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APPENDICE

A-1 Calculation of selectivity to other hydrocarbons

% Selectivity of gas fraction and liquid fraction

$$\% \text{ Selectivity of X} = \frac{\text{concentration of X} \times 100}{\text{total concentration of fractions}}$$

$$\text{Concentration of X} = \frac{b \times c}{a}$$

a = Peak area of X in standard gas or liquid fraction

b = % molar of X in standard gas or liquid fraction

c = Peak area of X in sample products

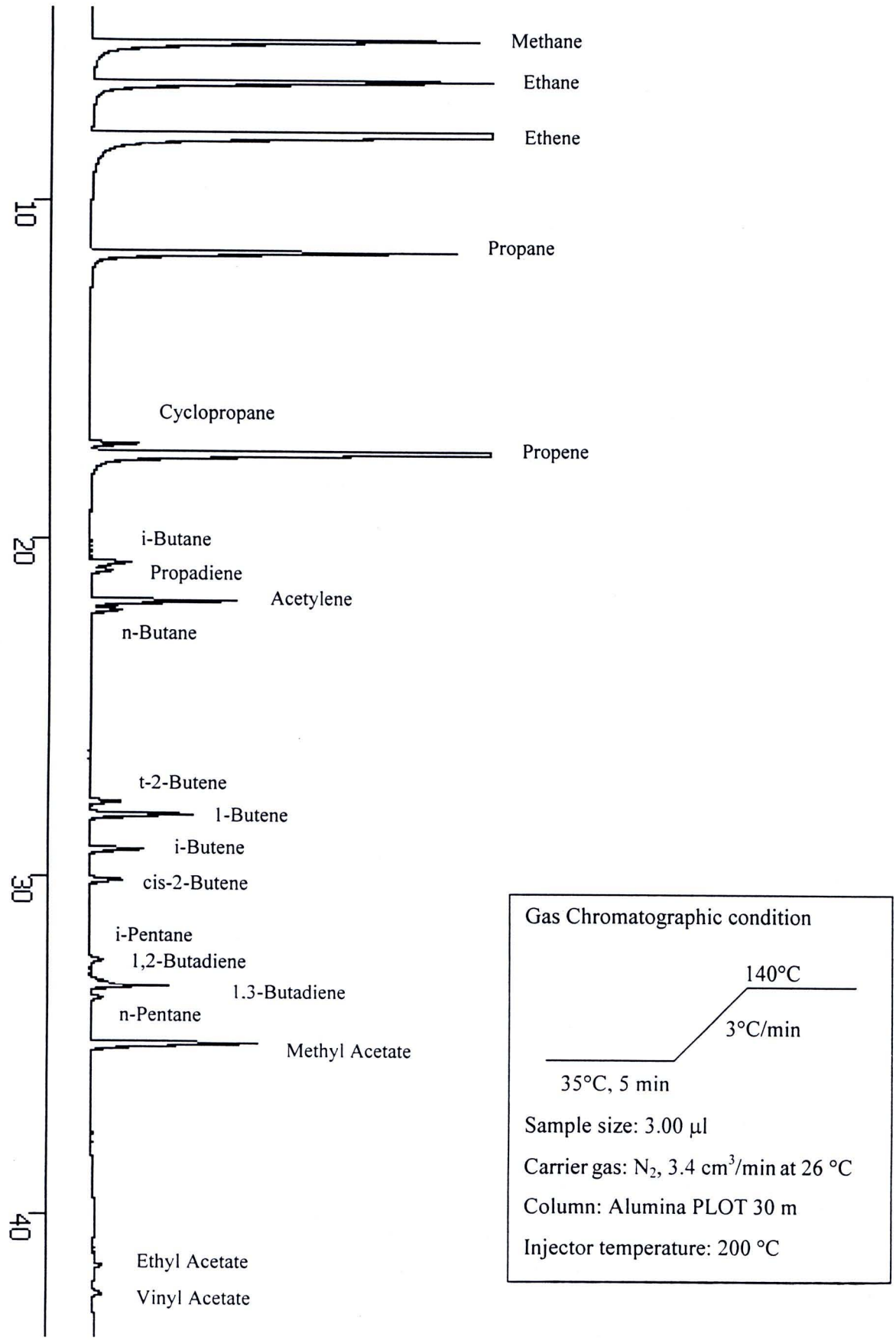


Figure A-1 Gas chromatogram of standard gas mixture.

