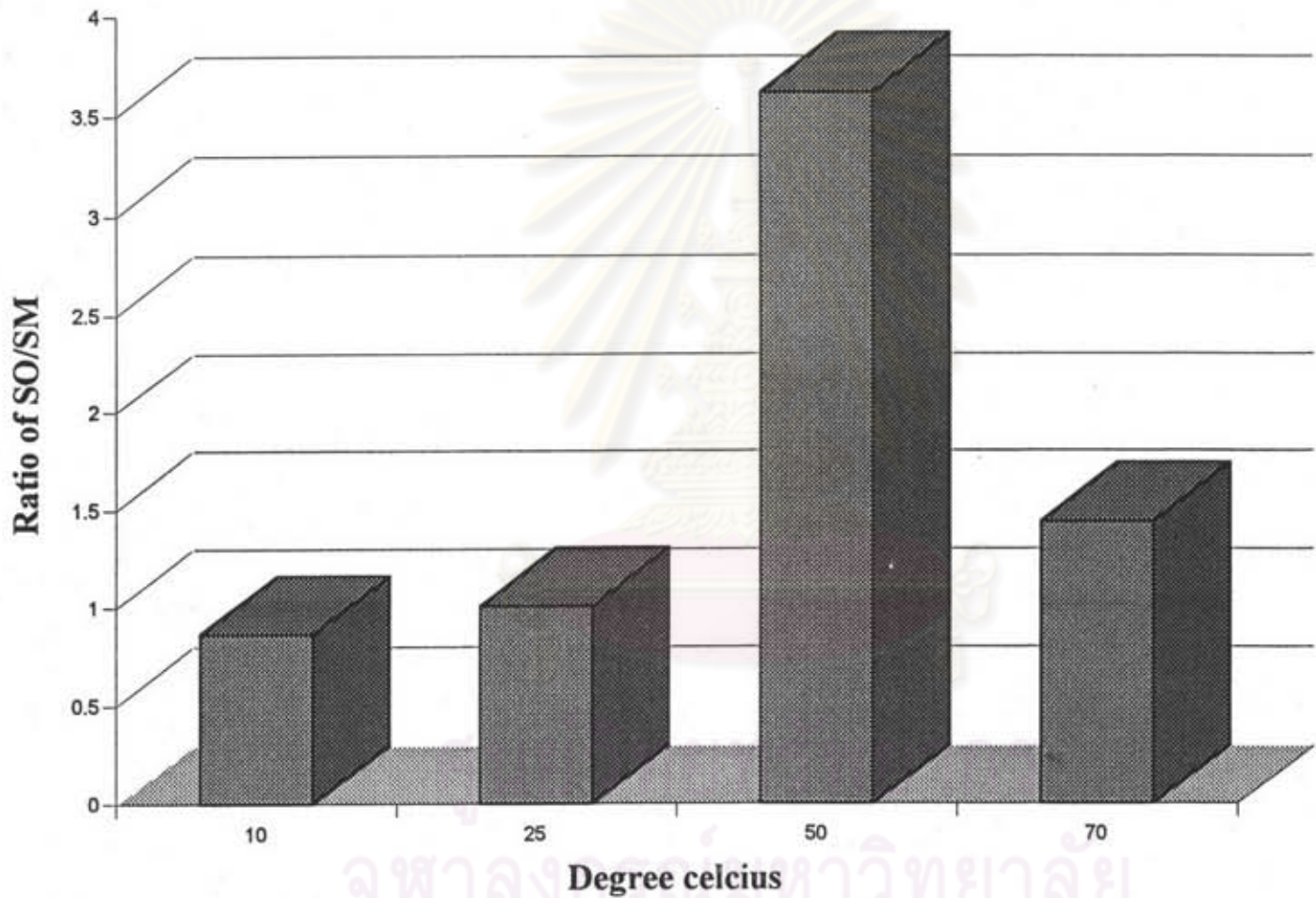


Fig 3.10 The graph between ratio of SO/SM and temperature



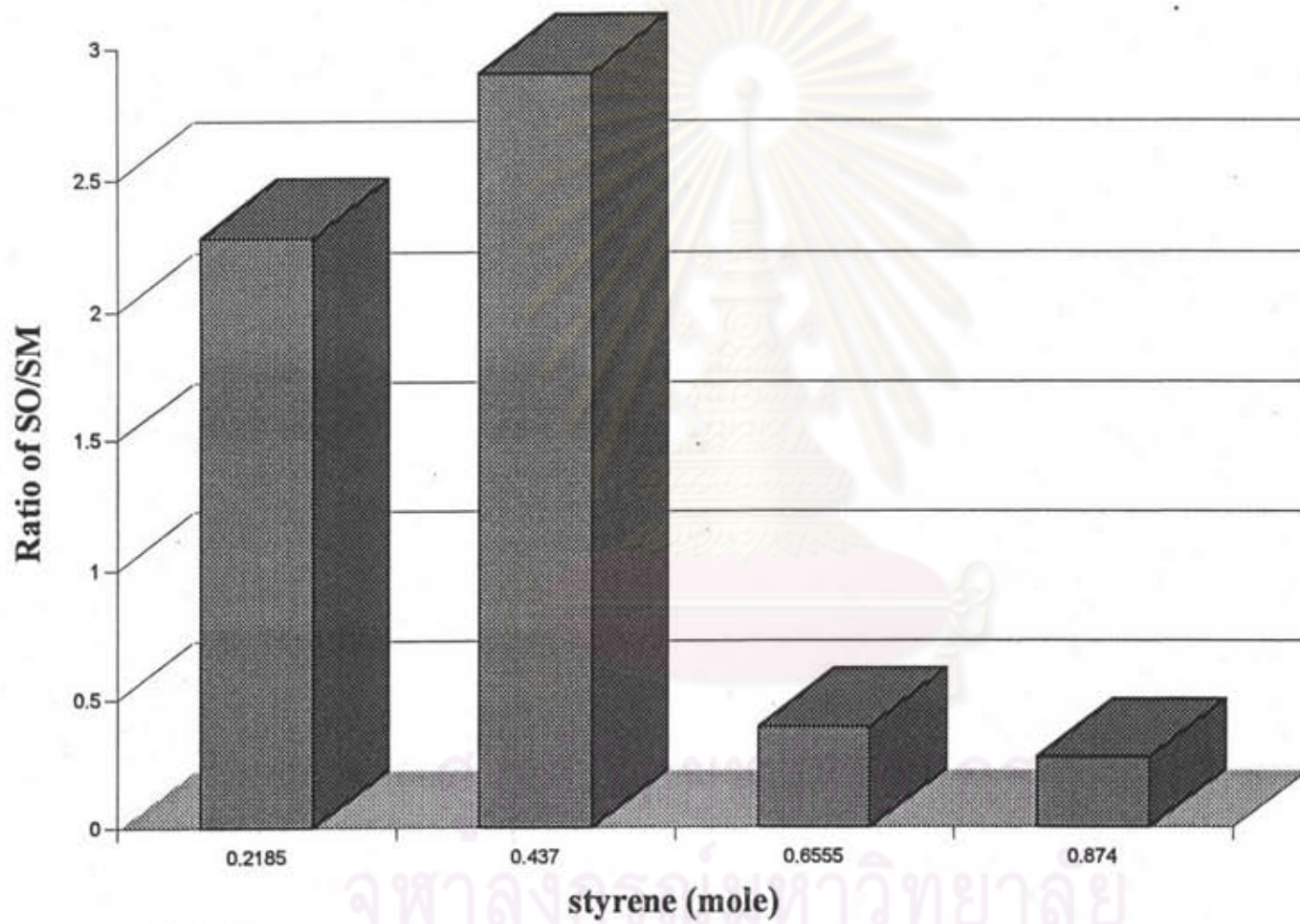


