

Supporting Information for:

Cobalt(II)-Catalysed Transfer Hydrogenation of Olefins

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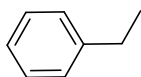
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Experimental Details

General. Unless specified otherwise, all reactions were carried out under a dry nitrogen atmosphere using standard glove-box and Schlenk techniques. Anhydrous grade solvents and liquid reagents used were obtained from Aldrich or Acros and stored over 4Å molecular sieves. GC-MS analysis was obtained using a Hewlett Packard 6890 GC system equipped with a Hewlett Packard 5973 mass selective detector. Cobalt complexes **1-6** were prepared according to previously published procedures.^{1,2}

General procedure for cobalt-catalyzed transfer hydrogenation of olefins. Under nitrogen, complex **2** (6.1 mg, 10.0 µmol) and H[BAr^F₄]·(Et₂O)₂ (10.1 mg, 10.0 µmol) were dissolved in THF/isopropanol (2 mL, v/v, 3:1) in a thick-walled glass vial or vessel equipped with a Teflon stopper and a stir bar. The alkene substrate (0.5 mmol, indicated in Table 2) and then hexamethylbenzene (32 mg, 0.2 mmol) was added as an internal standard. The vessel was sealed and stirred at 100°C for 24 or 48 h as indicated. The reaction was then cooled to room temperature and the reaction mixture was filtered through a celite plug. The filtrate was diluted with dichloromethane, and the yield was determined by GC analysis (integration against the internal standard). Product identities were verified by GC-MS analysis and comparison to authentic samples.

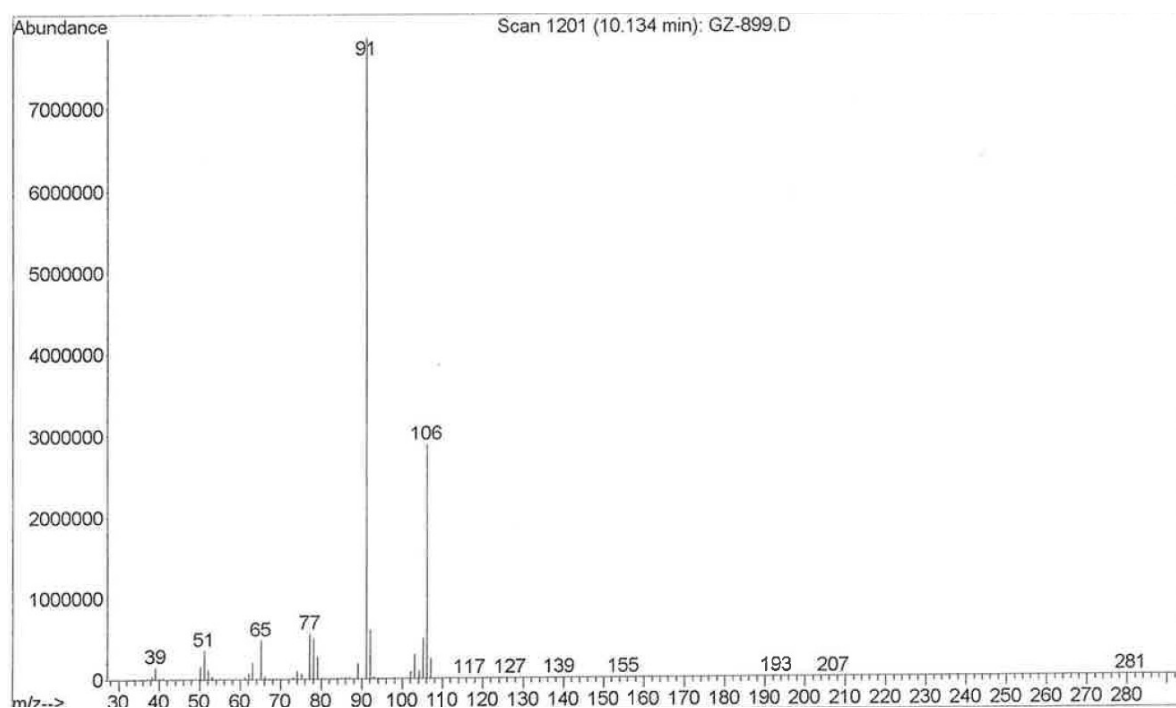
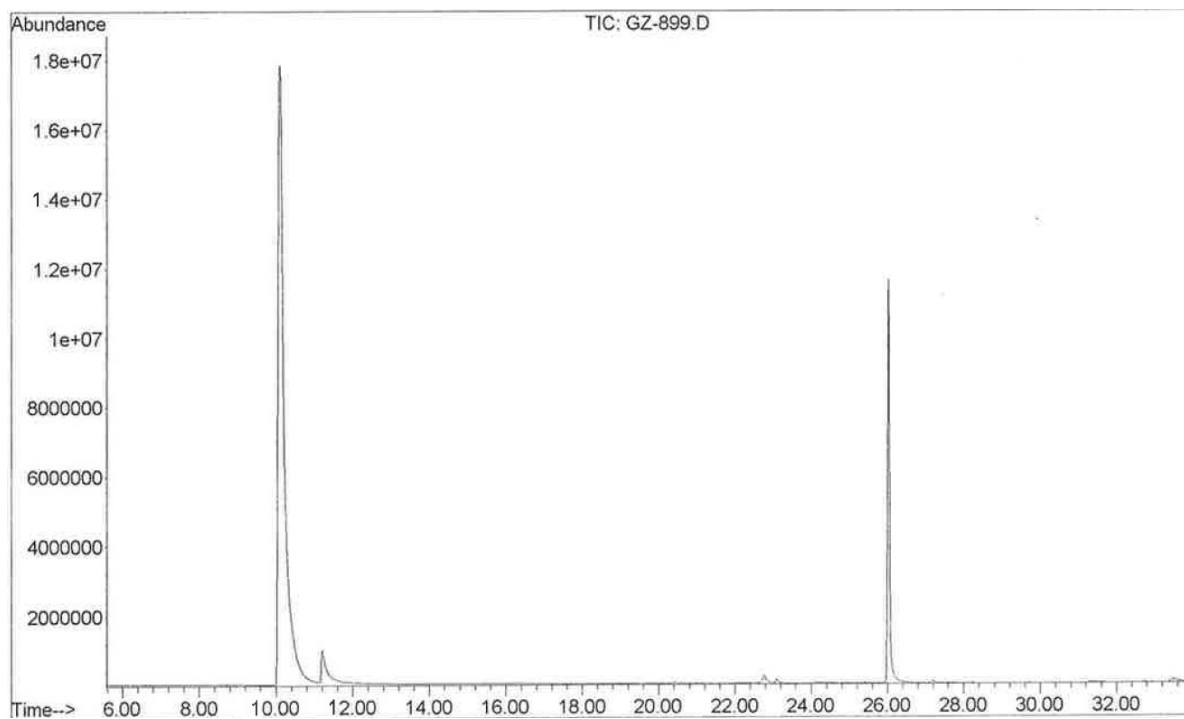
GC-MS data for hydrogenated products (All products reported here are known compounds).

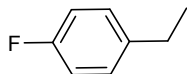


Chemical Formula: C_8H_{10}

Molecular Weight: 106.17

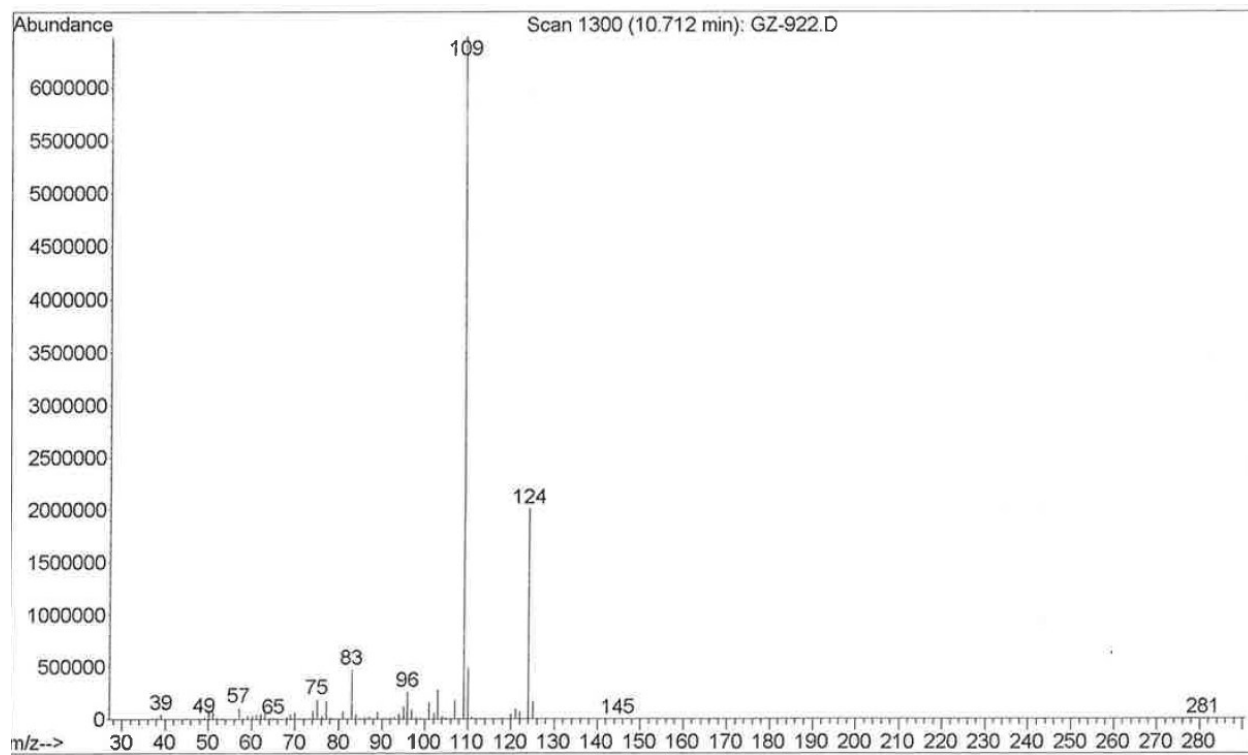
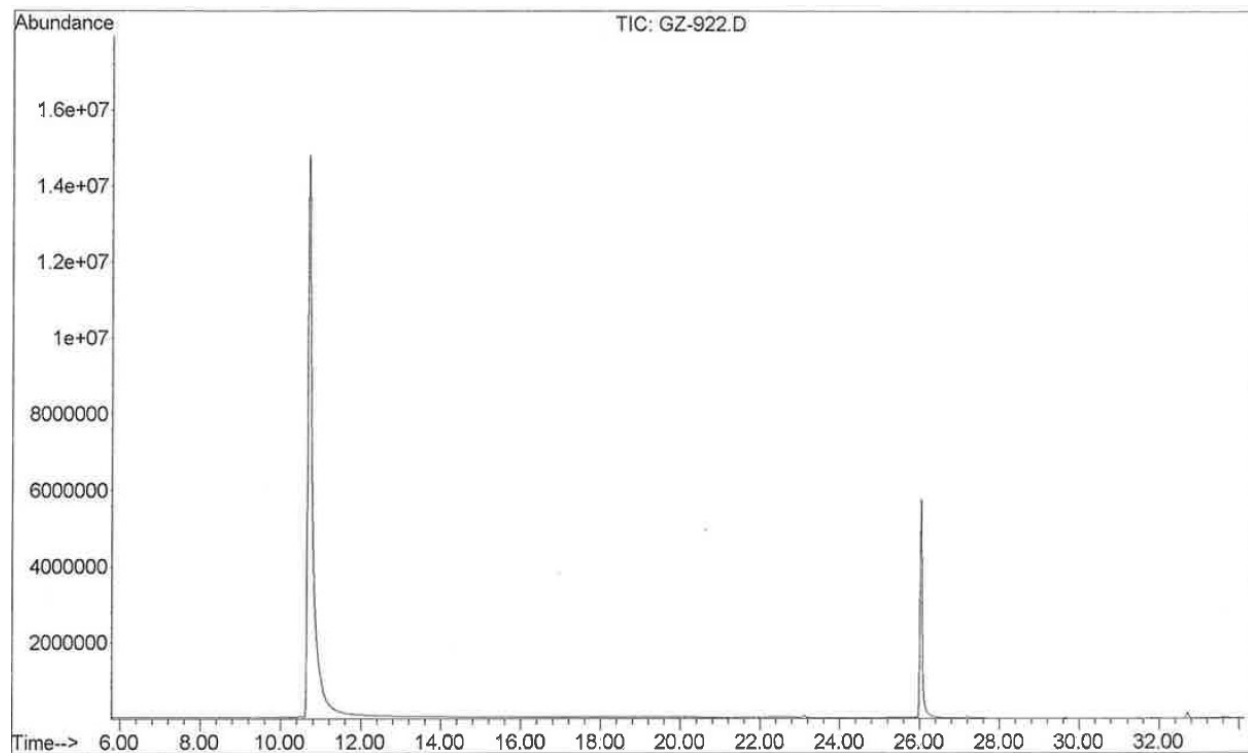
Hexamethylbenzene, $t_r = 26.1$ min