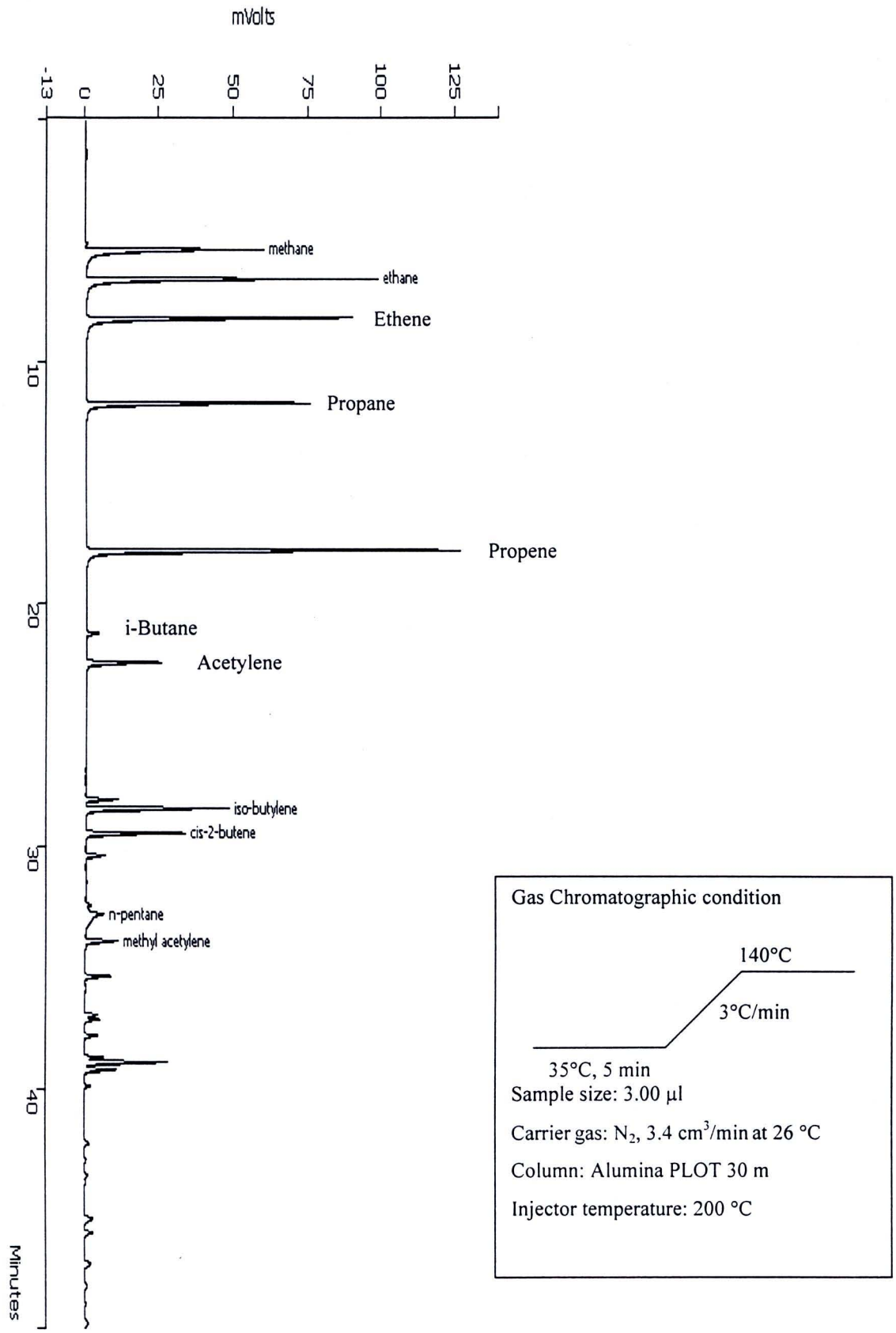


Figure A-2 Gas chromatogram of gas product obtained from catalytic cracking of grease over zeolite beta/Al-HMS composite catalysts at 400°C.