Fig 3.11 The graph between ratio of SO/SM and amount of styrene



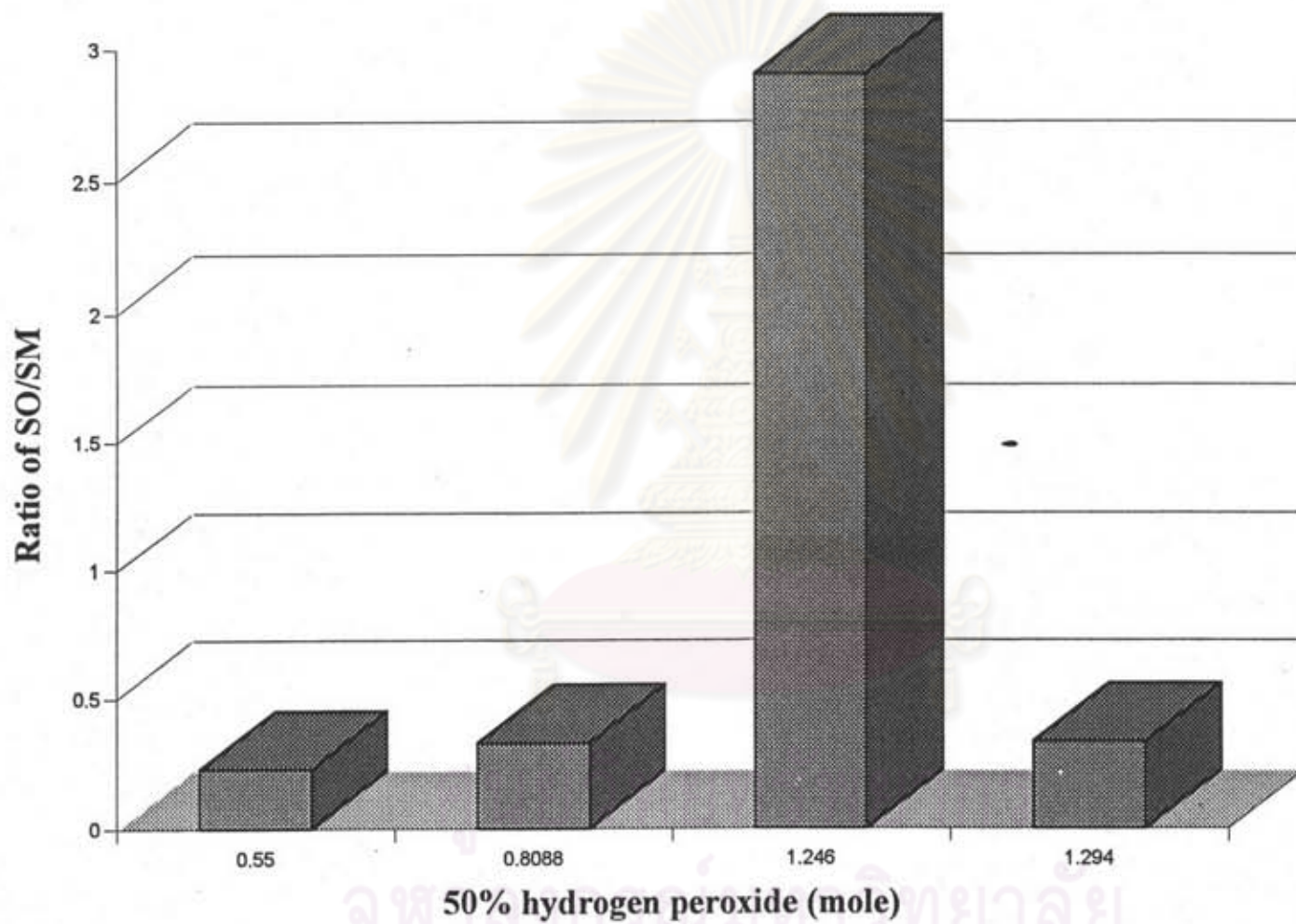