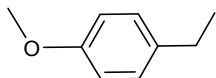




Chemical Formula: C₈H₉F

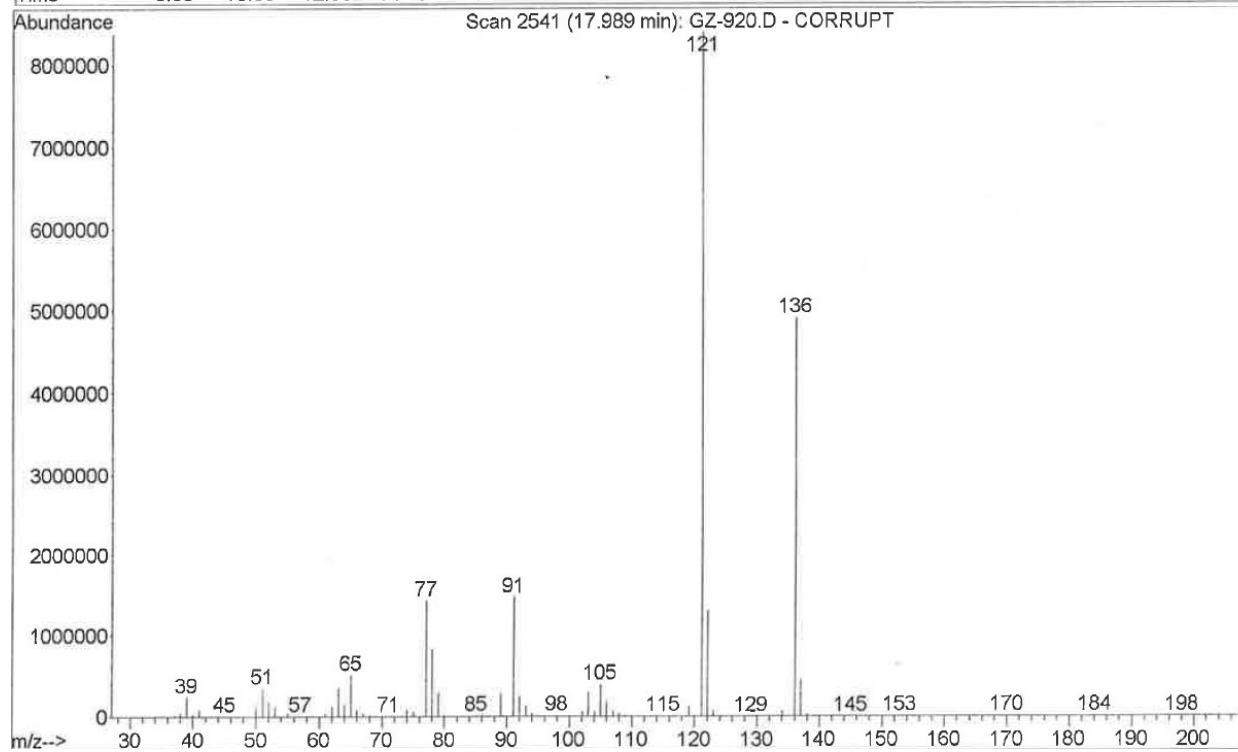
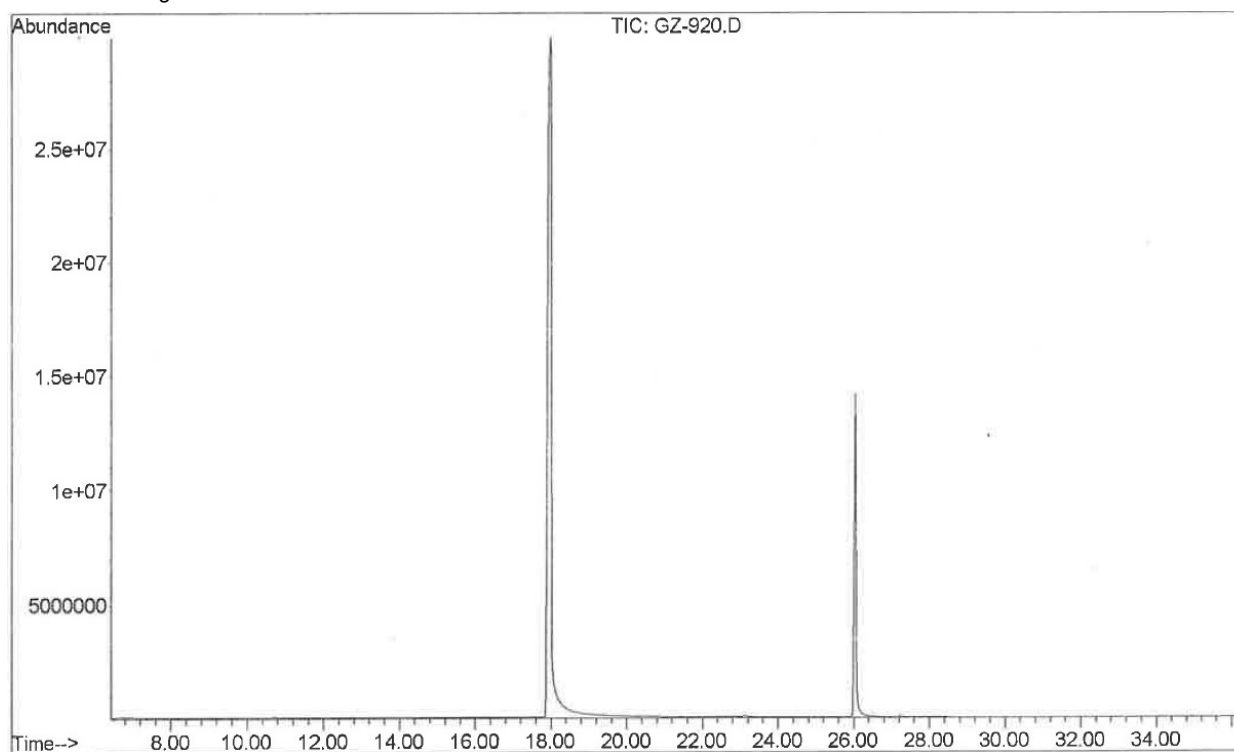
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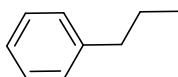




Chemical Formula: $C_9H_{12}O$

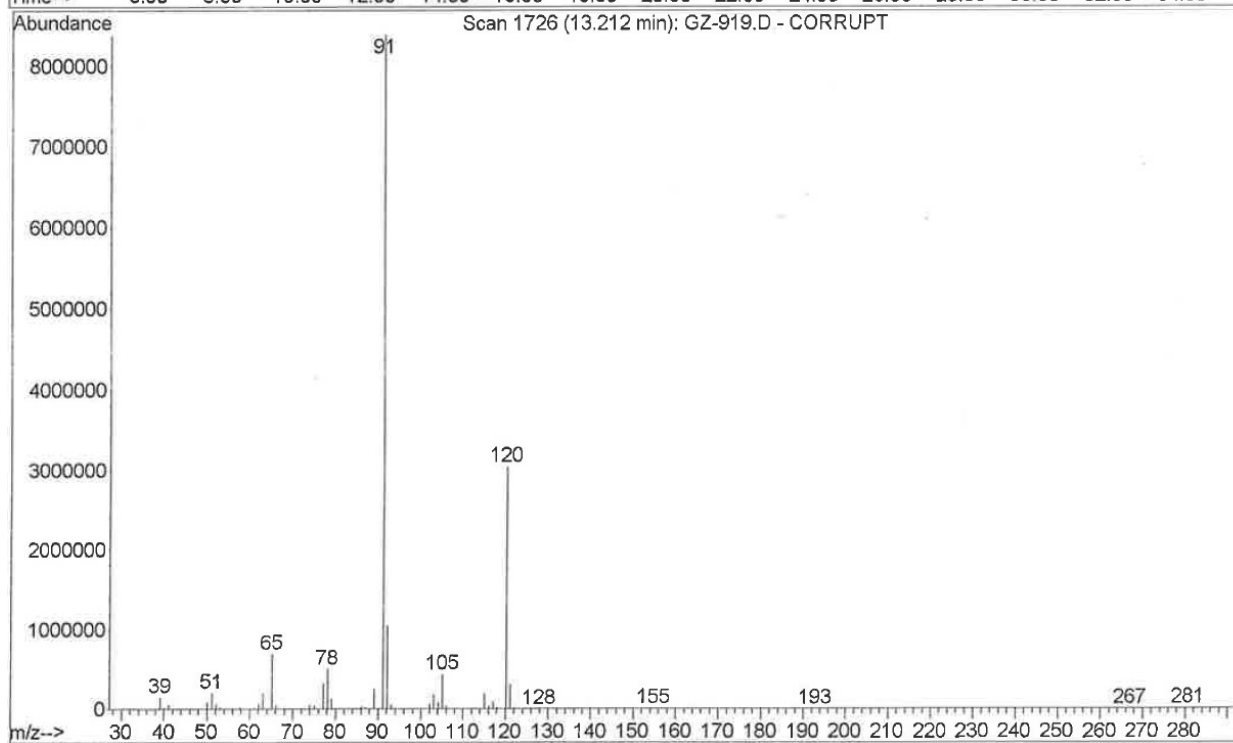
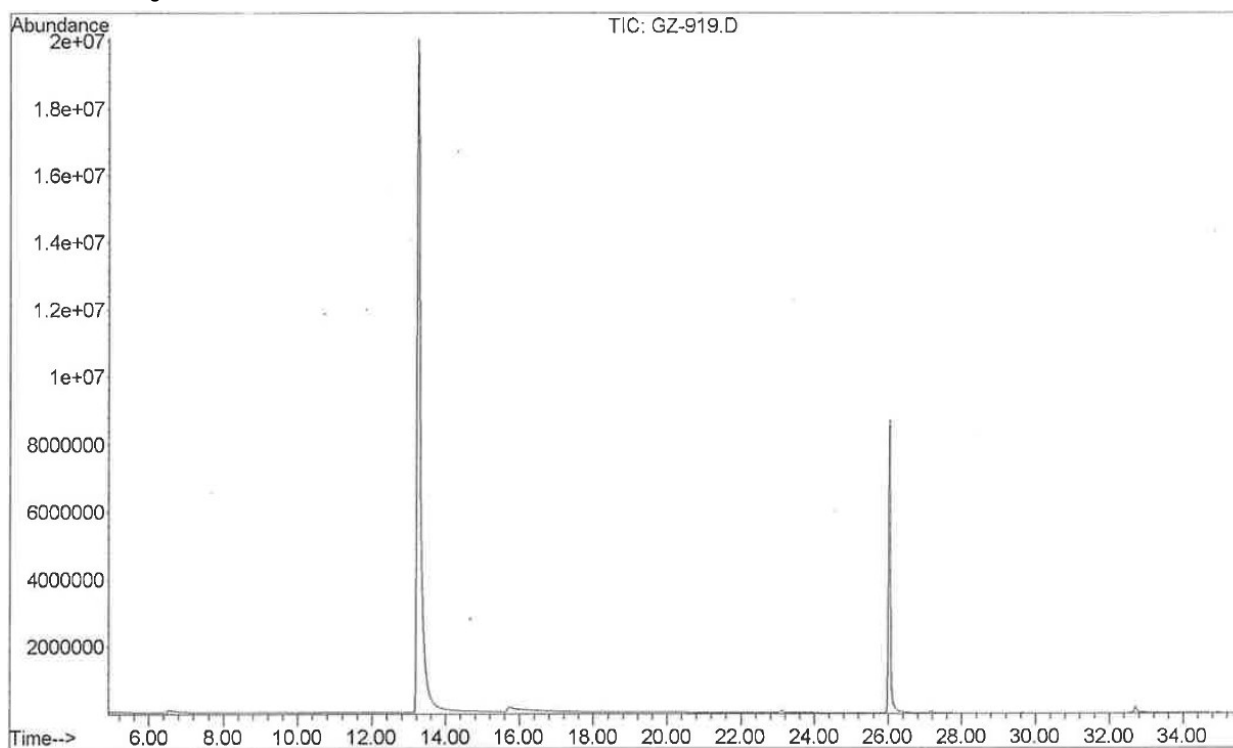
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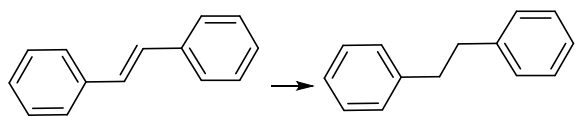




