SUPPORT INFORMATION

Continuous Flow Dynamic Kinetic Resolution

of *rac-1-Phenylethanol* using Single Packed-Bed Containing

Immobilized Cal-B Lipase and $VOSO_4$ as Racemization Catalyst.

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Summary

GC-FID Chromatograms

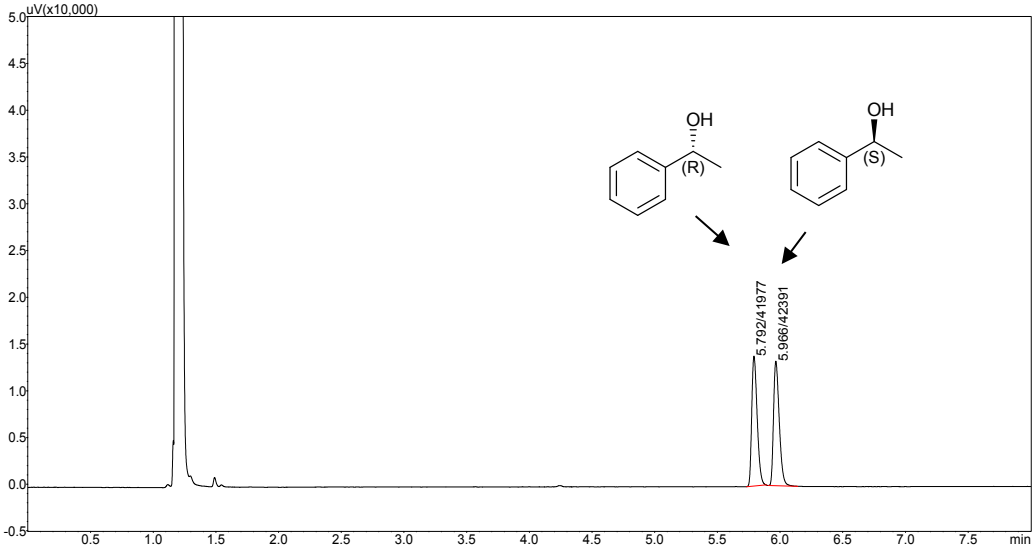


Figure S1. *Rac-1-Phenylethanol* (standard from Sigma-Aldrich)

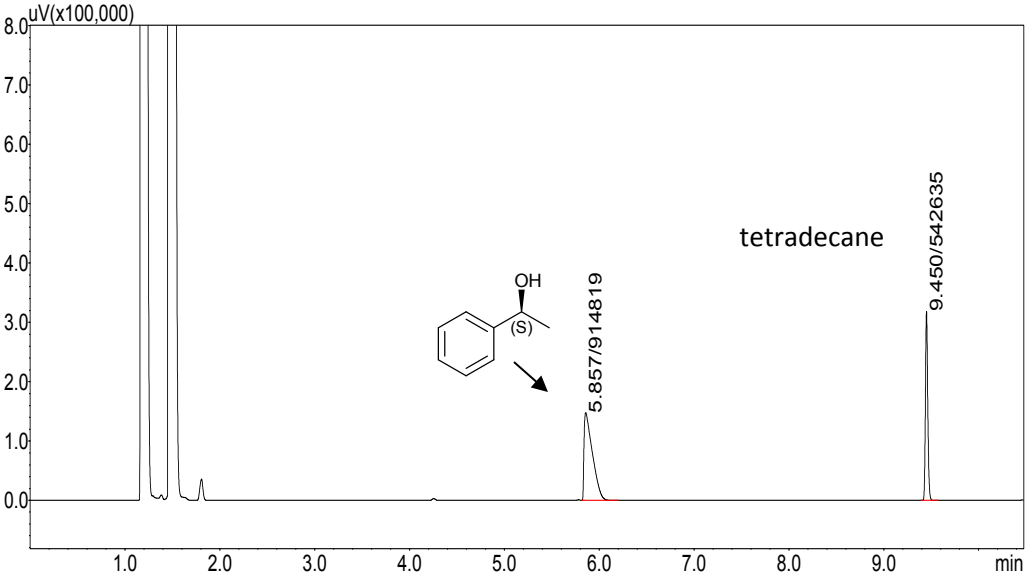


Figure S2. (*S*)-1-phenylethanol and tetradecane (standards from Sigma-Aldrich)