Fig 3.12 The graph between ratio of SO/SM and amount of Hydrogen peroxide

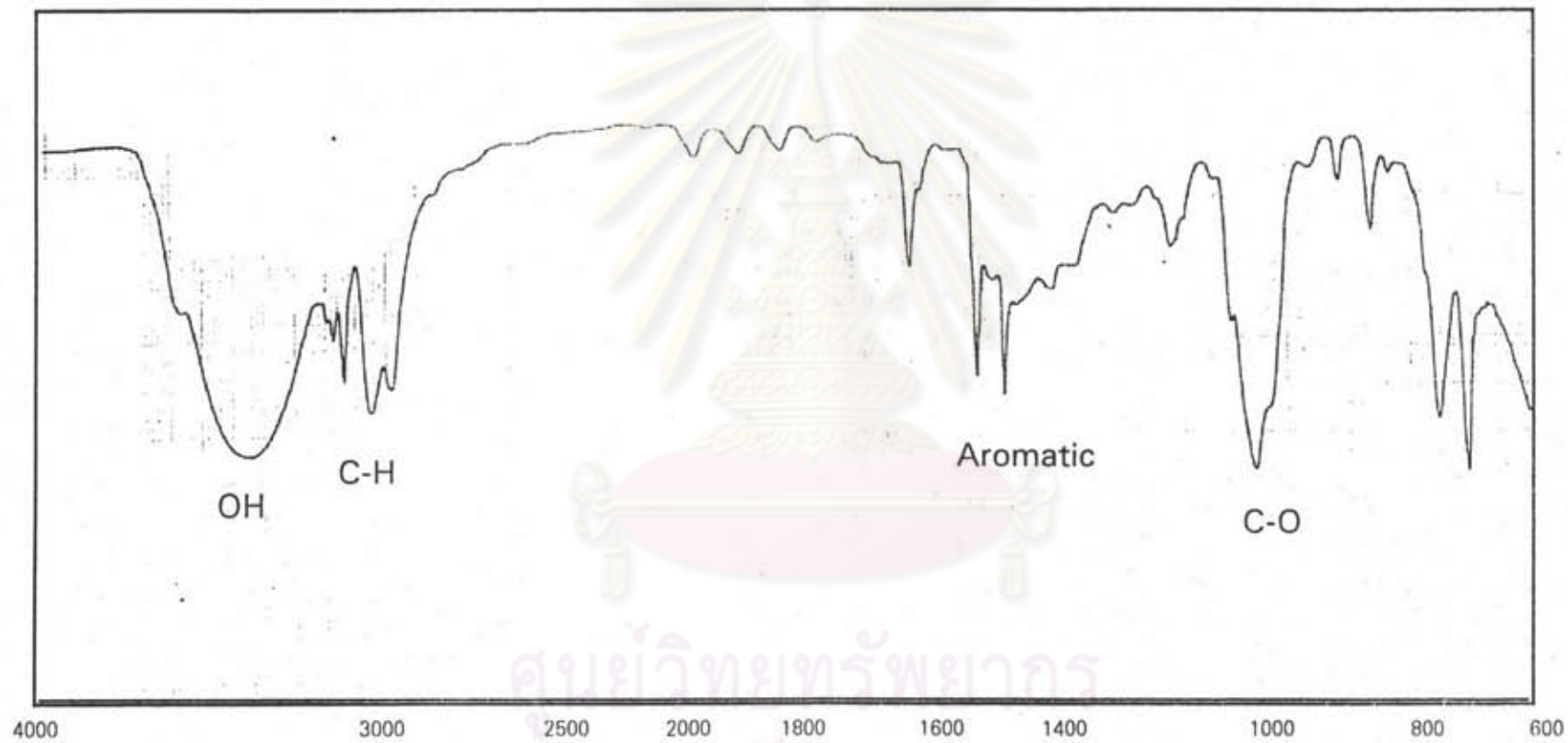
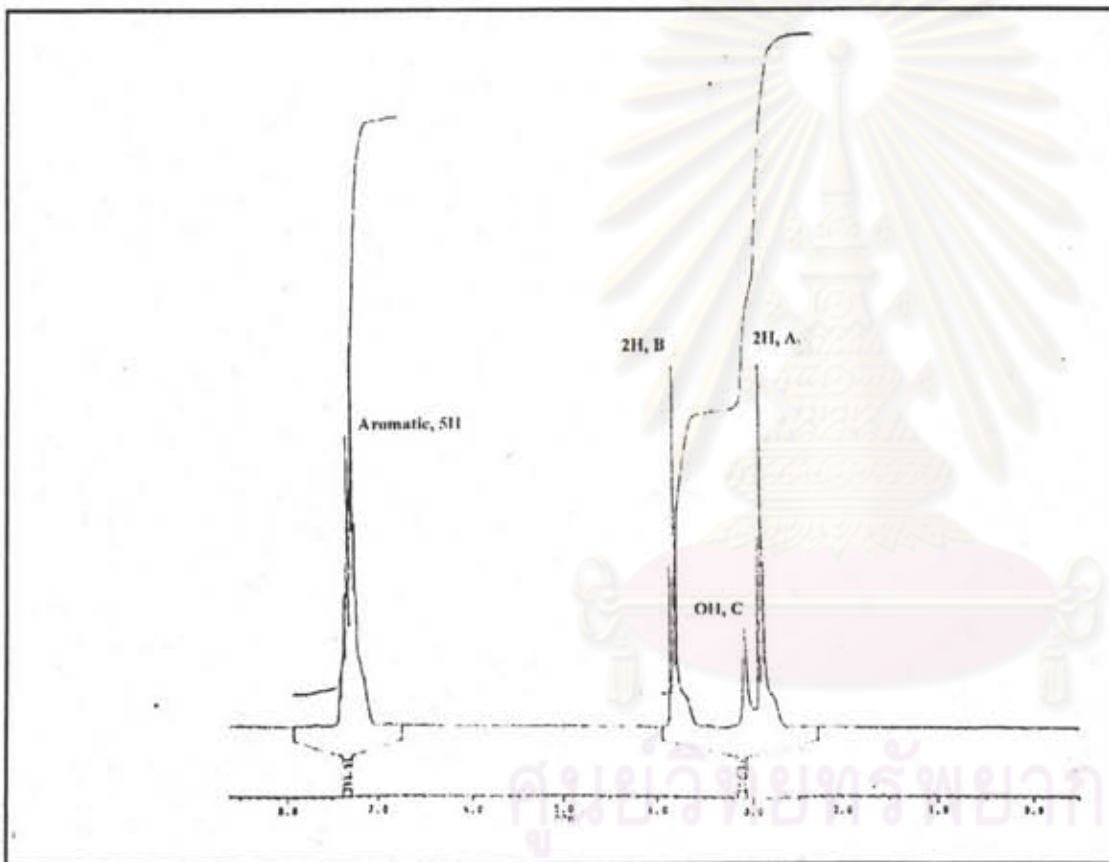