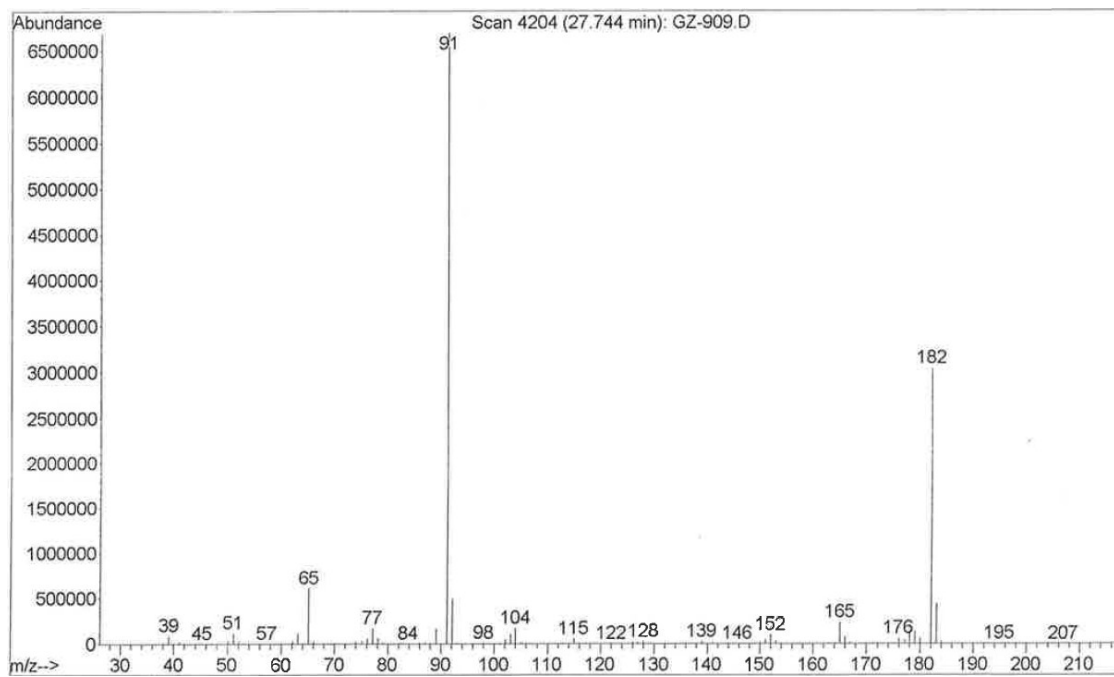
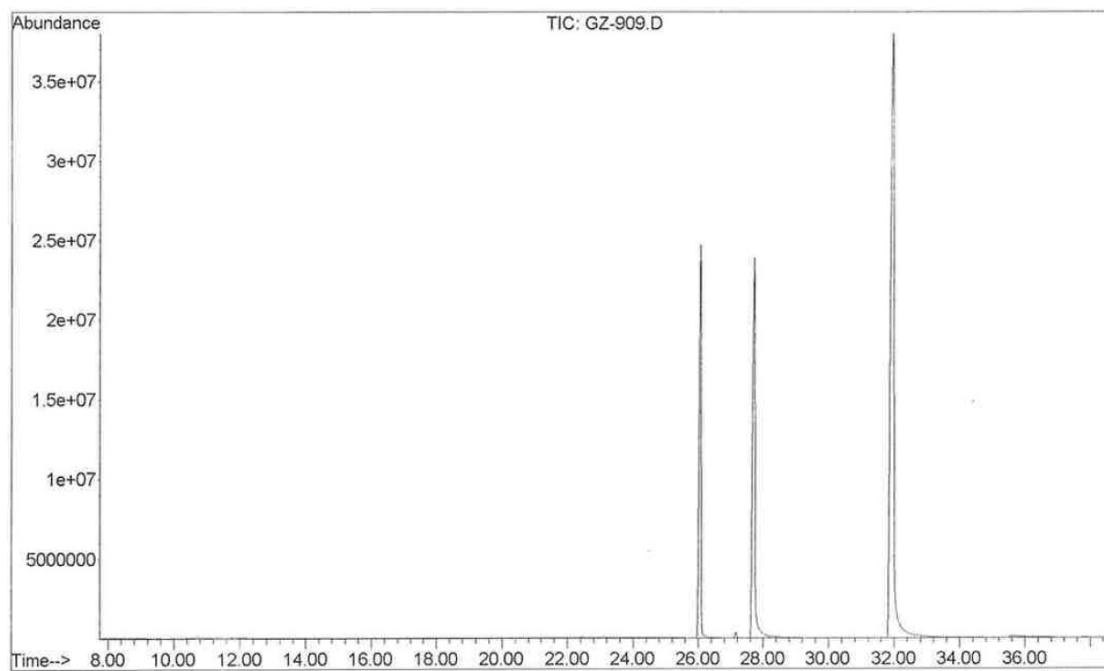
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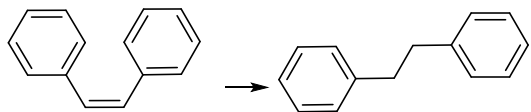
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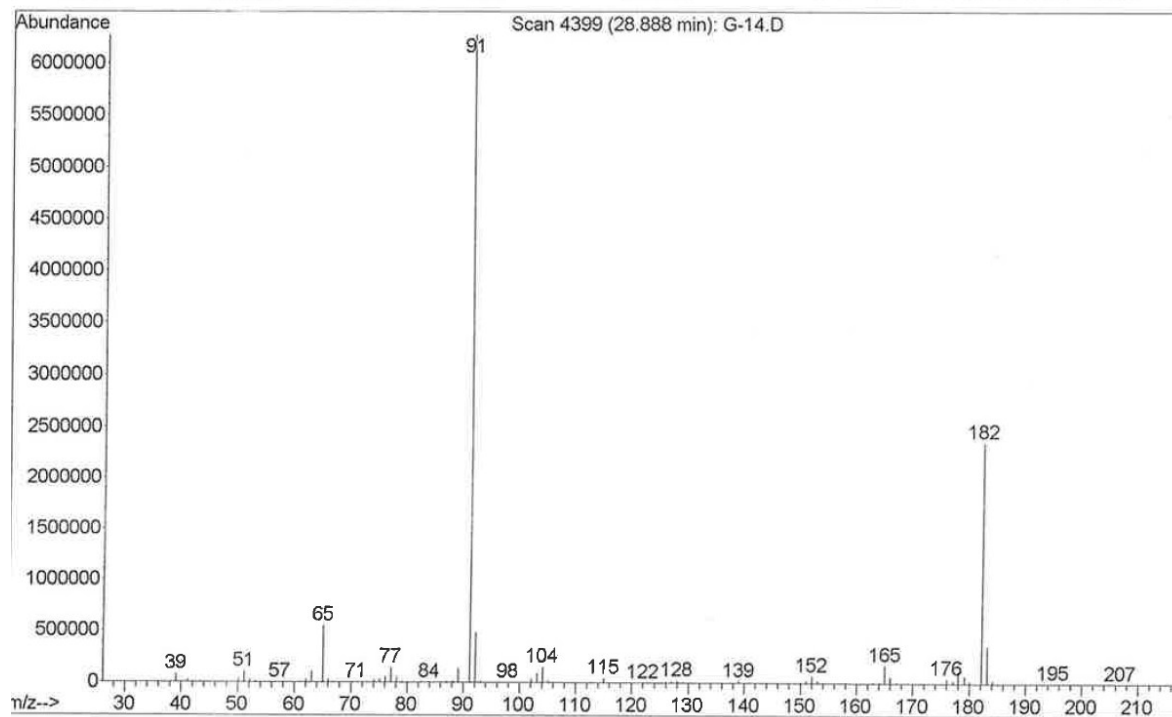
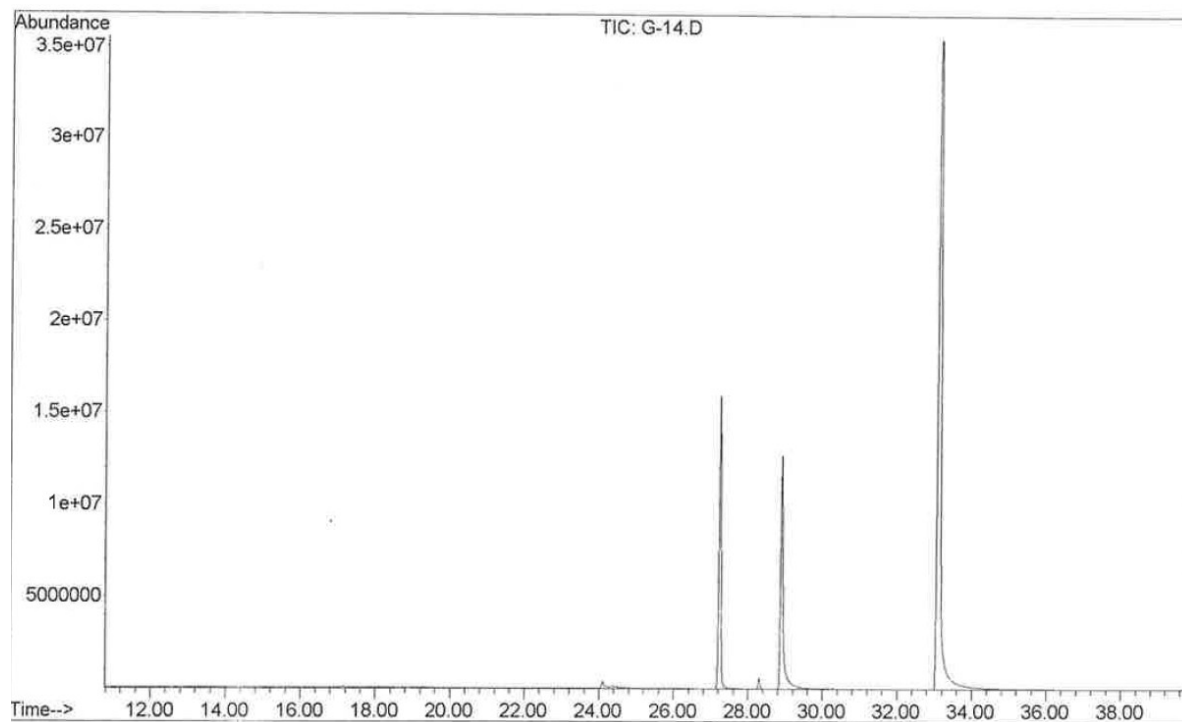