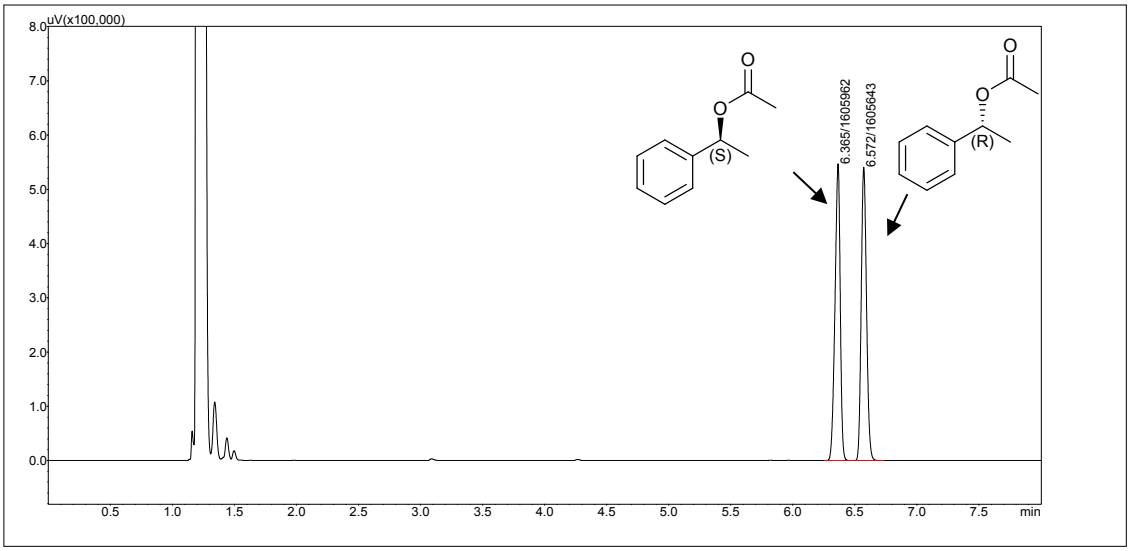


Figure S3. *Rac-1-Phenylethanol* acetate (synthesized from *rac-1-Phenylethanol* and acetic anhydride)

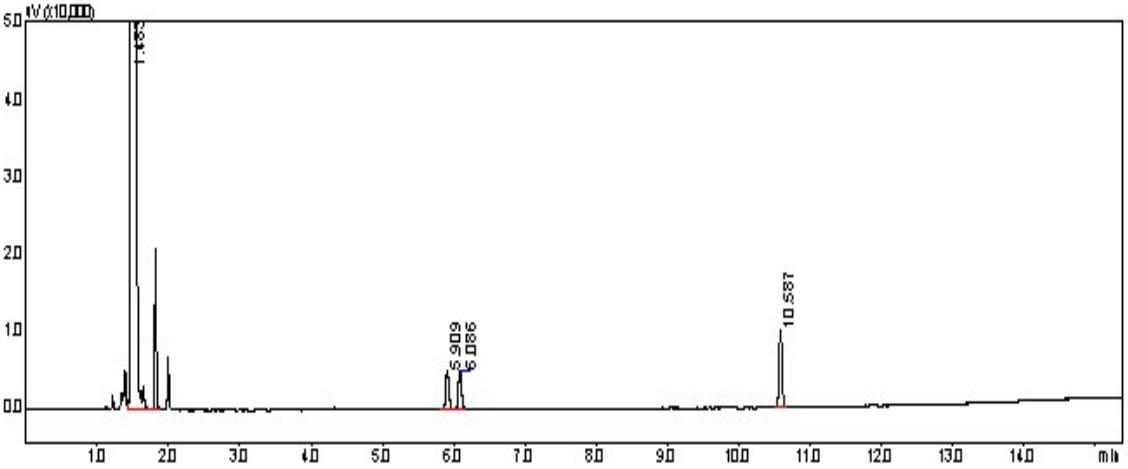
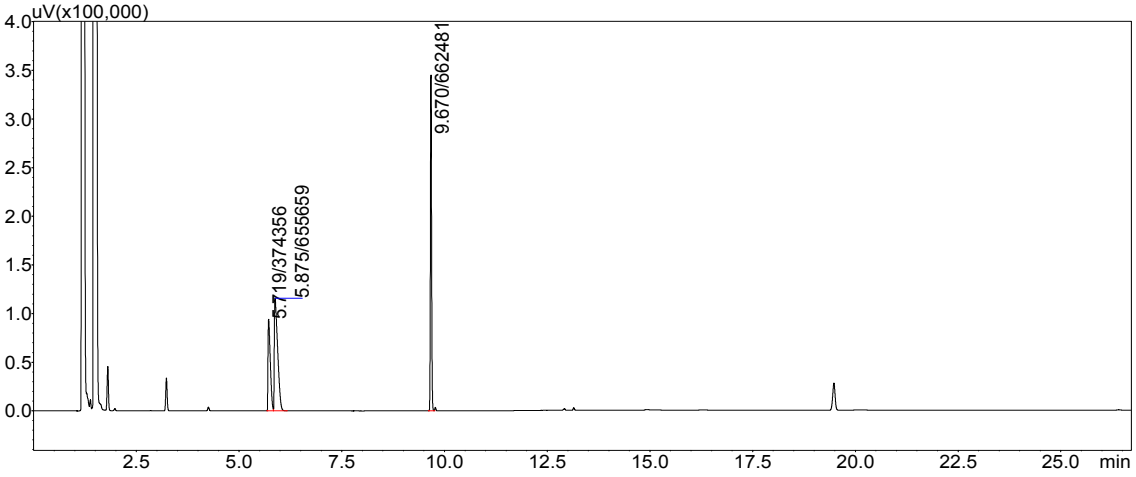


Figure S4. Racemization of (*S*)-1-phenylethanol catalyzed by $VOSO_4$ (5.1 mg. mL^{-1}) in toluene



at 70º C, 1.5h.

Figure S5. Racemization of (*S*)-1-phenylethanol catalyzed by $VOSO_4$ (5.1 mg. mL^{-1}) in toluene in the presence of vinyl acetate (0.05 M) at 70º C, 1.5h.