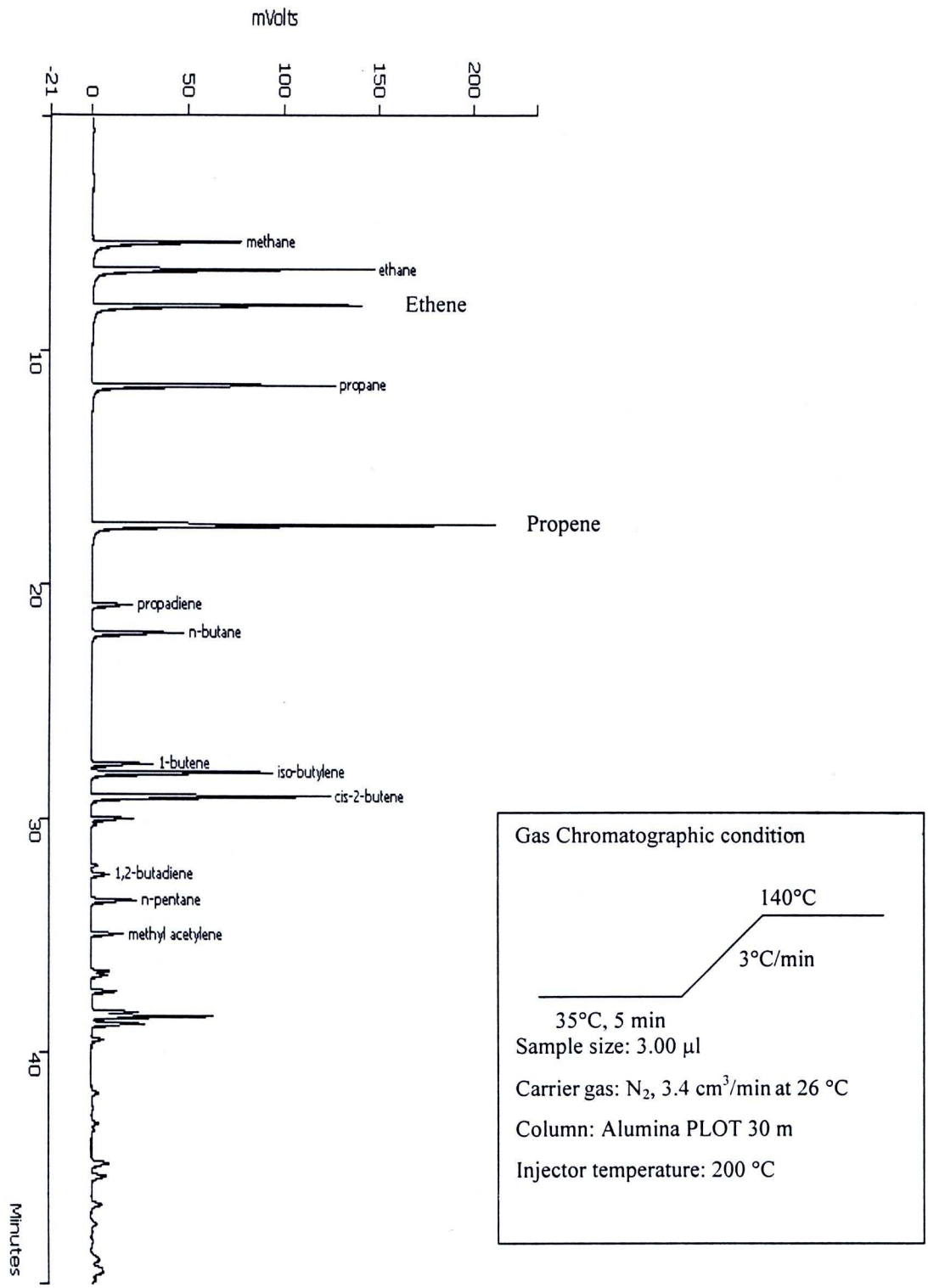


Figure A-3 Gas chromatogram of gas product obtained from catalytic cracking of lubricant oil over zeolite beta/Al-HMS composite catalysts at 380°C.