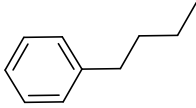
Chemical Formula: $C_{14}H_{14}$
Molecular Weight: 182.27



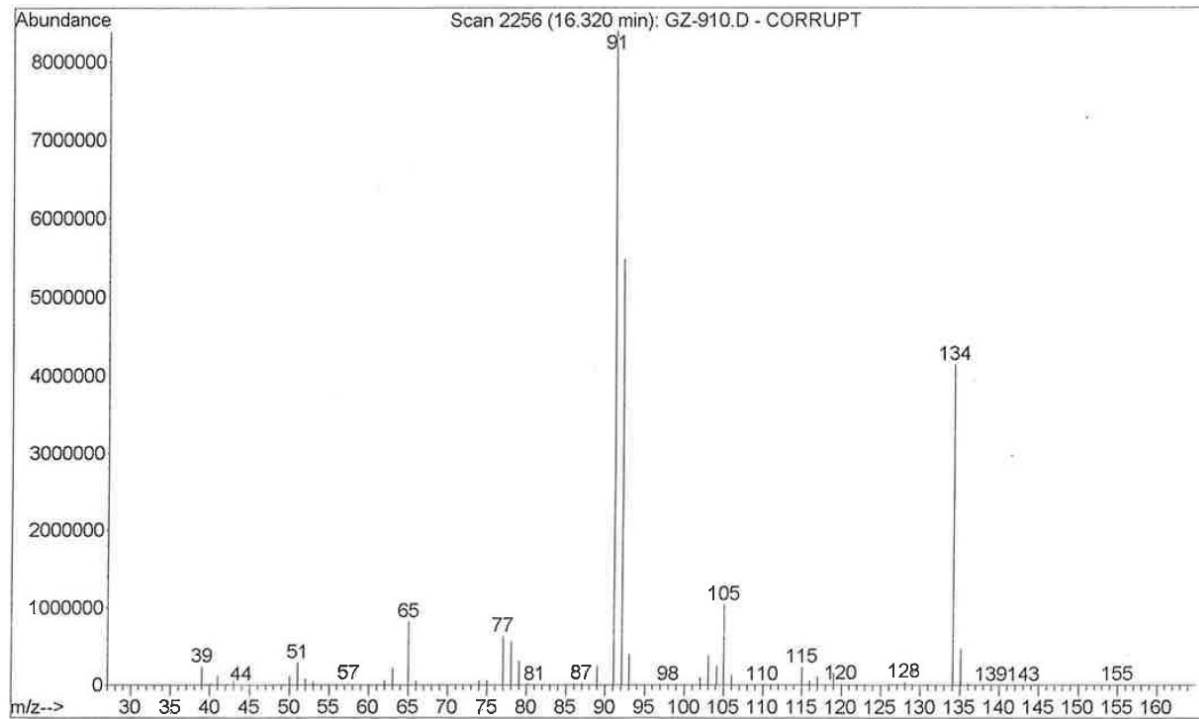
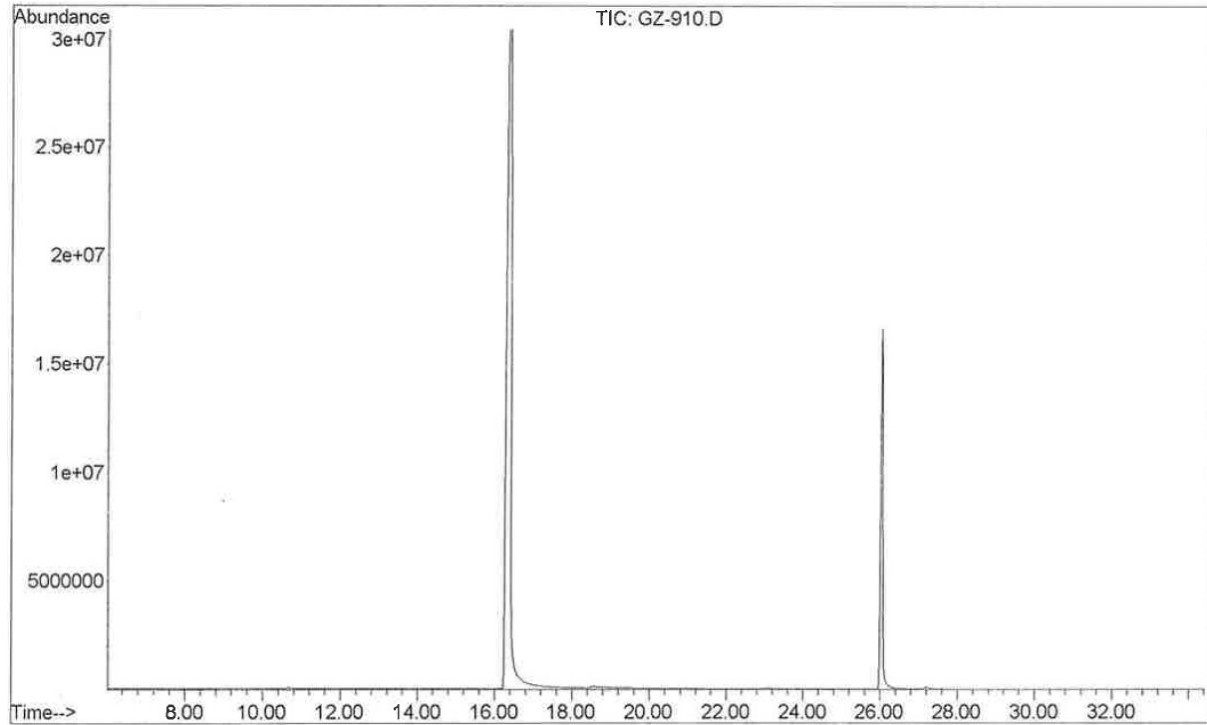


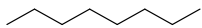
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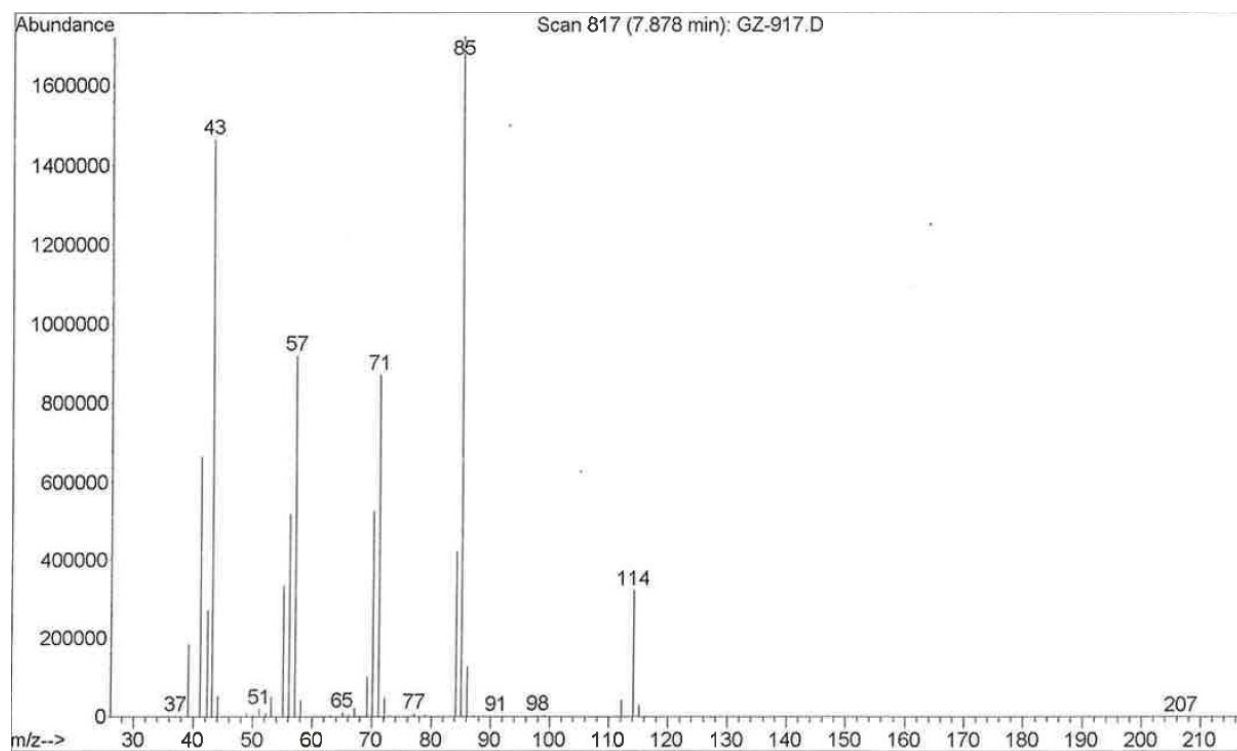
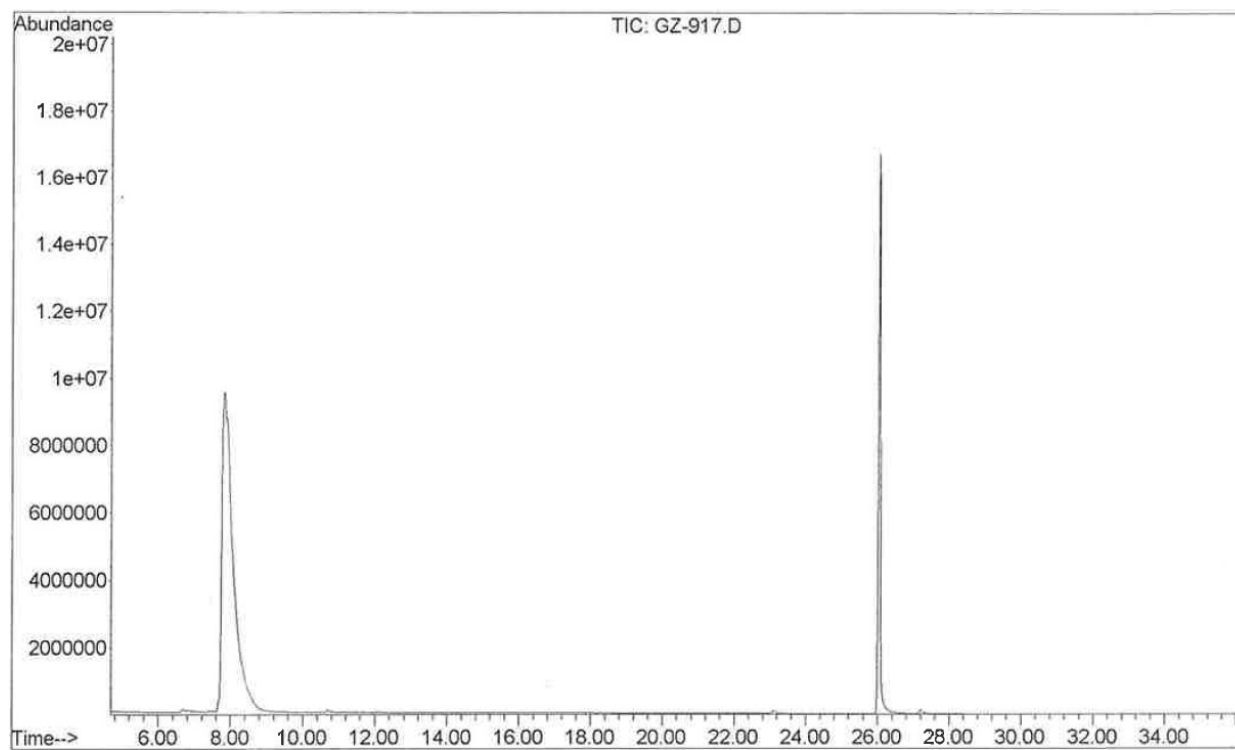