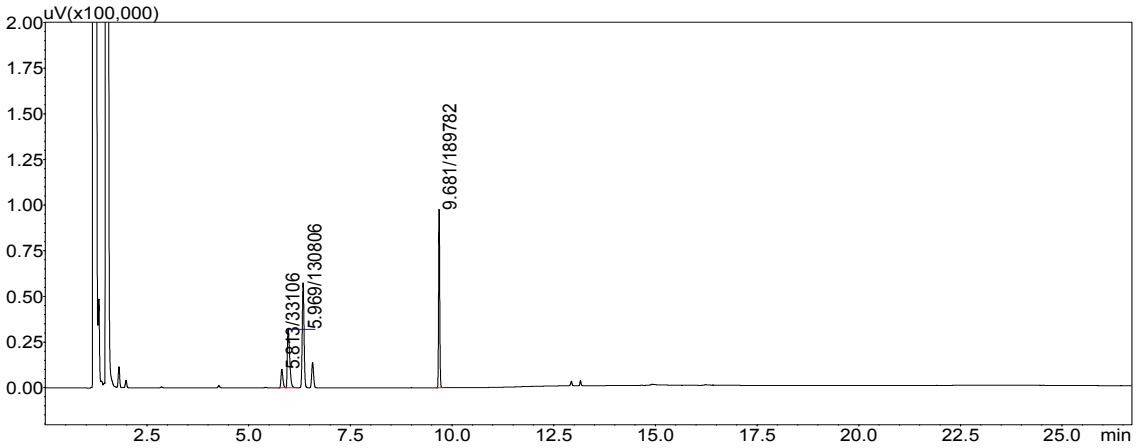


Figure S6. Racemization of (*S*)-1-phenylethanol catalyzed by $VOSO_4$ (5.1 mg. mL^{-1}) in toluene in the presence of isopropenyl acetate (0.1 M) at 70º C, 1.5h

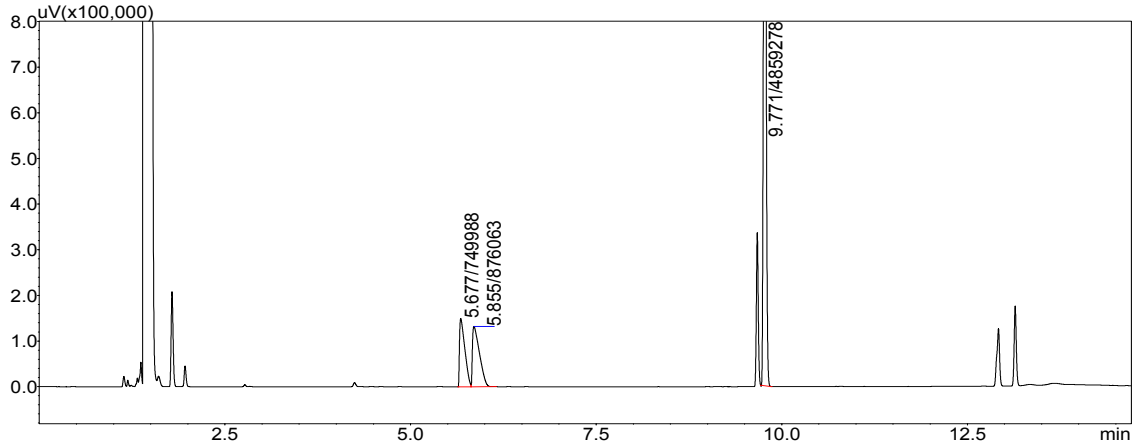


Figure S7. Racemization of (*S*)-1-phenylethanol catalyzed by $VOSO_4$ (5.1 mg. mL^{-1}) in toluene in the presence of vinyl decanoate (0.1 M) at 70º C, 1.5h.

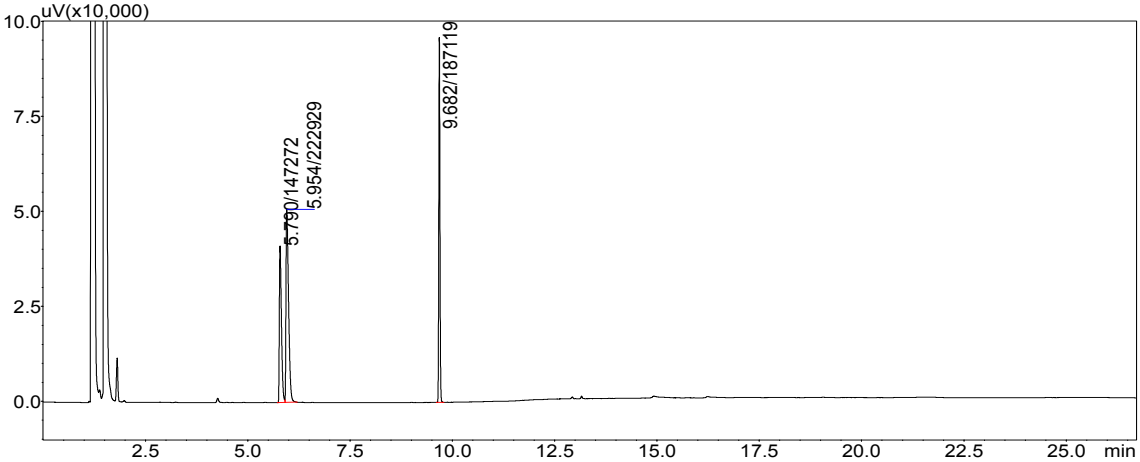


Figure S8. Racemization of (*S*)-1-phenylethanol catalyzed by $VOSO_4$ (5.1 mg. mL^{-1}) in toluene in the presence of ethyl acetate (0.1 M) at 70º C, 1.5h