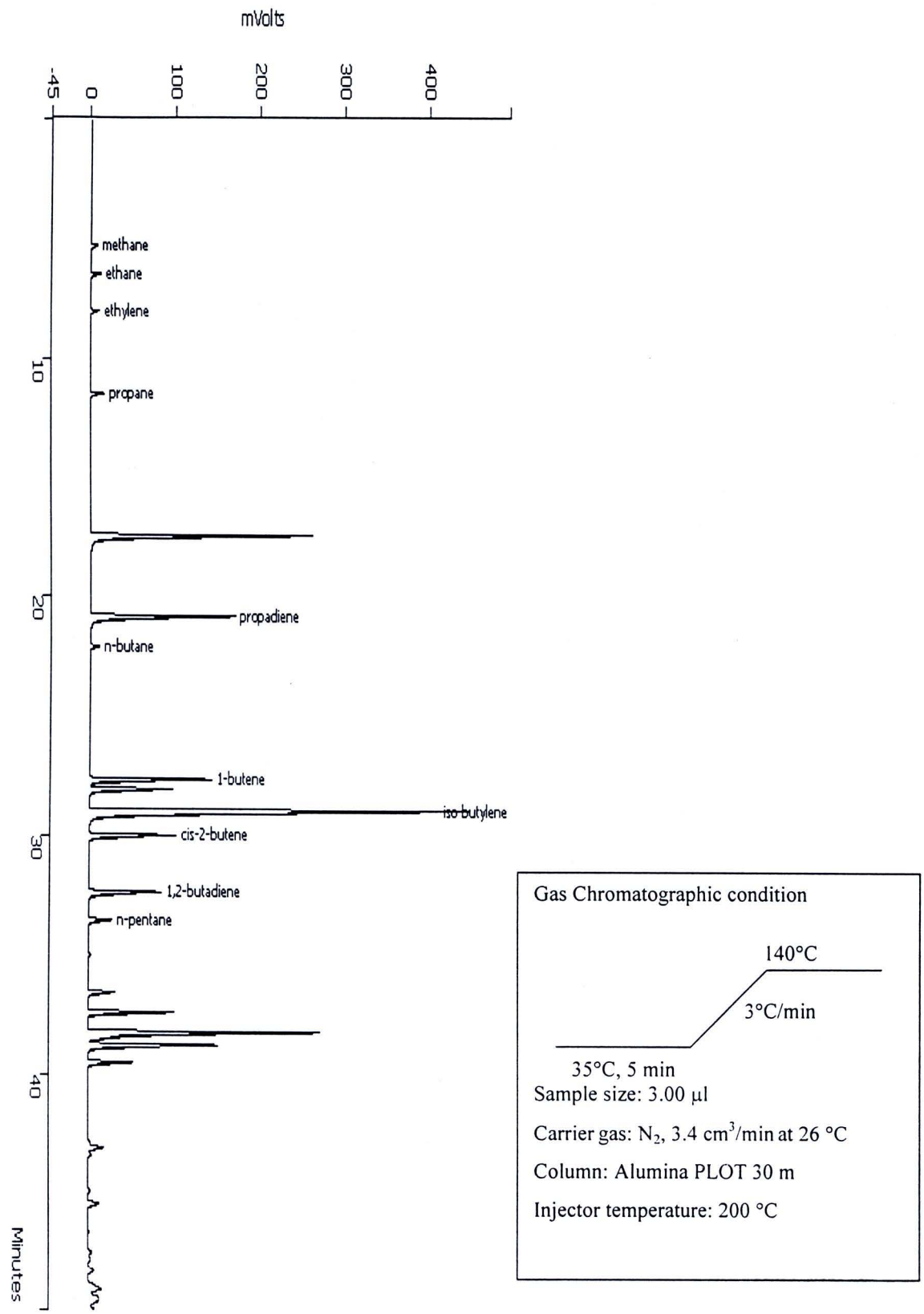


Figure A-4 Gas chromatogram of gas product obtained from catalytic cracking of PP over zeolite beta/Al-HMS composite catalysts at 380°C.