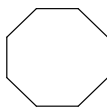
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Molecular Weight: 134.22



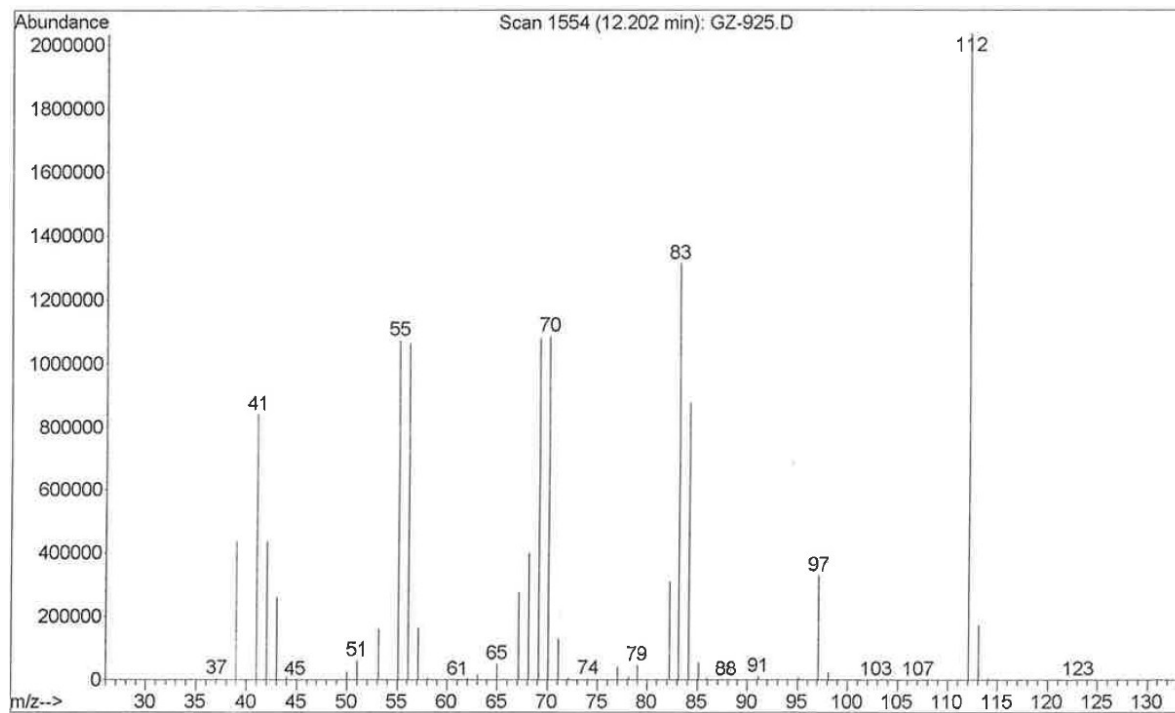
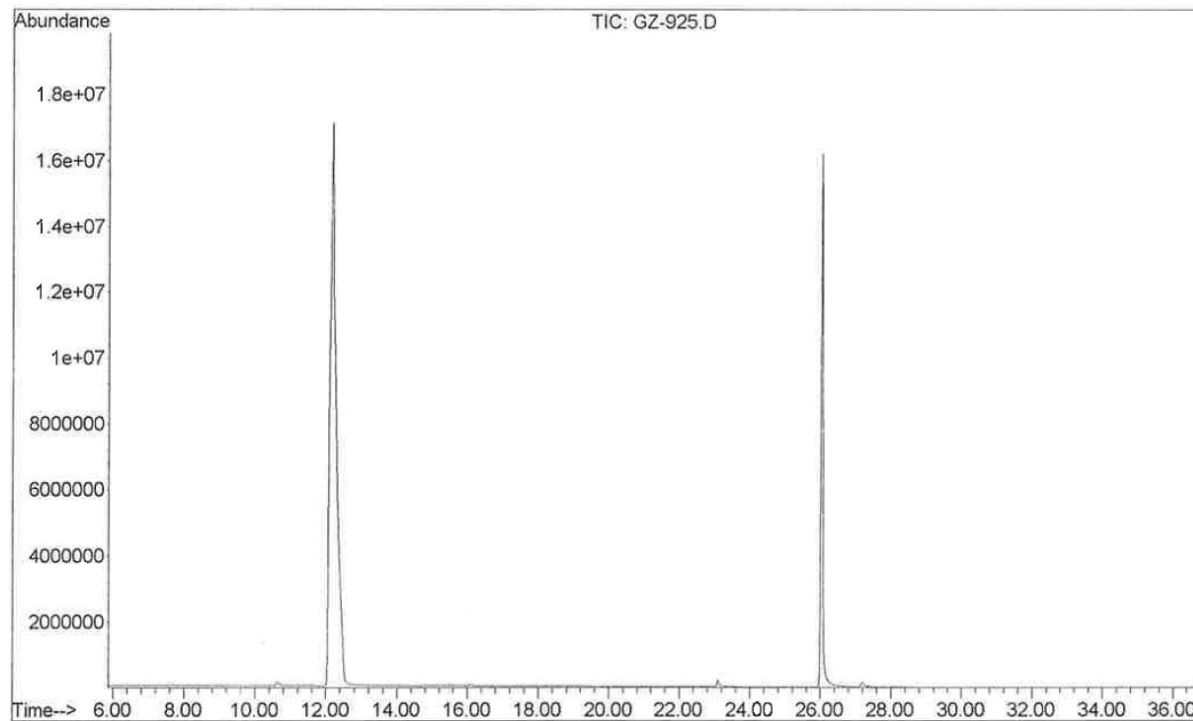


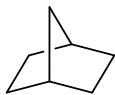
Chemical Formula: C₈H₁₈
Molecular Weight: 114.23



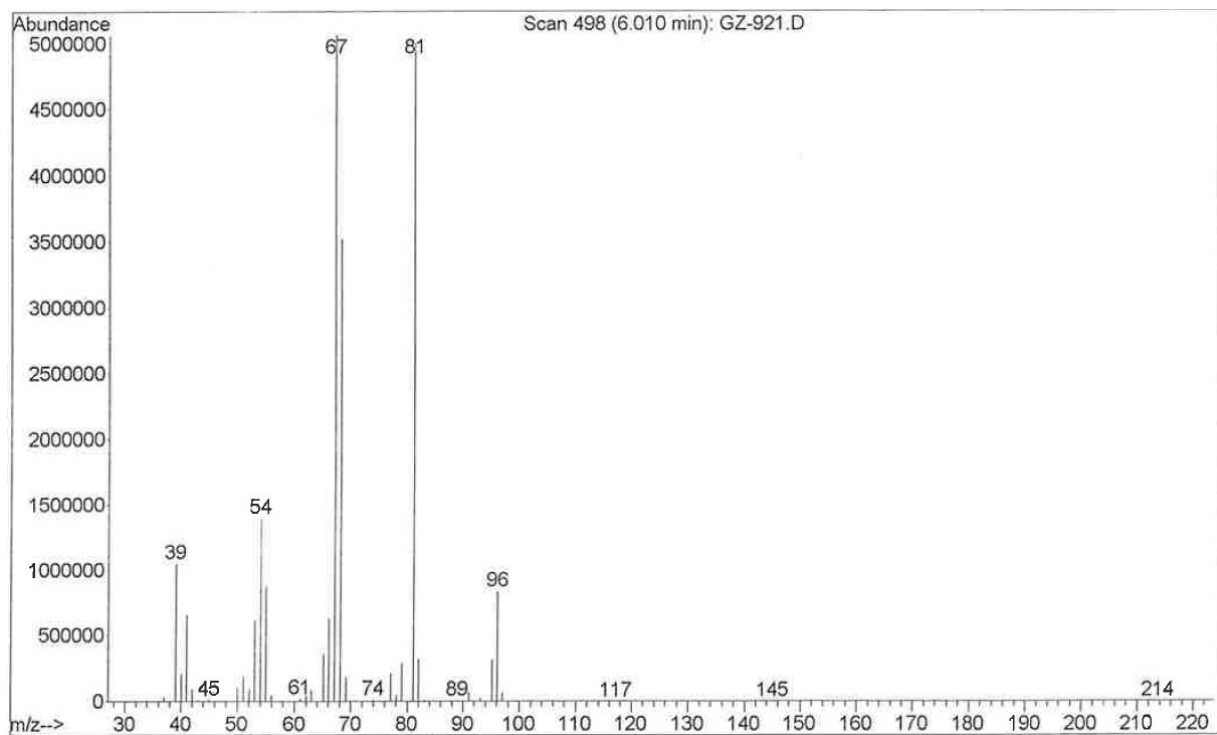
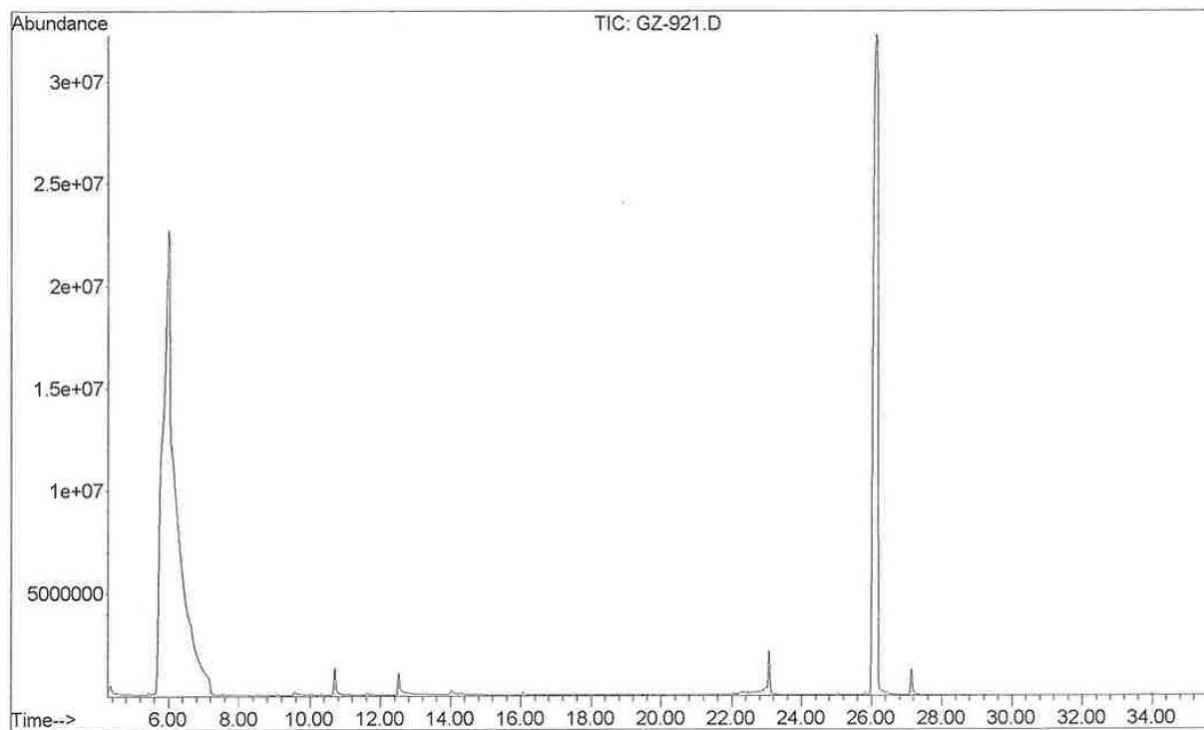


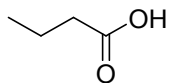
Chemical Formula: C_8H_{16}
Molecular Weight: 112.22