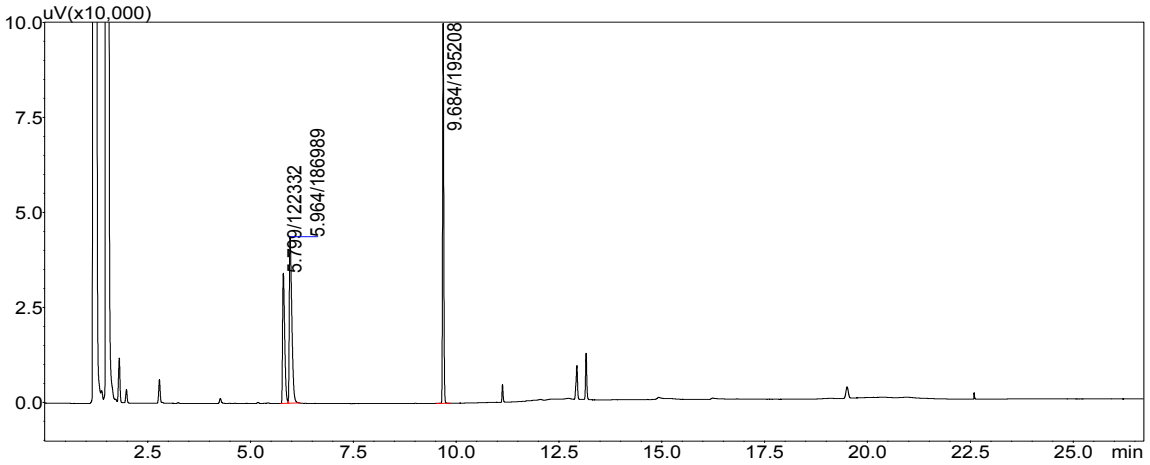
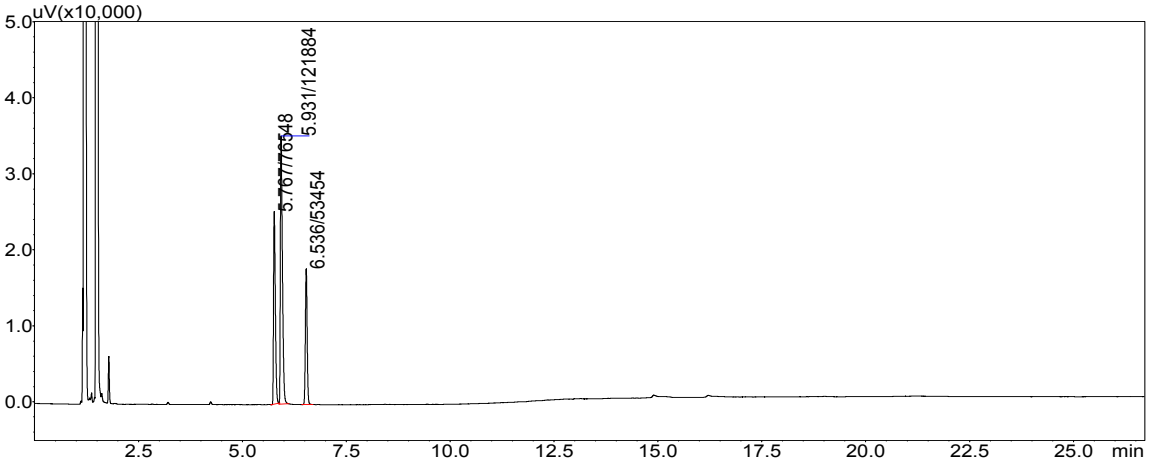


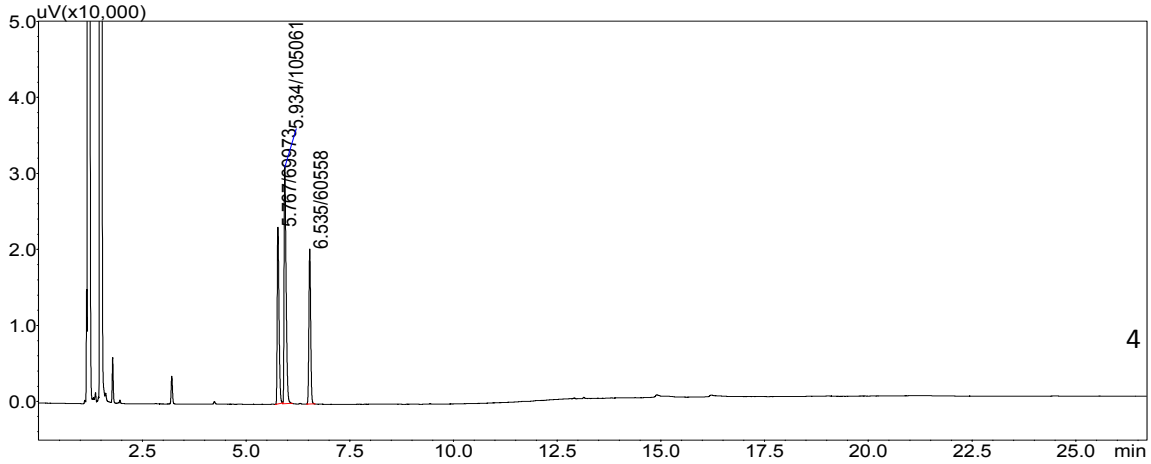
Figure S9. Racemization of (*S*)-1-phenylethanol catalyzed by $VOSO_4$ (5.1 mg. mL^{-1}) in toluene



in the presence of methyl 2-methoxyacetate (0.1 M) at 70º C, 1.5h

Figure S10. Continuous flow DKR of *rac-1-Phenylethanol* catalyzed by immobilized CAL-B and $VOSO_4$ with ethyl acetate as acyl donor at residence time of 5.2 min and after operation time of 120 min.