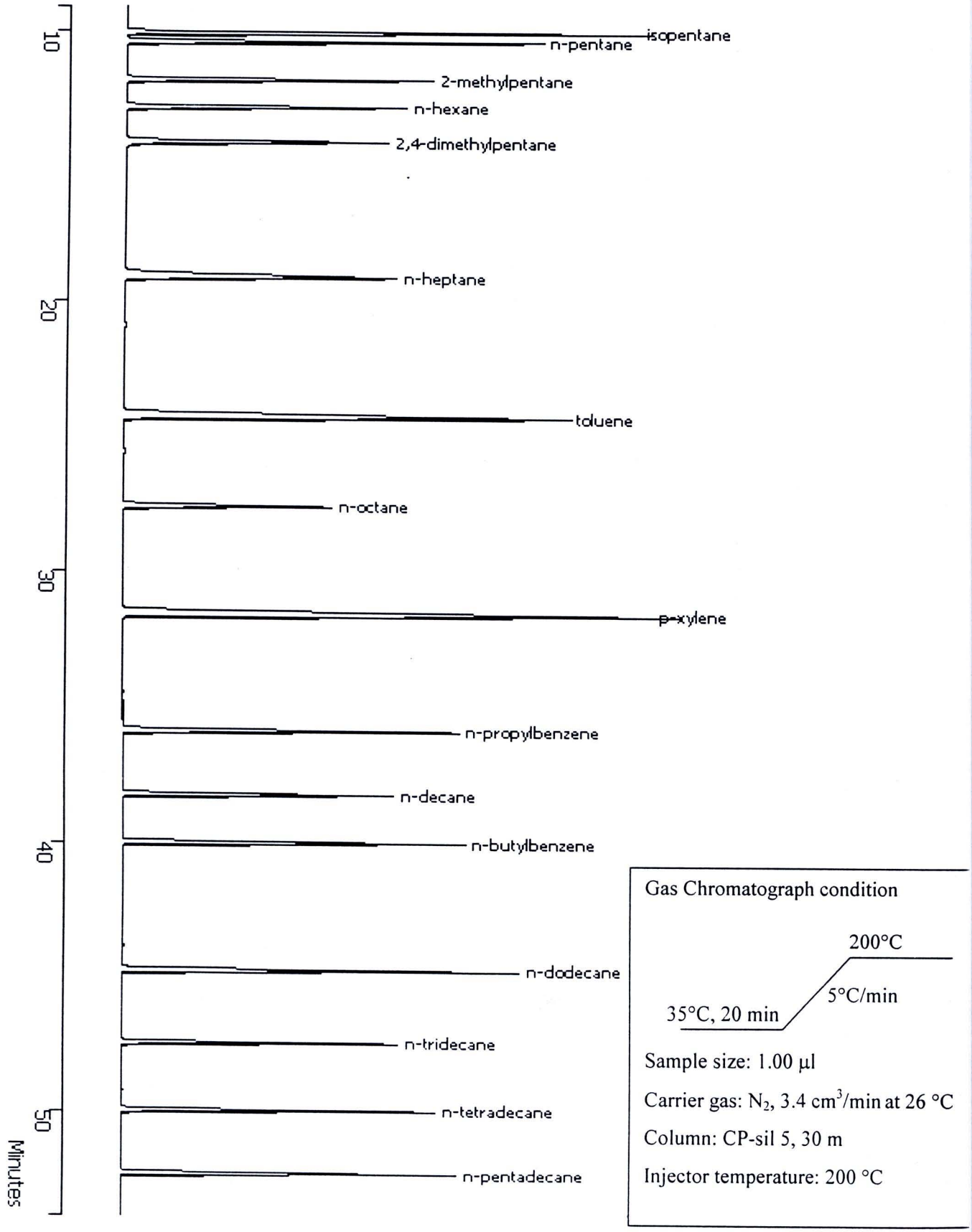


Figure A-5 Liquid chromatogram of standard gasoline (SUPELCO).