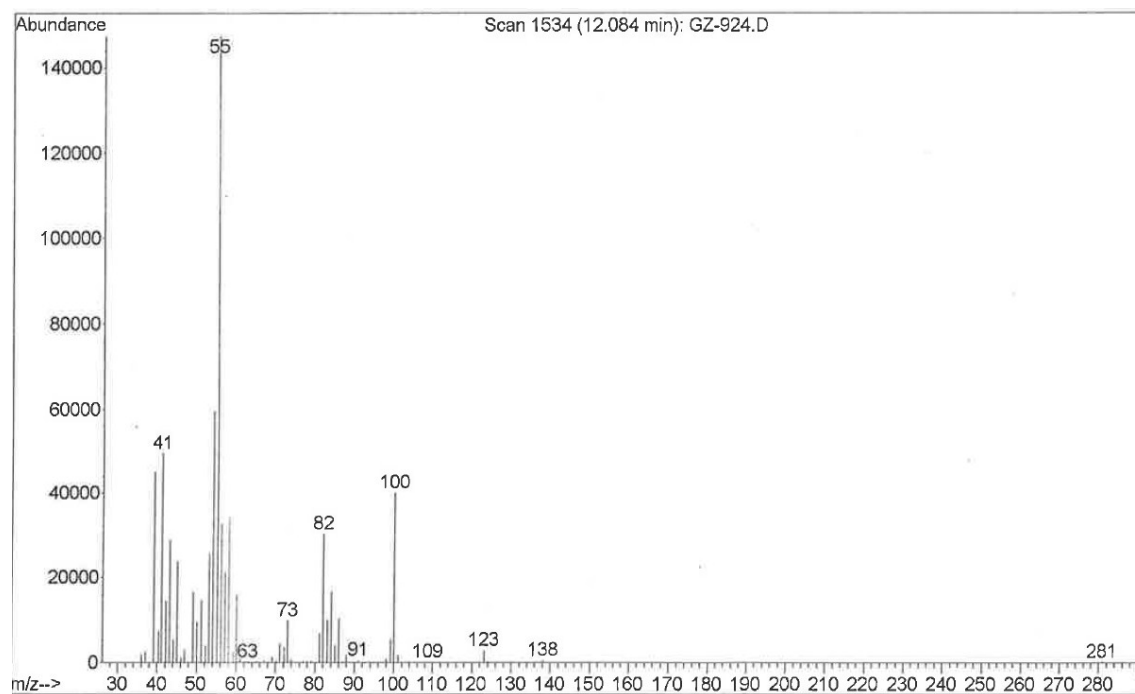
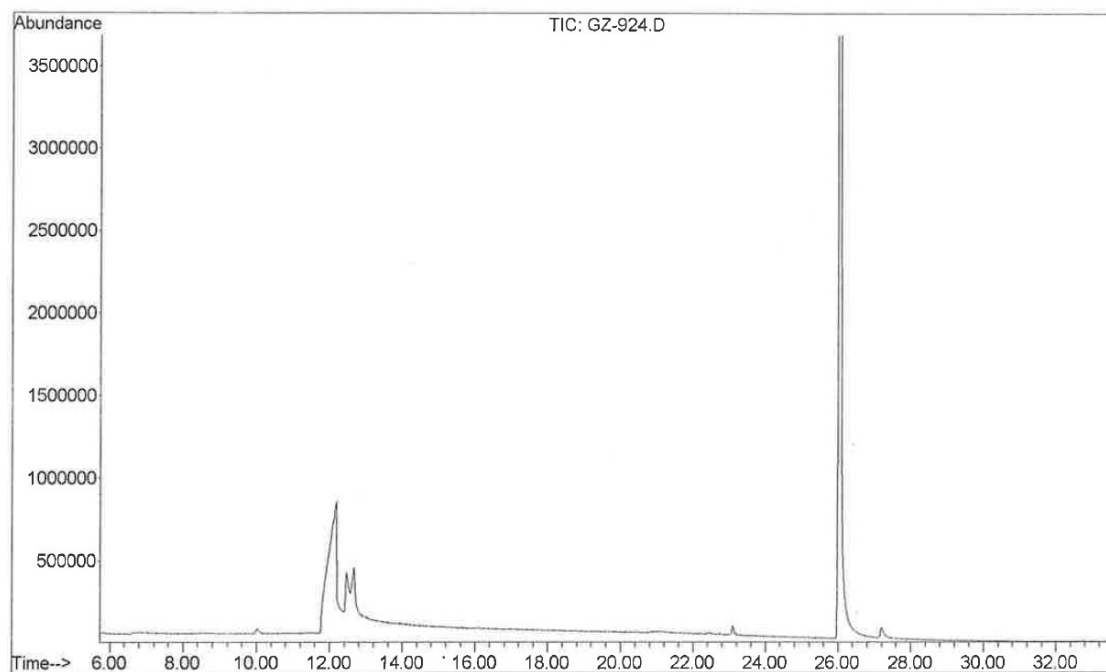
Chemical Formula: C_7H_{12}
Molecular Weight: 96.17

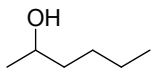




Chemical Formula: $C_4H_8O_2$

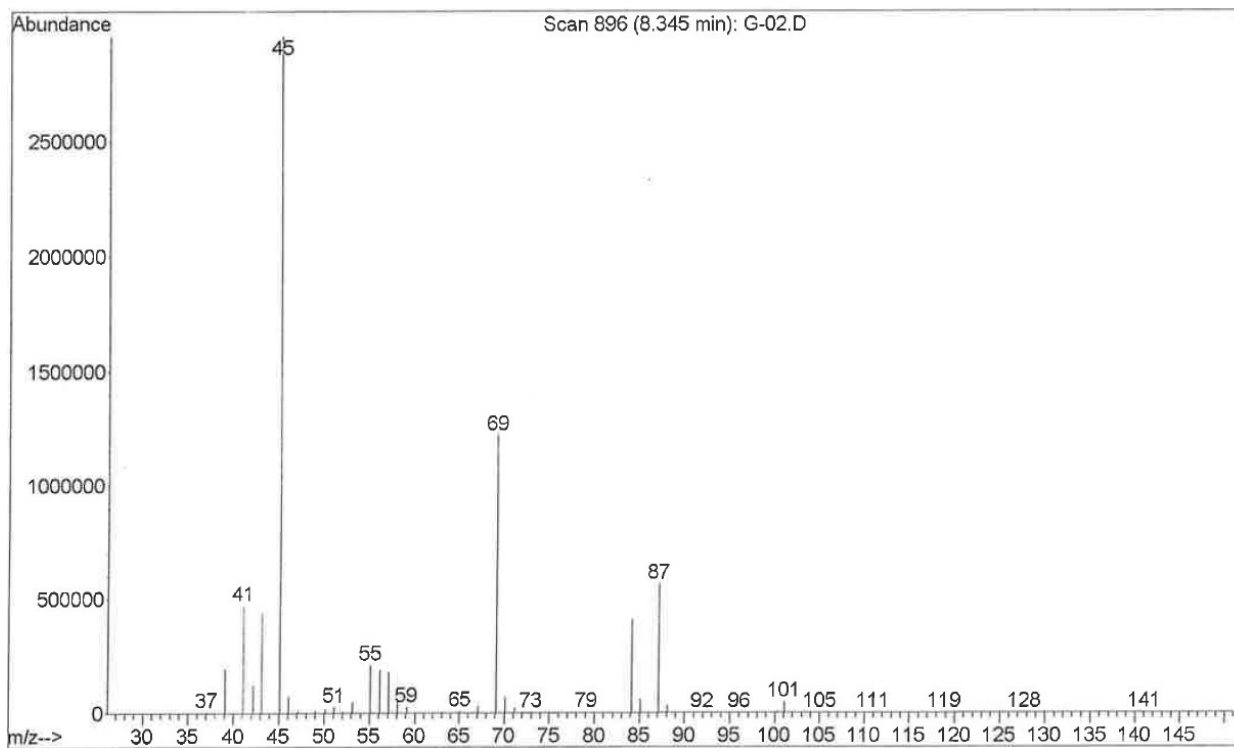
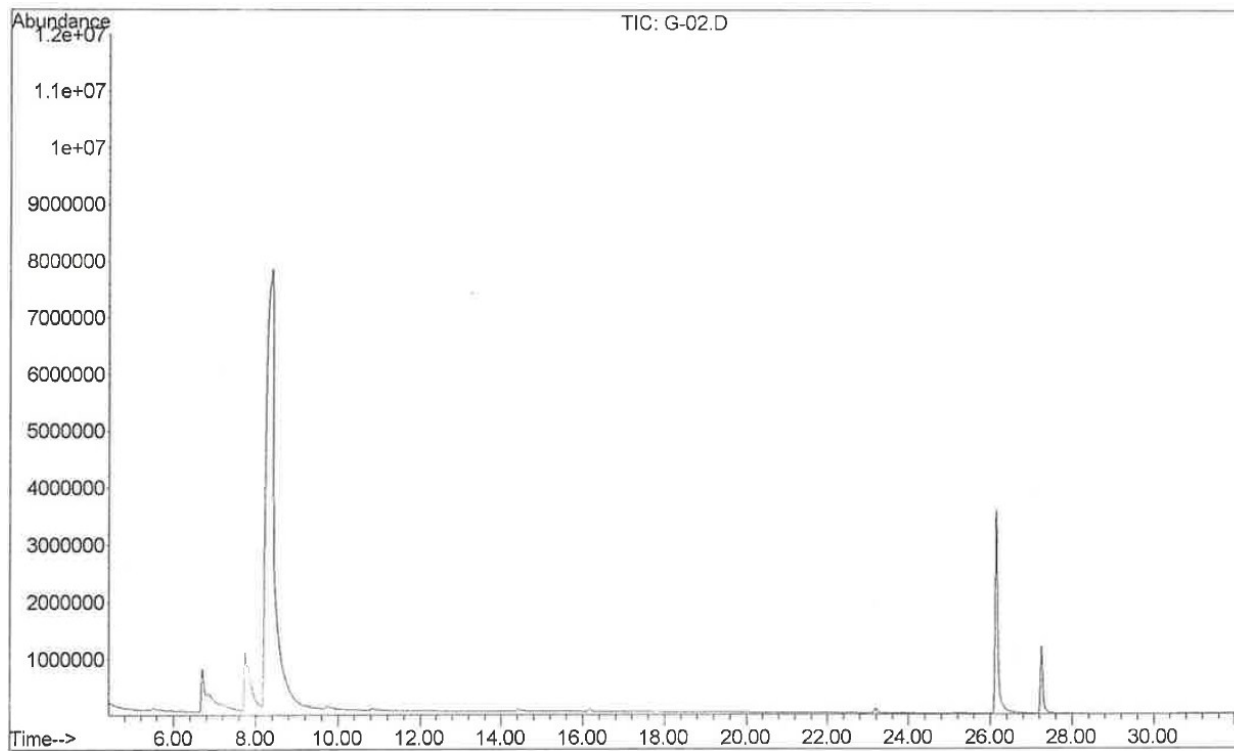
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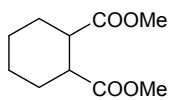