Fig 3.13 The IR spectrum of 2-phenyl ethanol



A 2.85-2.95 ppm (2H, J=6.843 Hz)  
 B 3.79-3.86 ppm (2H, J=6.841 Hz)  
 C 3.07 ppm (1H)  
 D 7.26-7.37 ppm (5H)

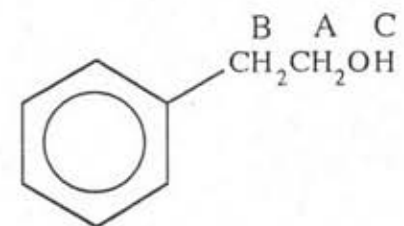
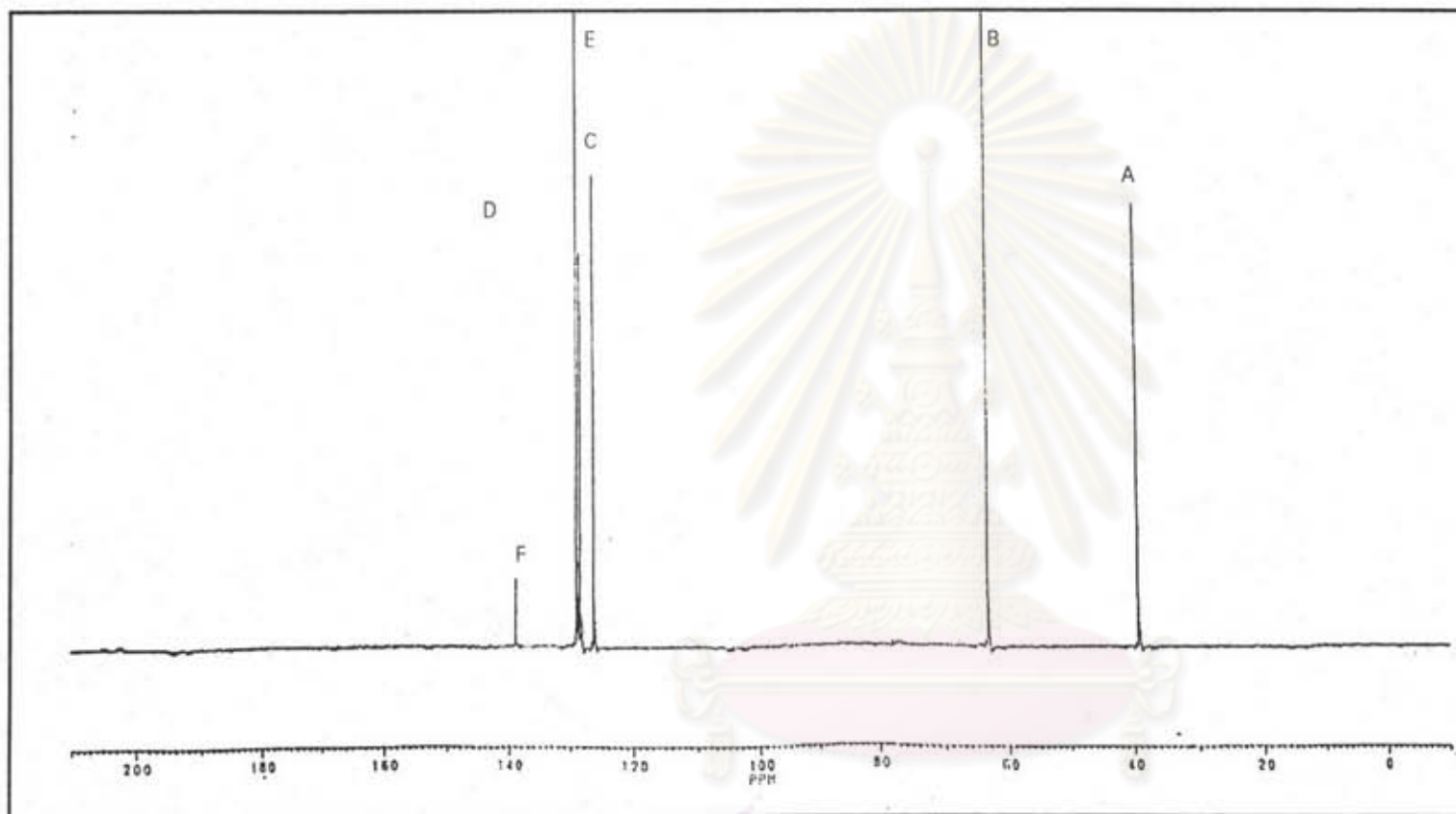


Fig 3.14 The PMR spectrum of 2-phenyl ethanol in  $\text{CDCl}_3$



- A = 39.28 ppm
- B = 63.45 ppm
- C = 126.40 ppm
- D = 128.57 ppm
- E = 129.15 ppm
- F = 138.95 ppm