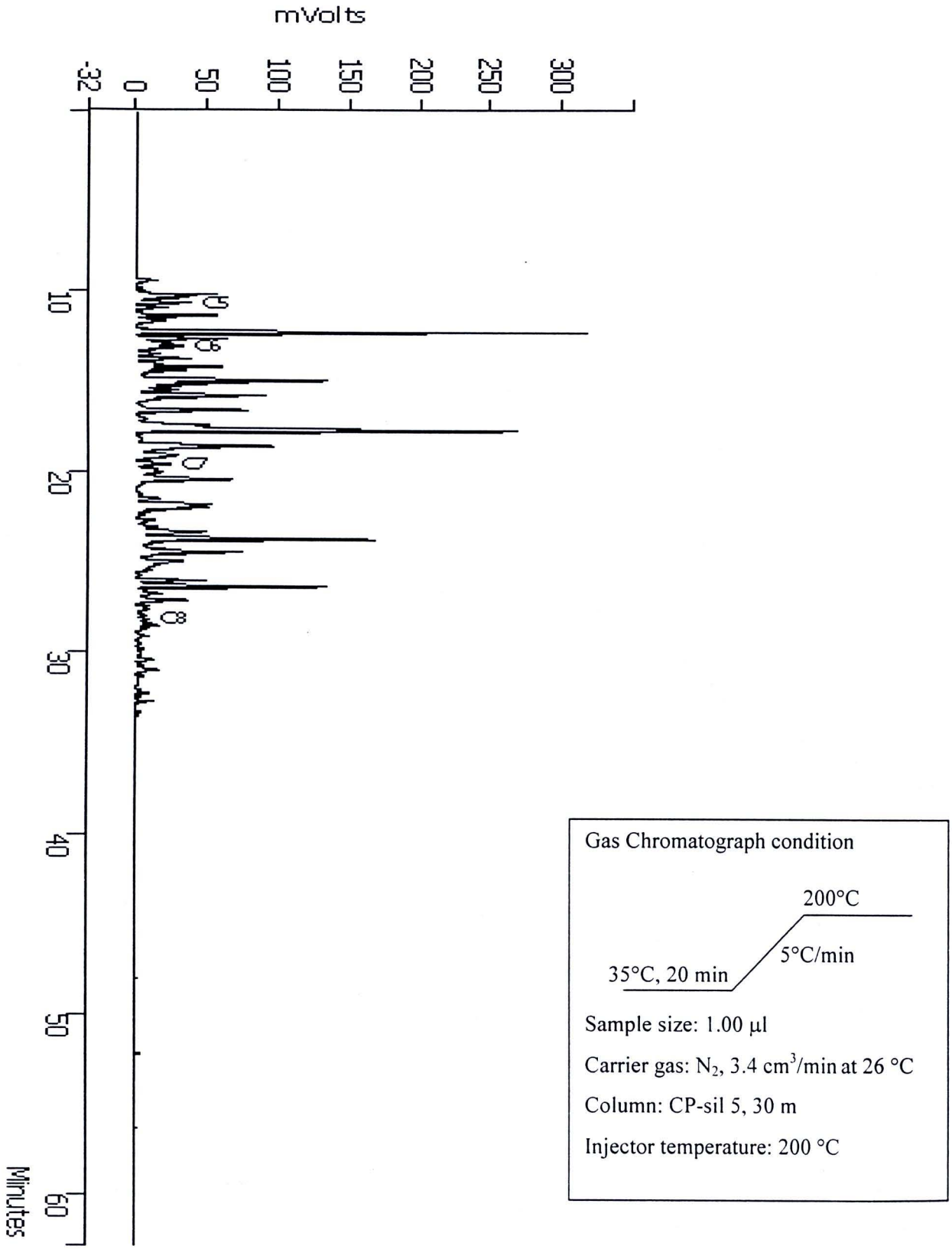