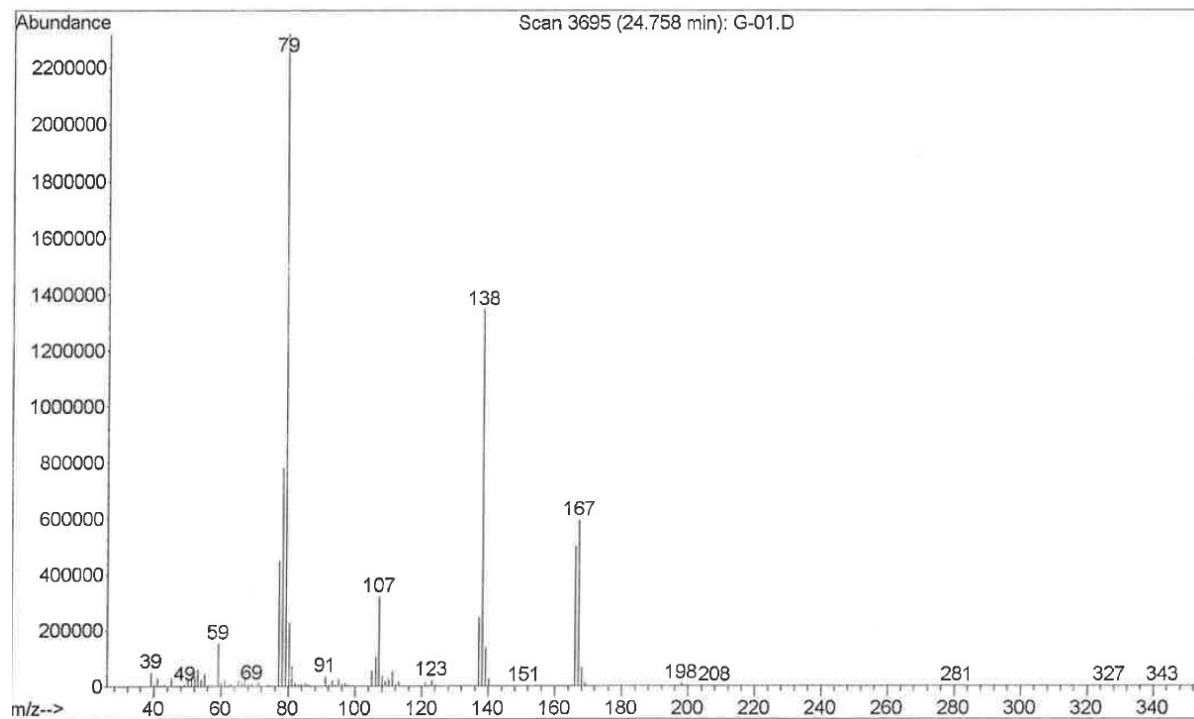
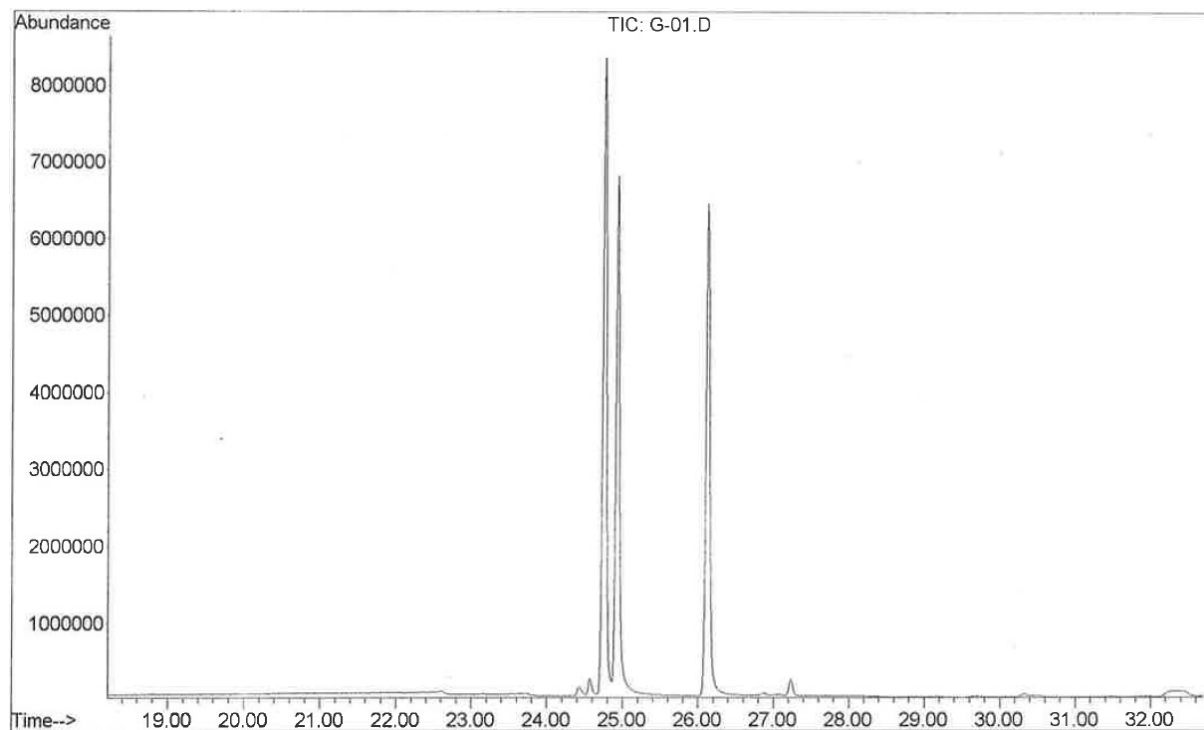
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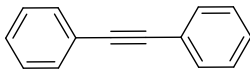
Molecular Weight: 102.18





Chemical Formula: $C_{10}H_{16}O_4$
Molecular Weight: 200.23

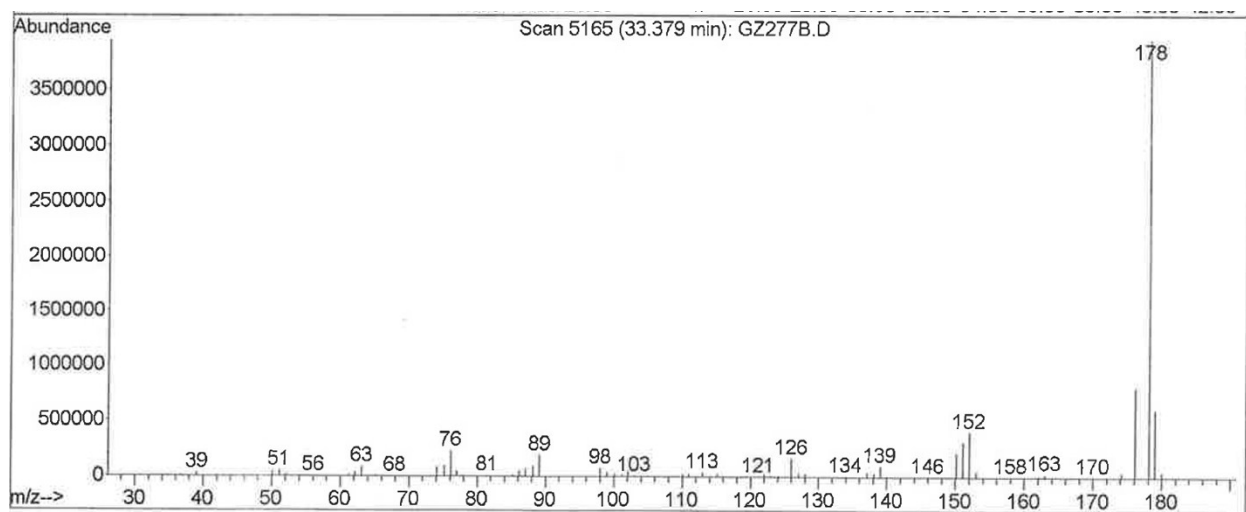
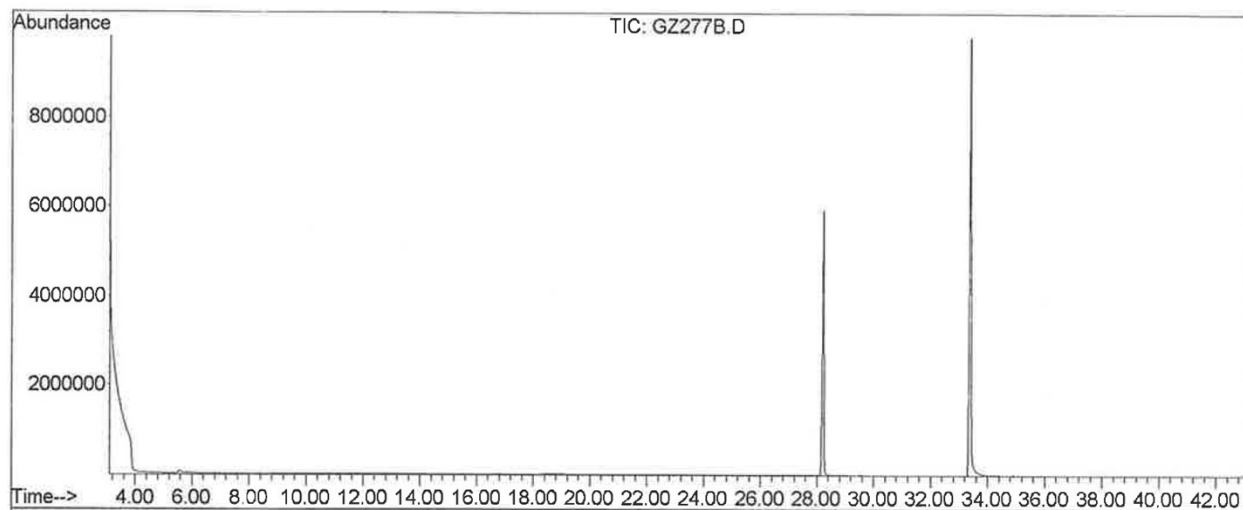


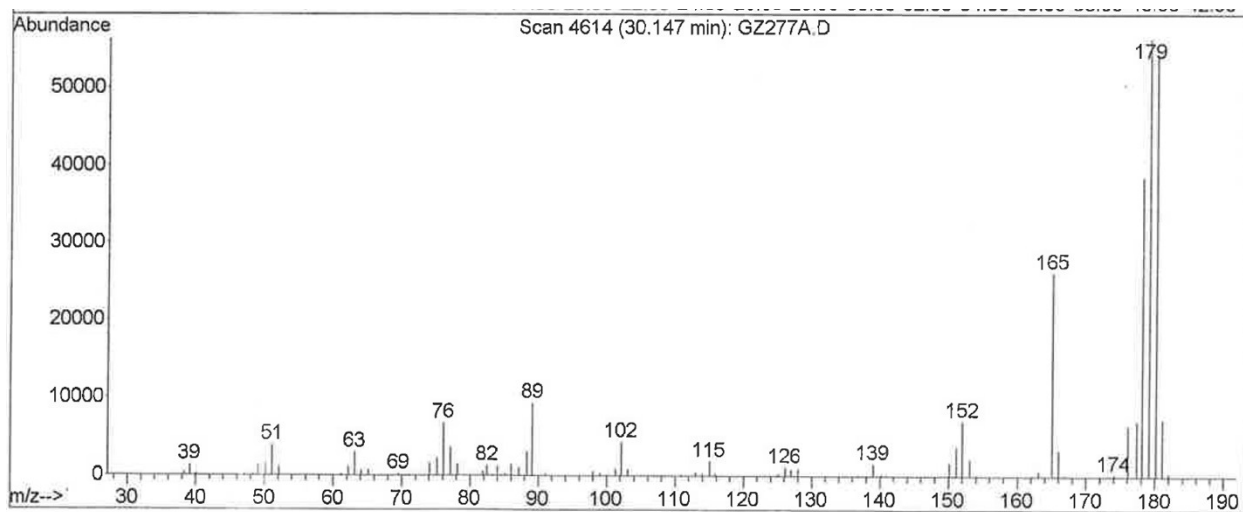
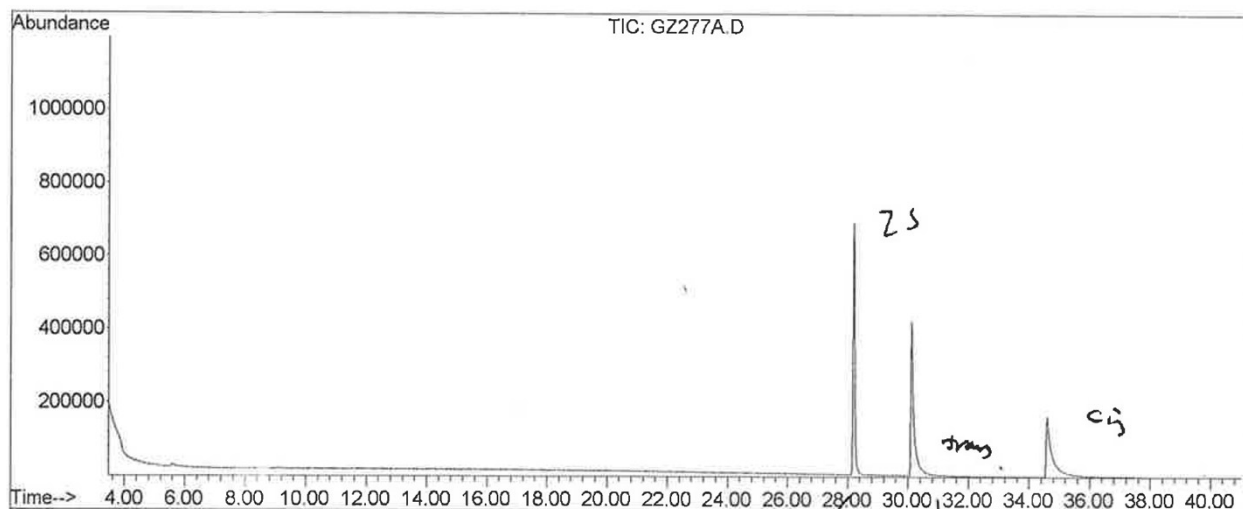
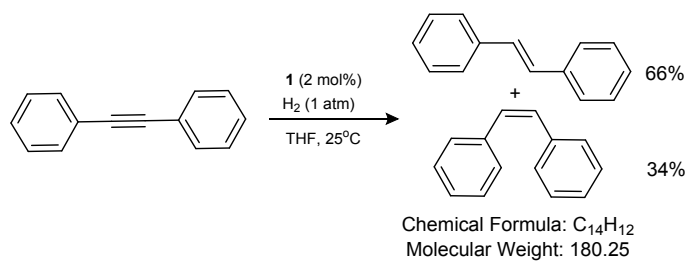