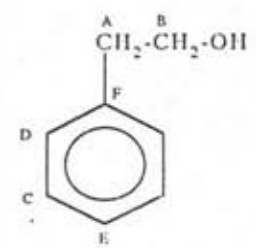


Fig 3.15 The CMR spectrum of 2-phenyl ethanol in  $\text{CDCl}_3$

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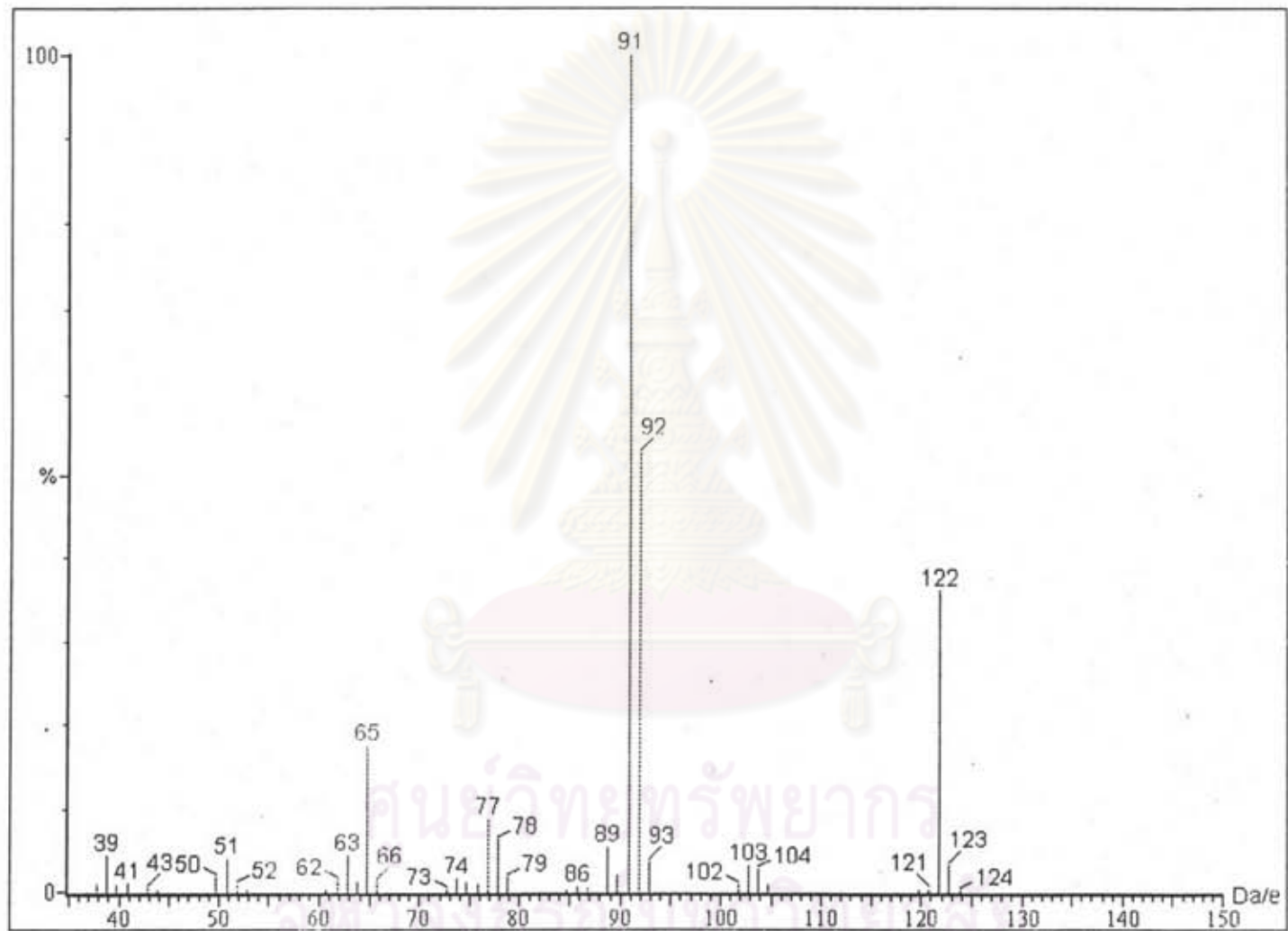