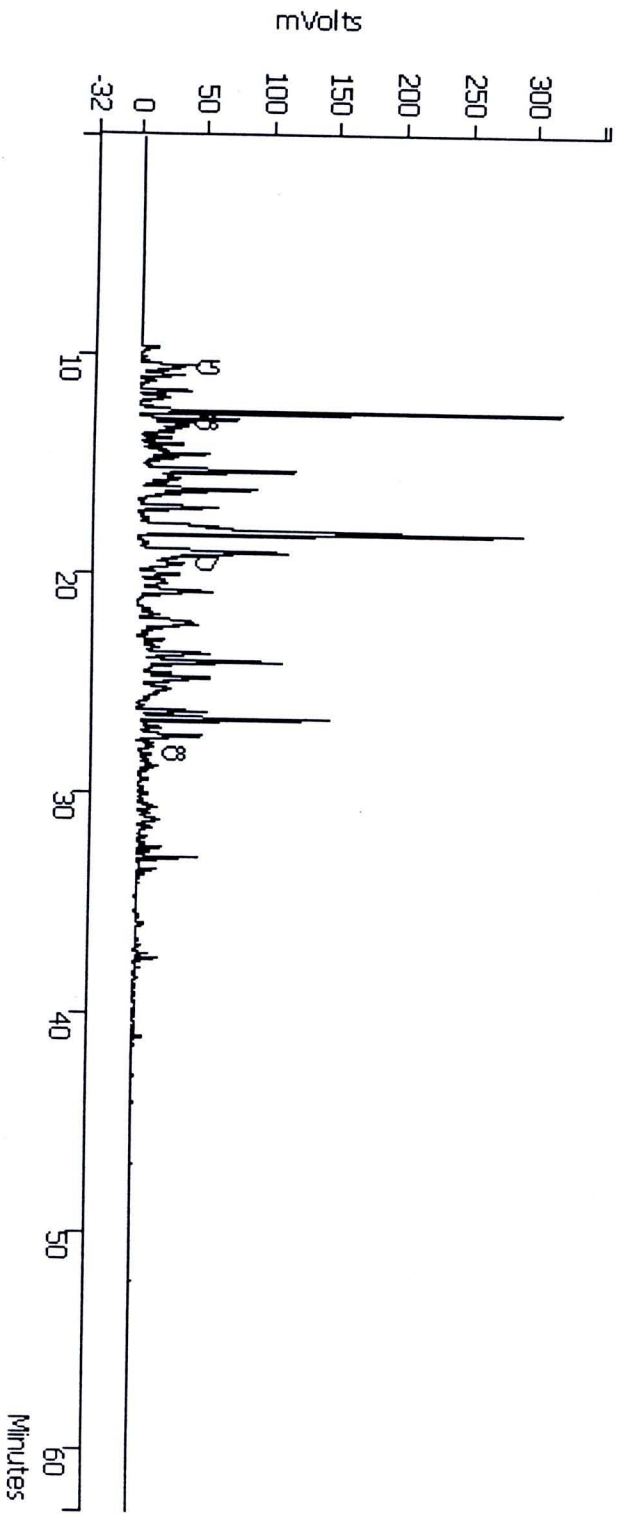