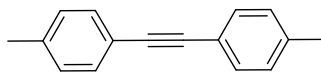
Chemical Formula: $C_{14}H_{10}$

Molecular Weight: 178.23

Hexamethylbenzene, $t_r = 28.2$ min,

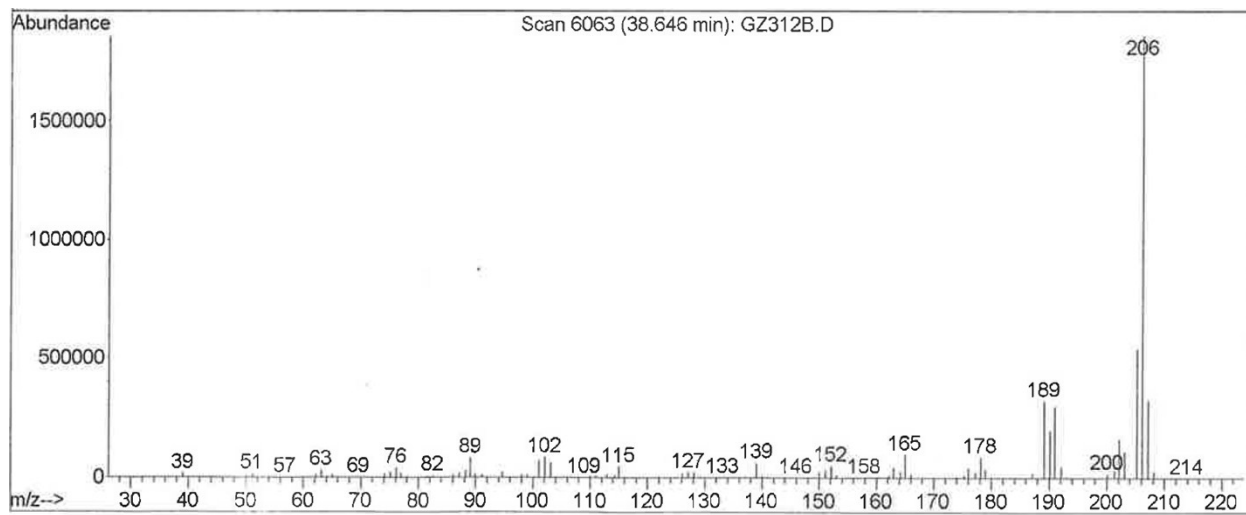
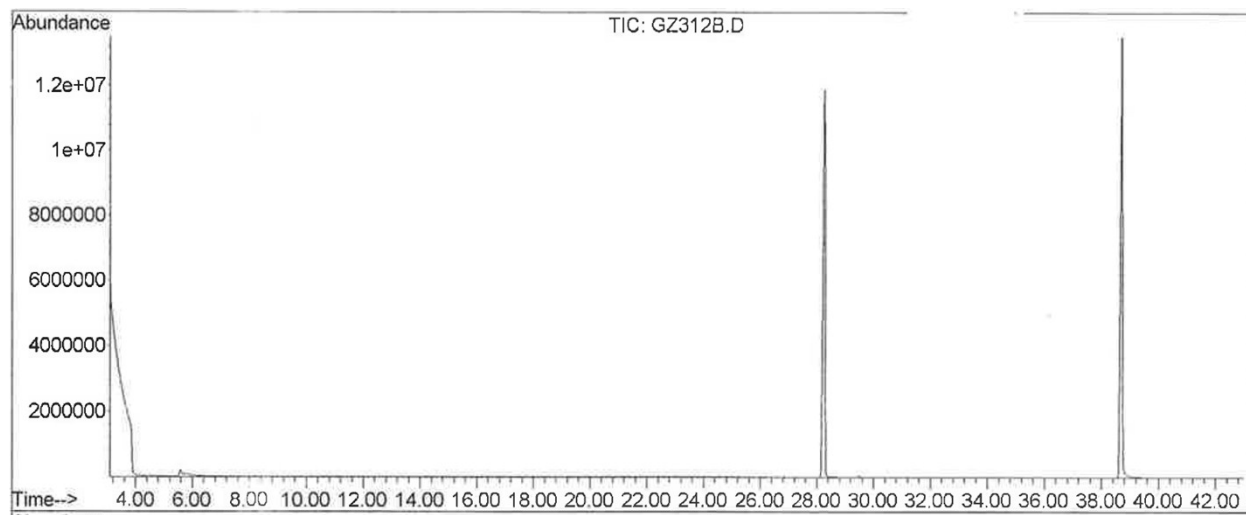


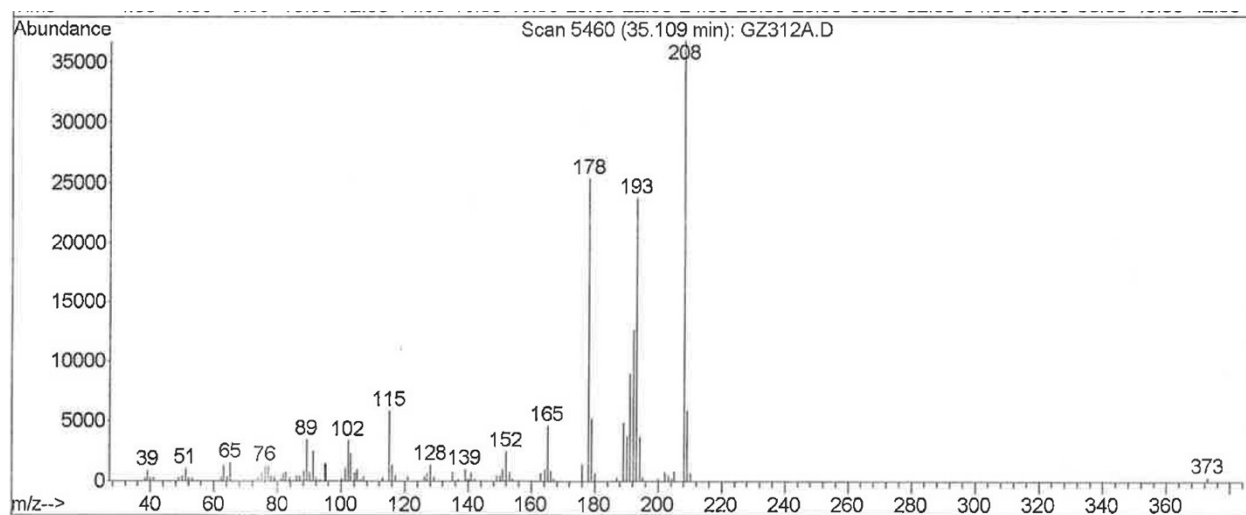
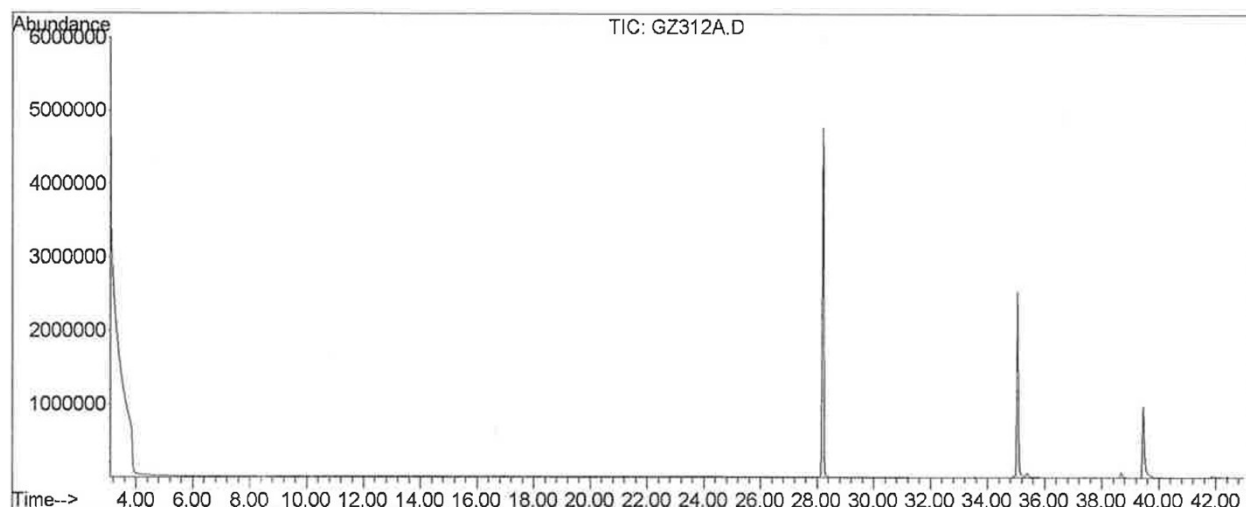
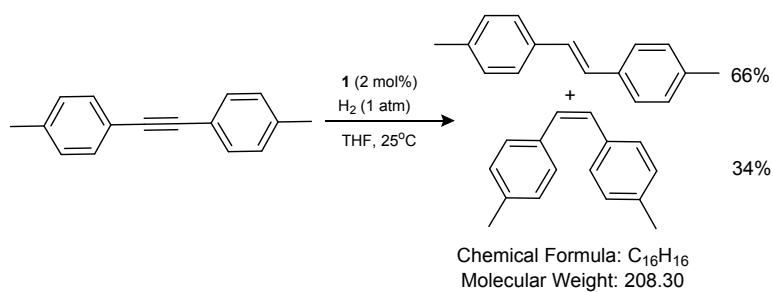




Chemical Formula: $C_{16}H_{14}$

Molecular Weight: 206.29





References:

1. Zhang, G.; Scott, B. L.; Hanson, S. K. *Angew. Chem. Int. Ed.* **2012**, *51*, 12102-12106.
2. Zhang, G.; Vasudevan, K. V.; Scott, B. L.; Hanson, S. K. *J. Am. Chem. Soc.* **2013**, *135*, 8668-8681.