Fig 3.16 The Mass spectrum of 2-phenyl ethanol from GC/MS

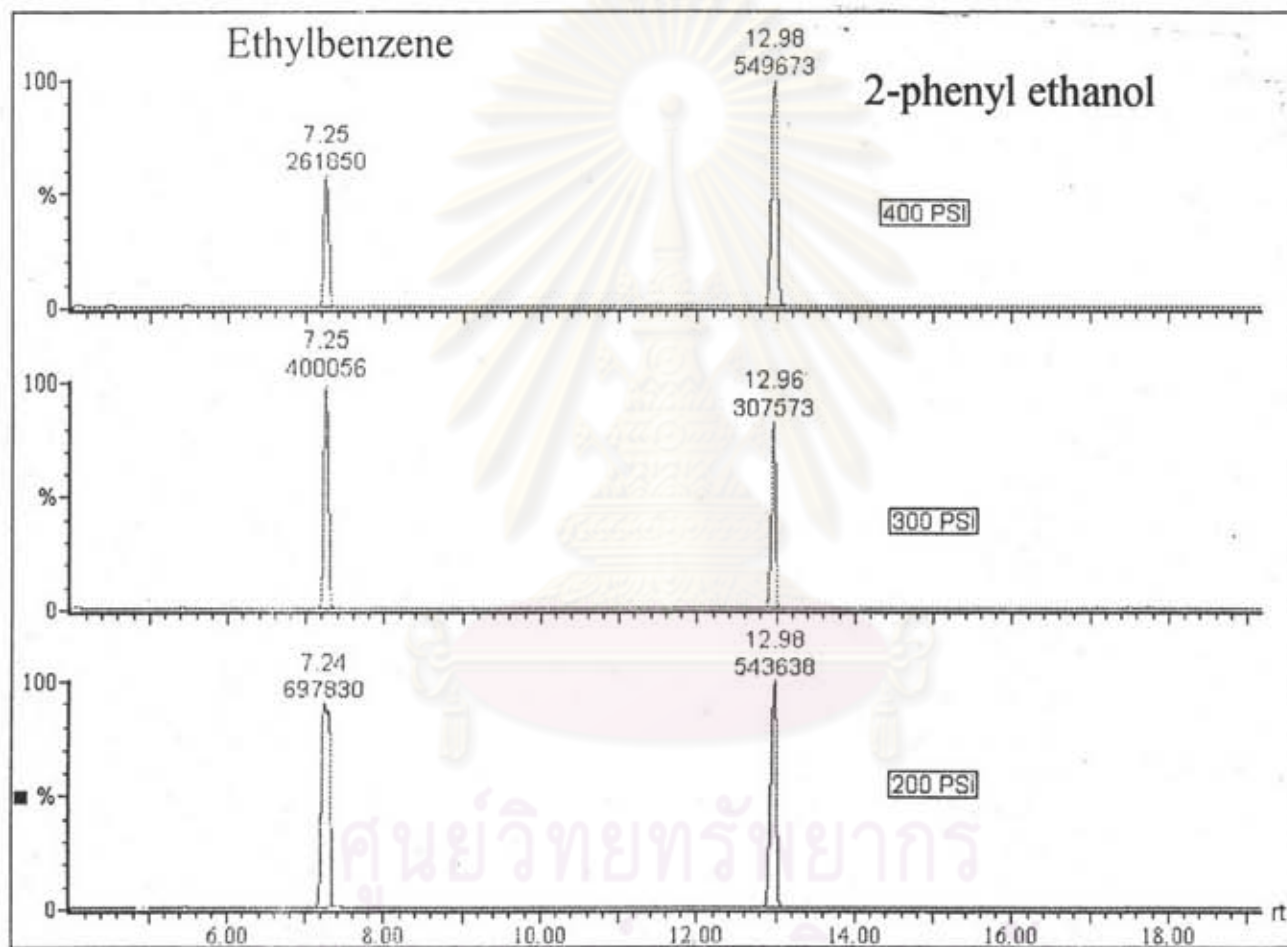


Fig 3.17 The GC/MS-chromatogram of products from hydrogenolysis reaction at various pressure of reactor



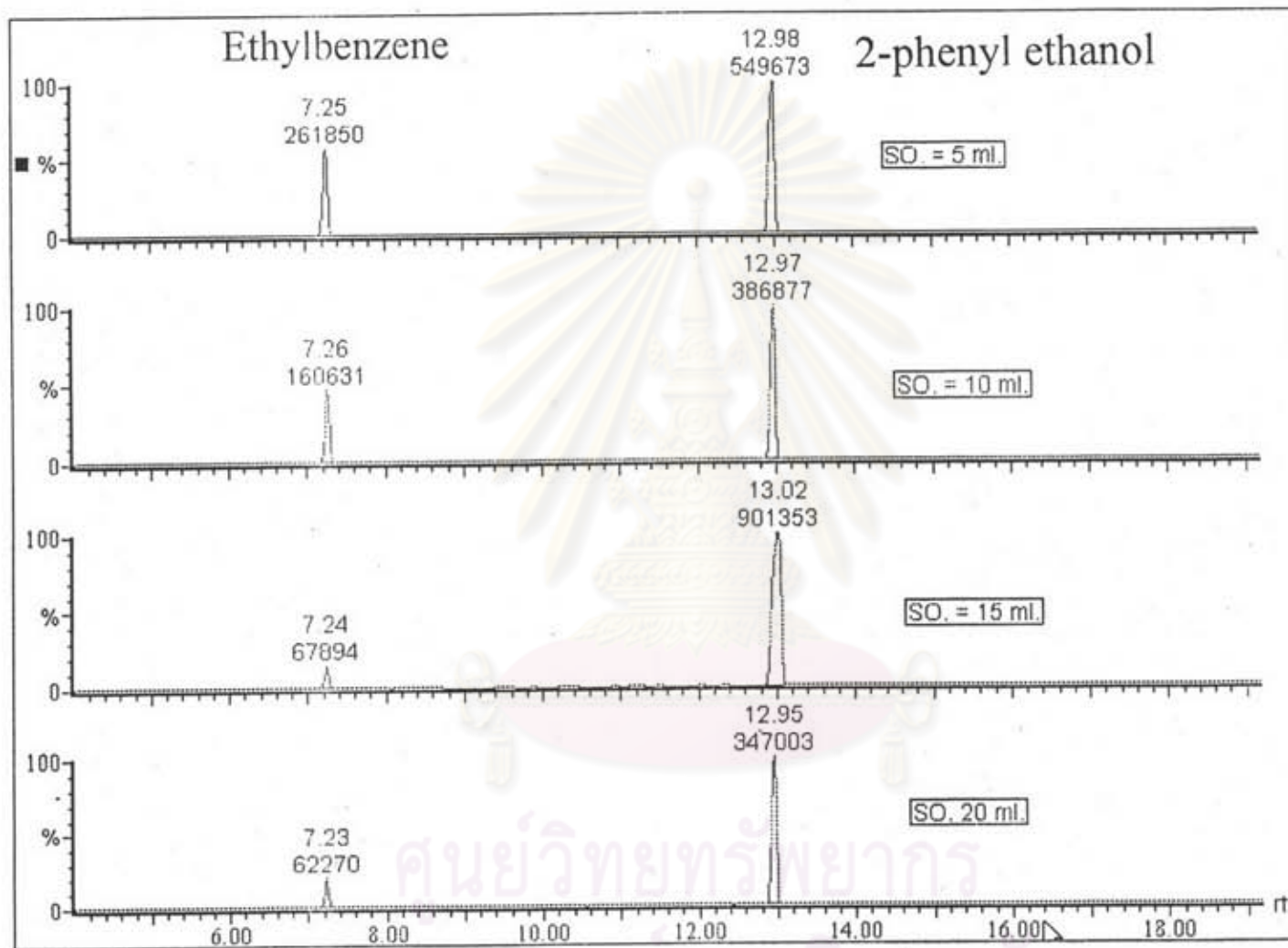


Fig 3.19 The GC/MS chromatogram of products from the hydrogenolysis reaction with various amount of styrene oxide