Figure S11. Continuous flow DKR of *rac-1-Phenylethanol* catalyzed by immobilized CAL-B and $VOSO_4$ with ethyl acetate as acyl donor at residence time of 7.8 min and after operation time of 120 min



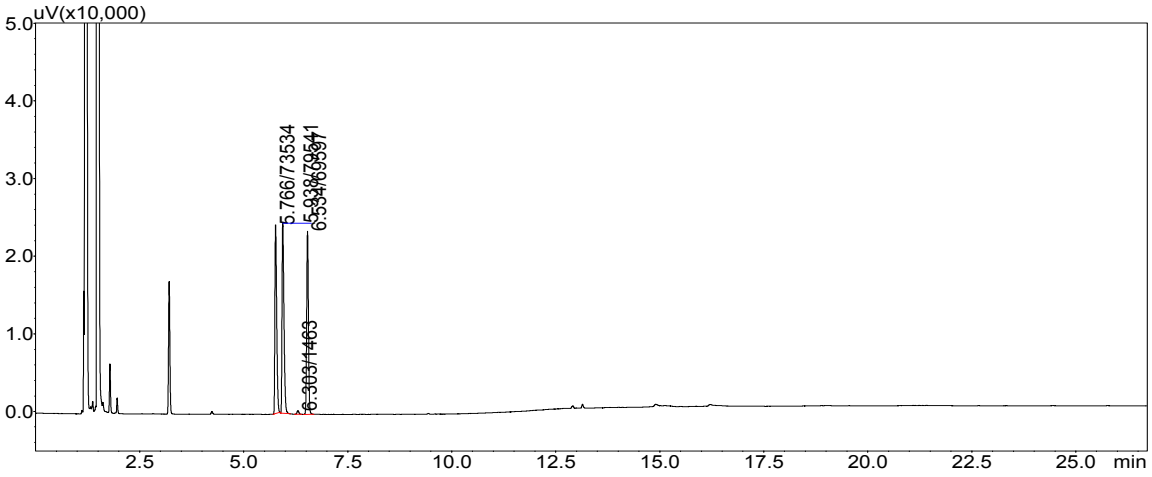


Figure S12. Continuous flow DKR of *rac-1-Phenylethanol* catalyzed by immobilized CAL-B and $VOSO_4$ with ethyl acetate as acyl donor at residence time of 15.6 min and after operation time of 120 min.

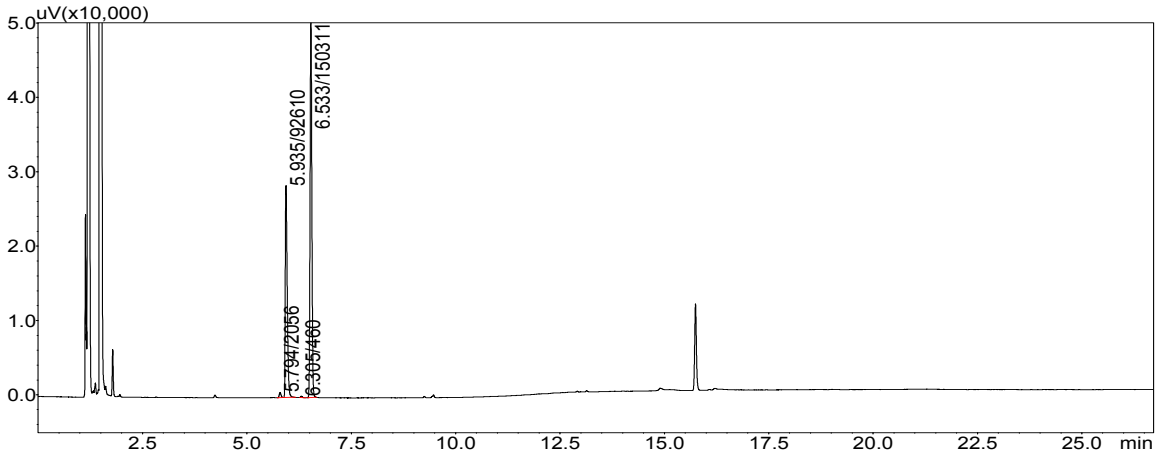
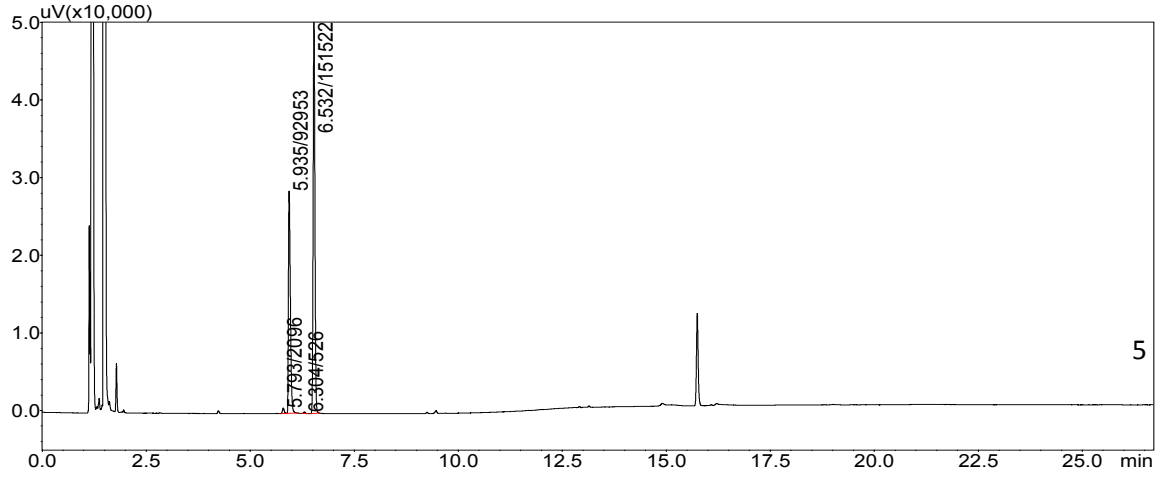


Figure S13. Continuous flow DKR of *rac-1-Phenylethanol* catalyzed by immobilized CAL-B and $VOSO_4$ with vinyl acetate as acyl donor at residence time of 5.2 min and after operation time of 120 min

Figure S14. Continuous flow DKR of *rac-1-Phenylethanol* catalyzed by immobilized CAL-B and $VOSO_4$ with vinyl acetate as acyl donor at residence time of 7.8 min and after operation time of 120 min.