Figure A-6 Liquid chromatogram of liquid product obtained from catalytic cracking of grease zeolite beta/Al-HMS composite catalysts at 400°C.



Gas Chromatograph condition

200°C

5°C/min

35°C, 20 min

Sample size: 1.00 μl

Carrier gas: N_2, 3.4 cm^3/min at 26 °C

Column: CP-sil 5, 30 m

Injector temperature: 200 °C

Figure A-7 Liquid chromatogram of liquid product obtained from catalytic cracking of lubricant oil zeolite beta/Al-HMS composite catalysts at 380°C.

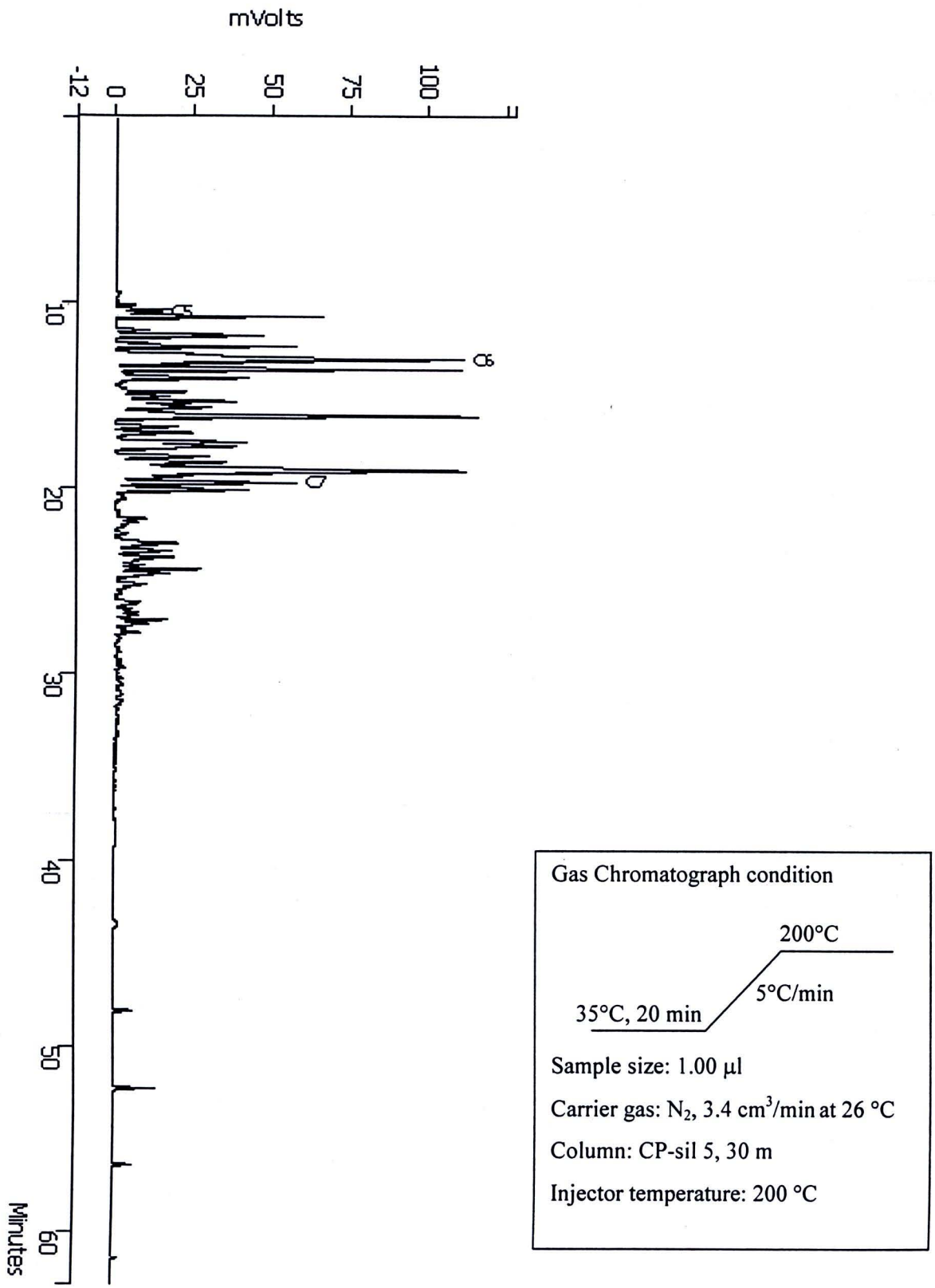


Figure A-8 Liquid chromatogram of liquid product obtained from catalytic cracking of lubricant oil zeolite beta/Al-HMS composite catalysts at 380°C.

VITAE

Miss Kamonwan Kingputtapong was born on May 16th, 1983 in Bangkok, Thailand. She received a Bachelor Degree of Science, major in Industrial Chemistry from King Mongkut's Institute of Technology Ladkrabang in 2005. Since 2005 she has been a graduate student in the program of Petrochemistry and Polymer Science, Faculty of Science, Chulalongkorn University and graduated in 2008.

PRESENTATIONS

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12-14 DEC 2007

Poster Presentation "Cracking of lubricant oil over Al-HMS catalyst" The 3rd Mathematic and Physical Science Graduate Conference (MPSGC), University of Malaya, Kuala Lumpur, Malaysia.

18 – 20 OCT 2007

Poster Presentation "Cracking of lubricant oil over Al-HMS catalyst" The 33th Congress on Science and technology of Thailand (STT 33), Walailak University, Nakhon Si Thammarat, Thailand.