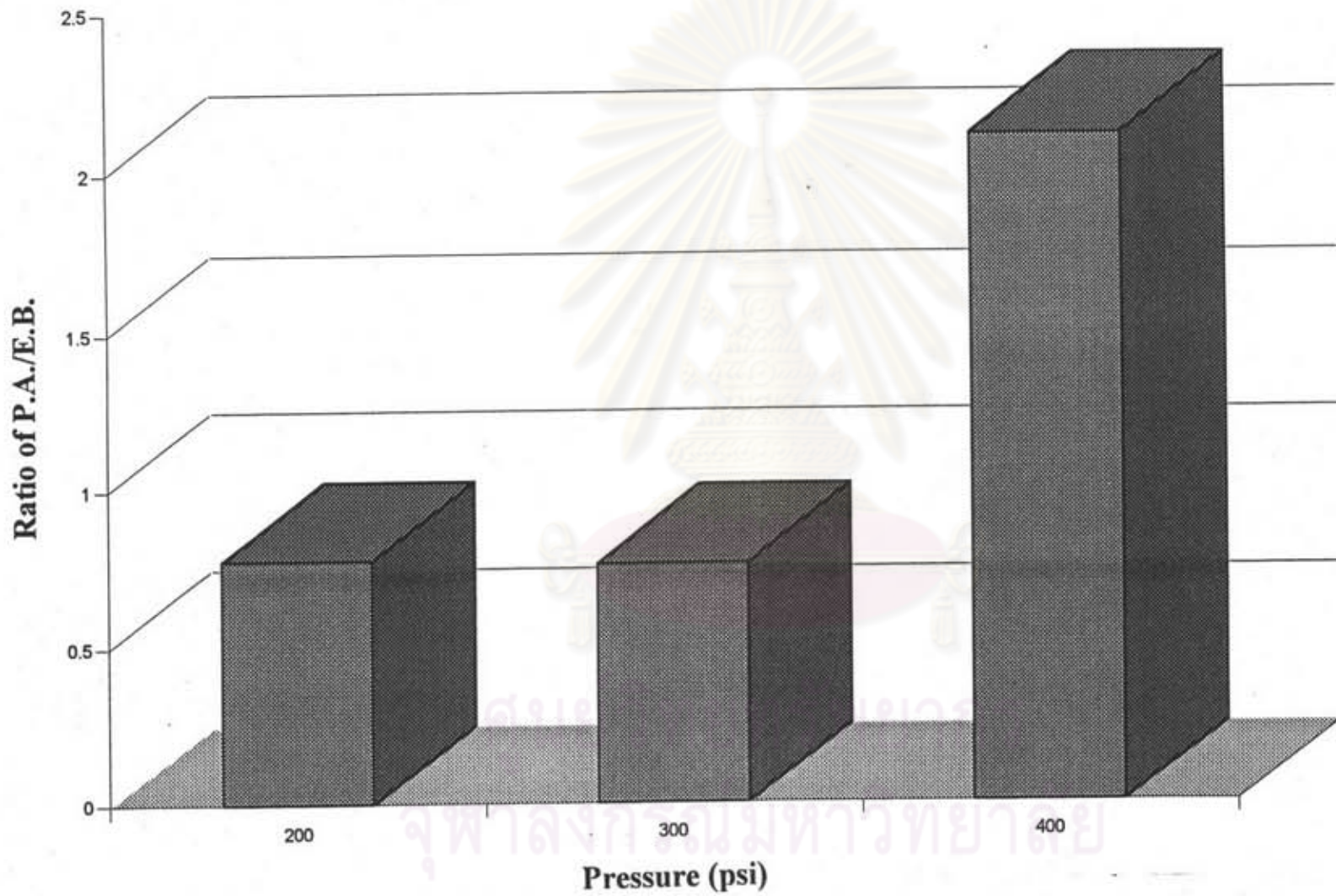


Fig 3.18 The graph between ratio of P.A./E.B. and pressure of reactor

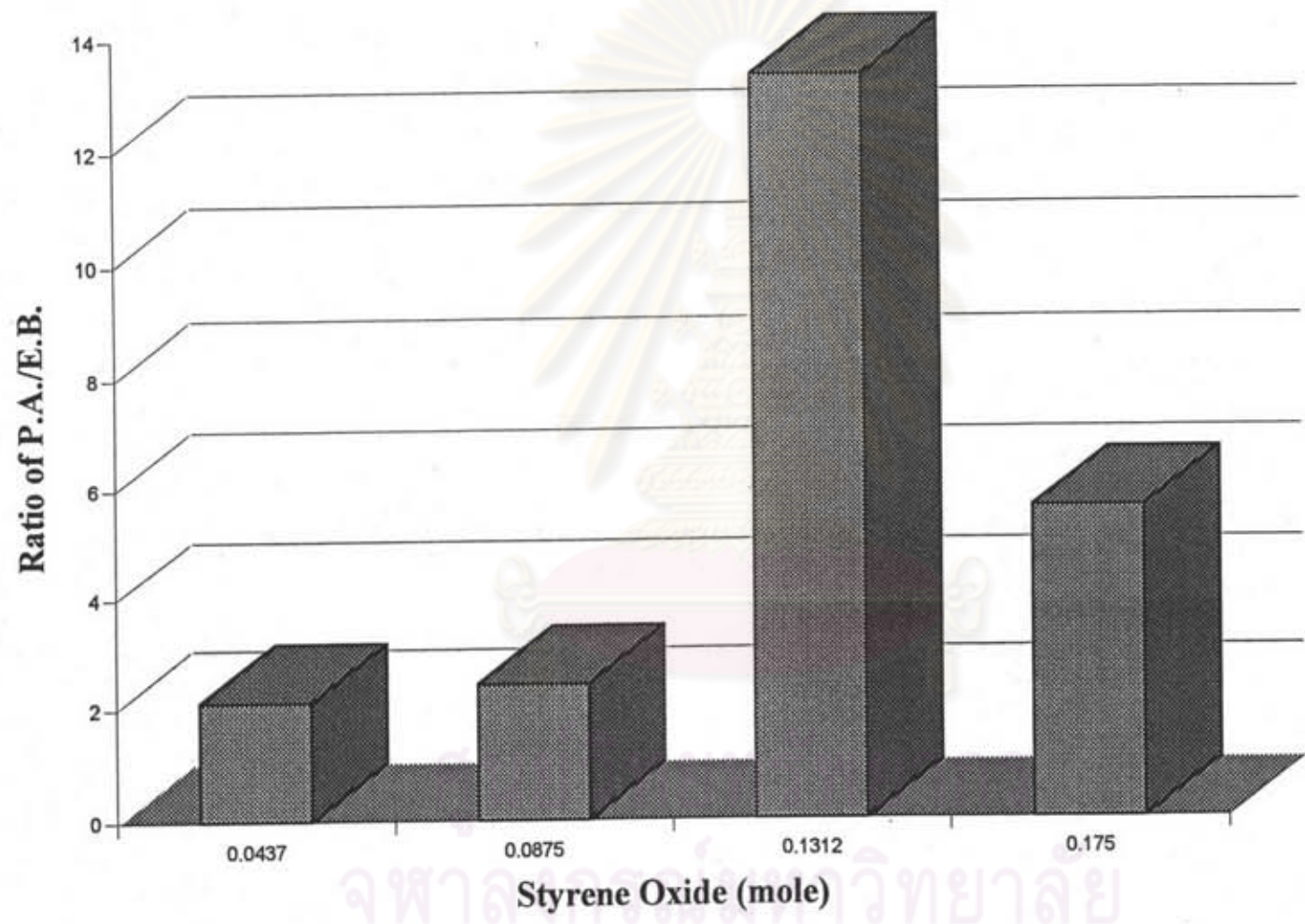


Fig 3.20 The graph between ratio of P.A./E.B. and amount of styrene oxide

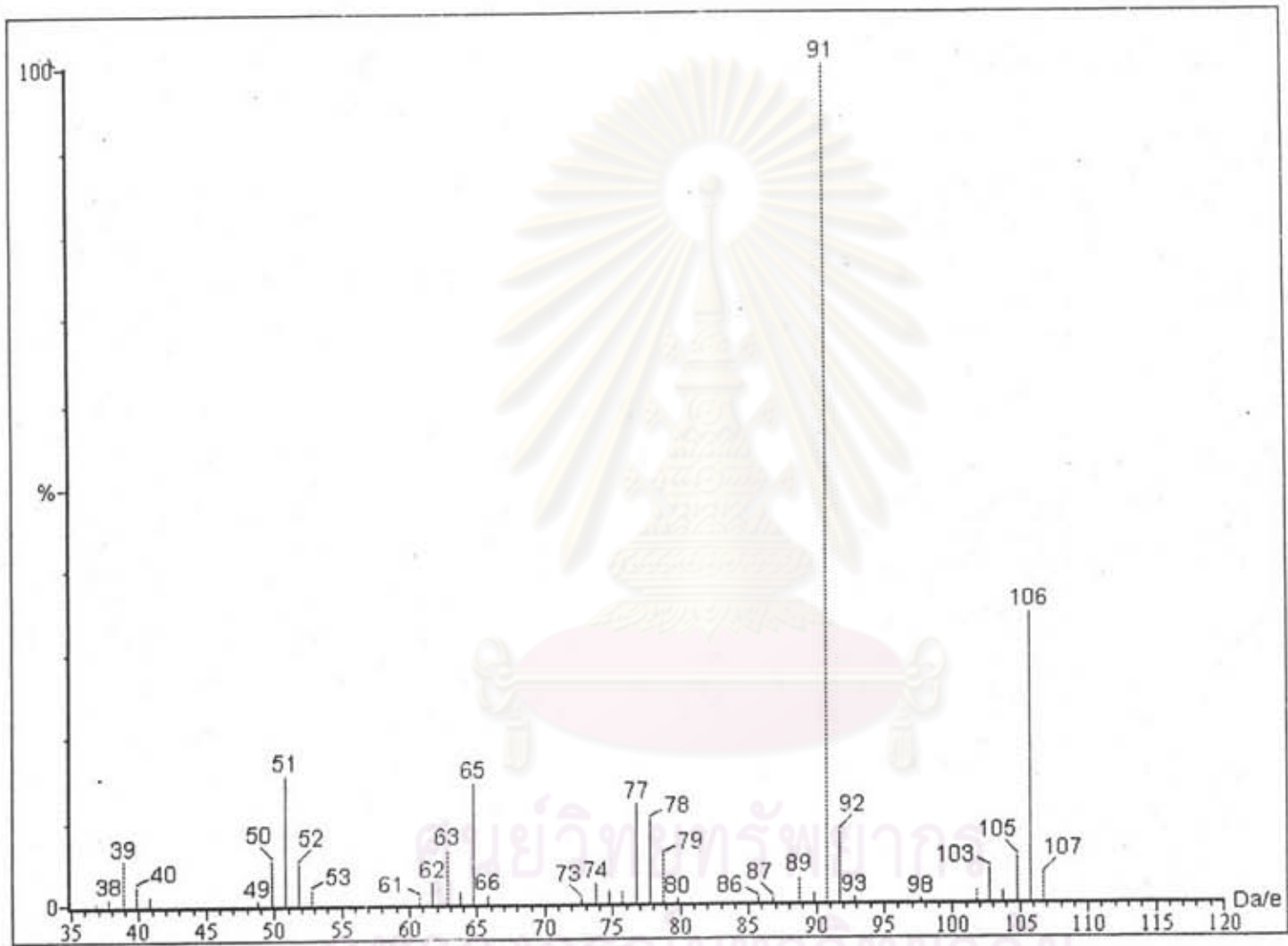


Fig 3.21 The Mass spectrum of Ethylbenzene from GC/MS



## VITA

Mr. Polkit Sangvanich was born on Jan 1, 1971 in Chanthaburi Province. He received a Bachelor's Degree of Science in Chemistry from Chulalongkorn University in 1991. He has been a graduate student of Multi-disciplinary Program of Petrochemistry and Polymer, Graduate School, Chulalongkorn, Since 1992



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