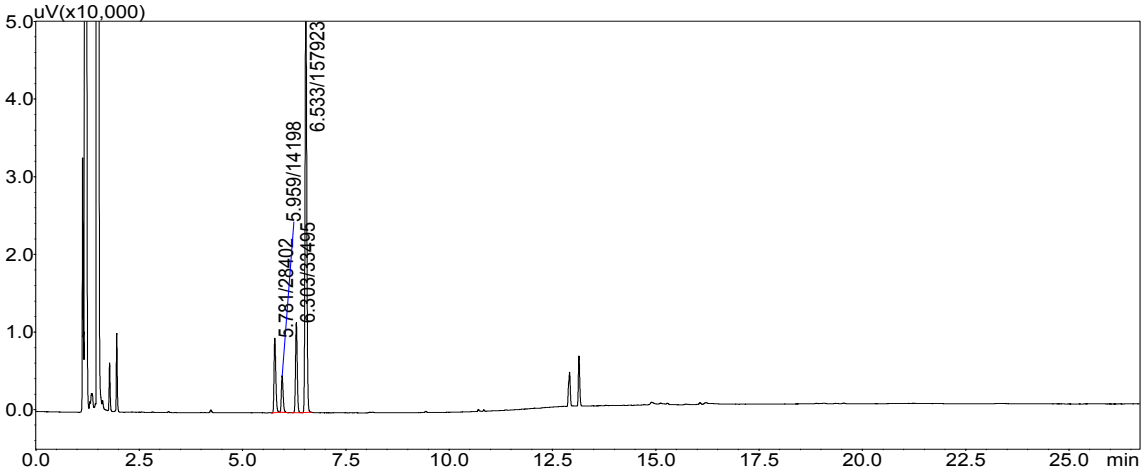
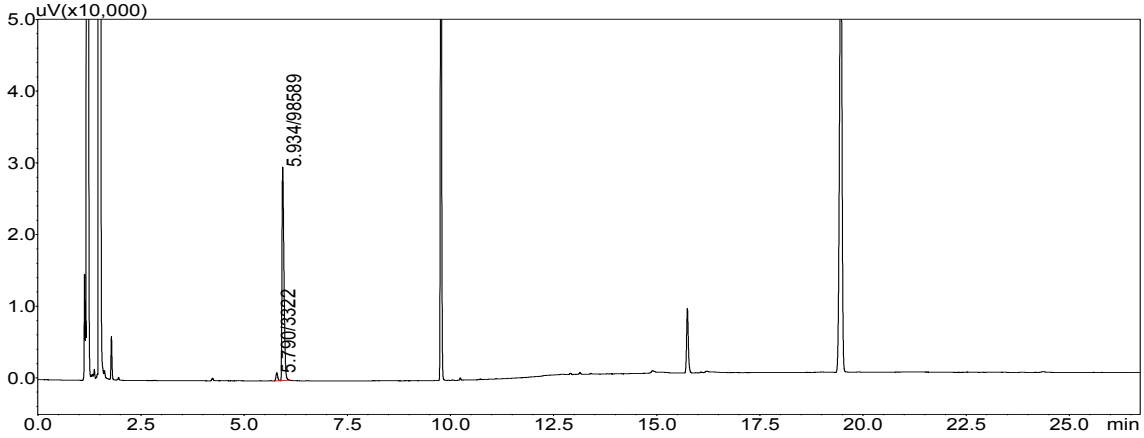


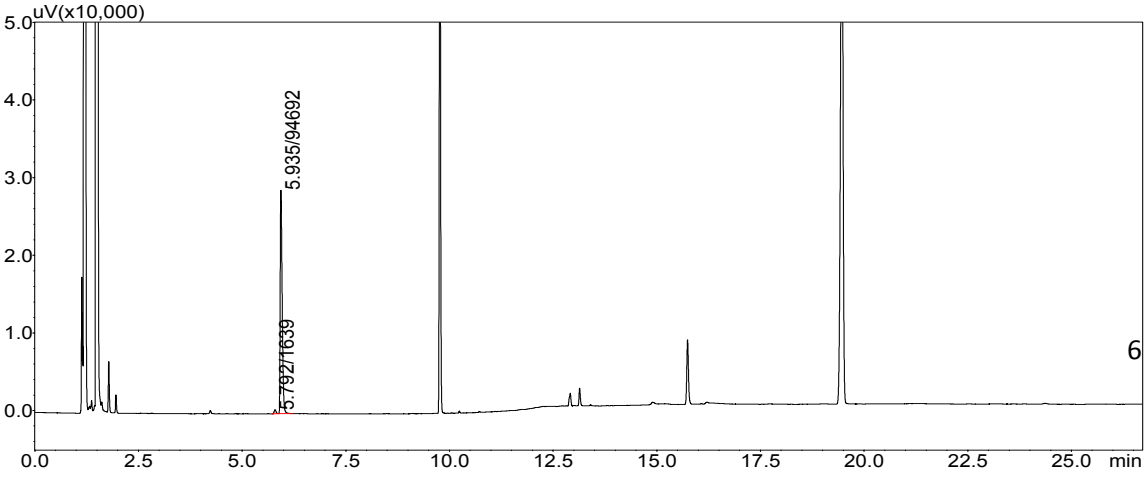
Figure S15. Continuous flow DKR of *rac-1-Phenylethanol* catalyzed by immobilized CAL-B and $VOSO_4$ with vinyl acetate as acyl donor at residence time of 15.6 min and after operation



time of 120 min.

Figure S16. Continuous flow DKR of *rac-1-Phenylethanol* catalyzed by immobilized CAL-B and $VOSO_4$ with vinyl decanoate as acyl donor at residence time of 5.2 min and after operation time of 120 min.

Figure S17. Continuous flow DKR of *rac-1-Phenylethanol* catalyzed by immobilized CAL-B and $VOSO_4$ with vinyl decanoate as acyl donor at residence time of 7.8 min and after operation time of 120 min.



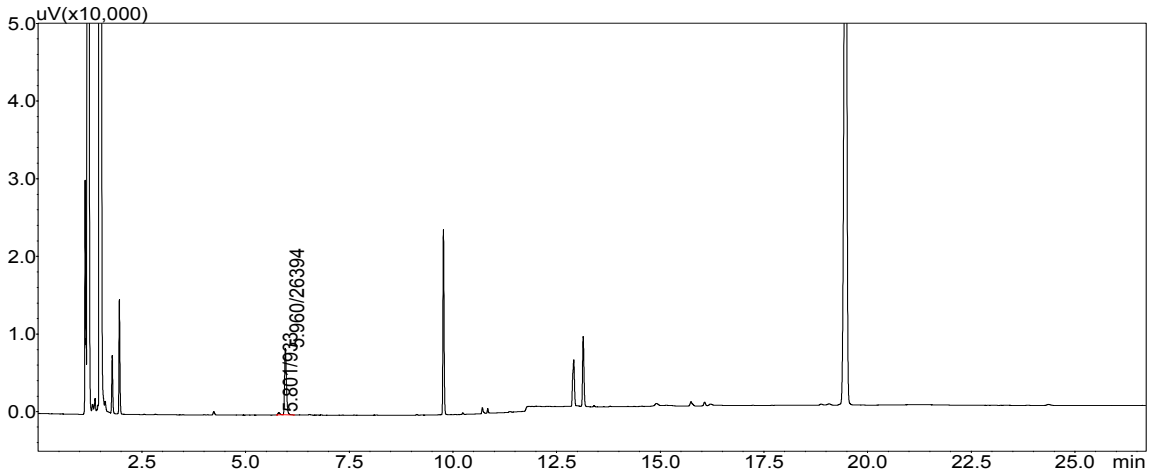


Figure S18. Continuous flow DKR of *rac-1-Phenylethanol* catalyzed by immobilized CAL-B and $VOSO_4$ with vinyl decanoate as acyl donor at residence time of 15.6 min and after operation time of 120 min.

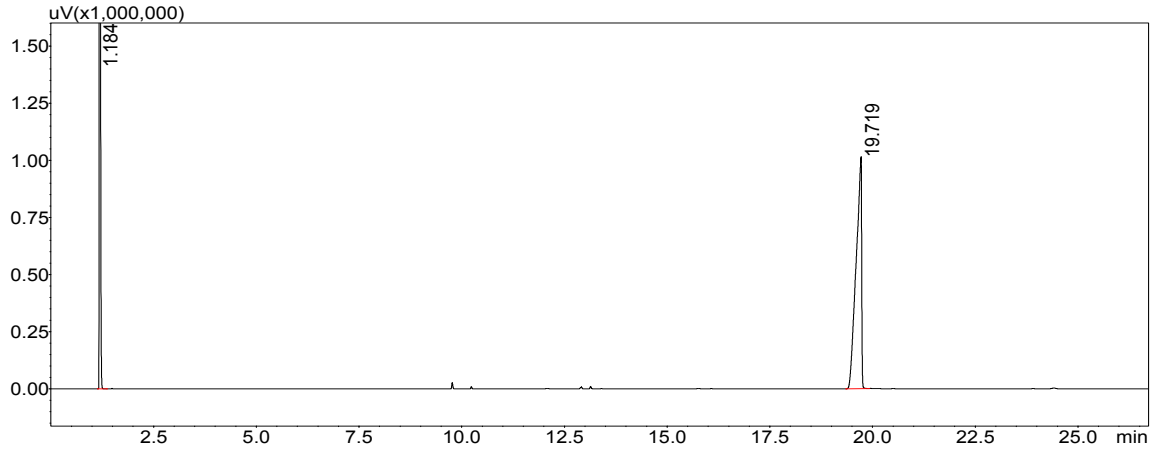
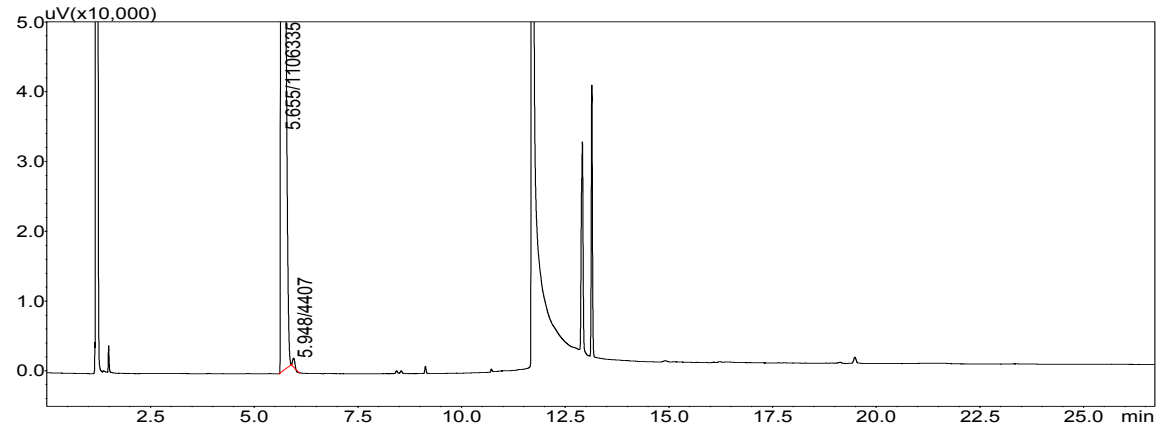


Figure S19. Purified (*R*)-1-phenylethyl decanoate obtained from continuous flow DKR of *rac-1-Phenylethanol* catalyzed by immobilized CAL-B and $VOSO_4$ with vinyl decanoate (0. 1 M) as



acyl donor at residence time of 5.2 min.

Figure S20. Hydrolysis of (*R*)-1-phenylethyl decanoate obtained from DKR of rac-1-Phenylethanol (0.1 M) catalyzed by immobilized CAL-B and $VOSO_4$ with vinyl decanoate as acyl donor (0.1 M) at residence time of 5.2 min.

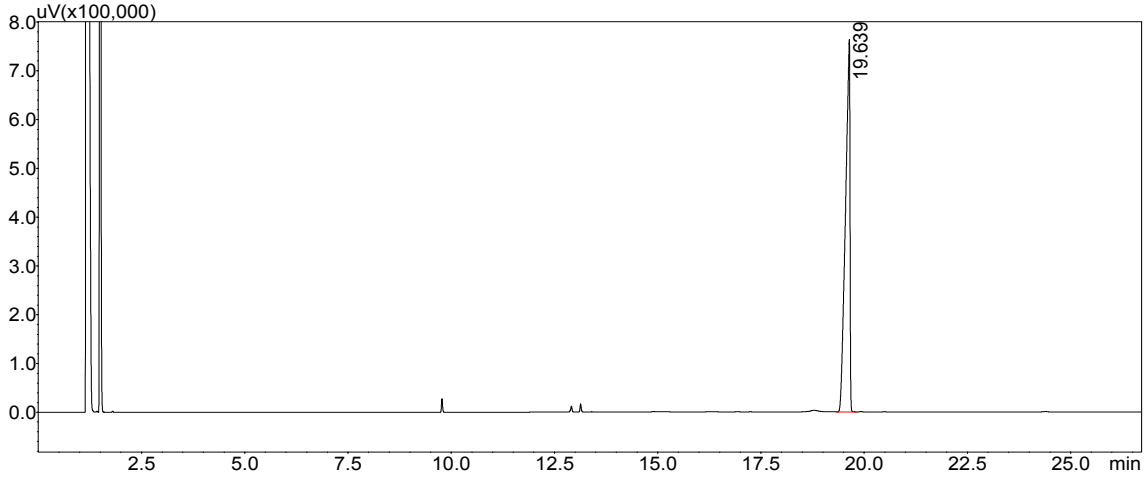


Figure S21. Purified (*R*)-1-phenylethyl decanoate obtained from continuous flow DKR of *rac-1-Phenylethanol* catalyzed by immobilized CAL-B and $VOSO_4$ with vinyl decanoate (0. 15 M) as acyl donor at residence time of 7.8 min.

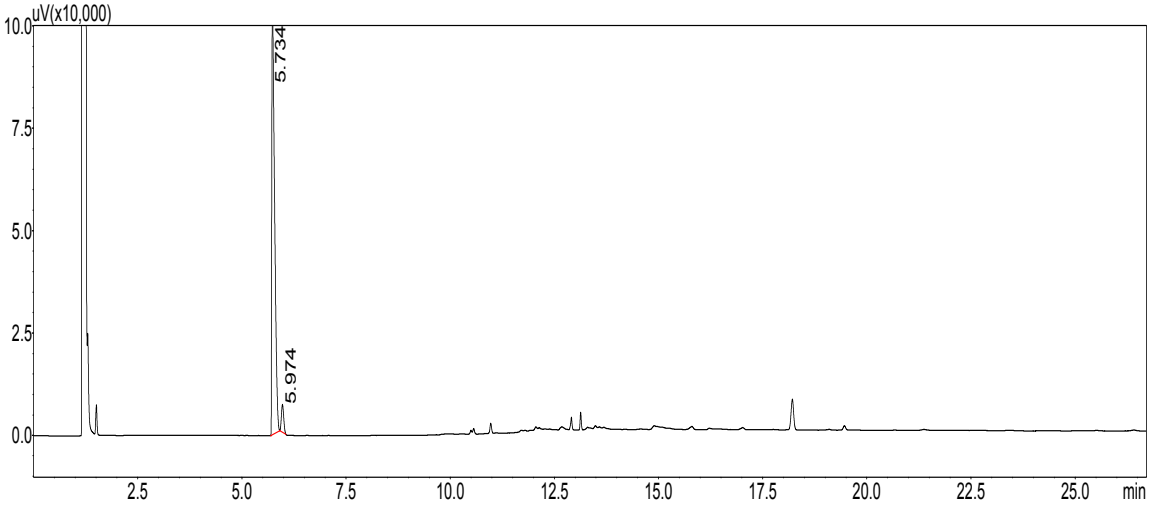


Figure S22. Hydrolysis of (*R*)-1-phenylethyl decanoate obtained from DKR of *rac-1-Phenylethanol* (0.1 M) catalyzed by immobilized CAL-B and $VOSO_4$ with vinyl decanoate as acyl donor (0.5 M) at residence time of 7.8 min.

GC-MS Chromatograms and mass spectra

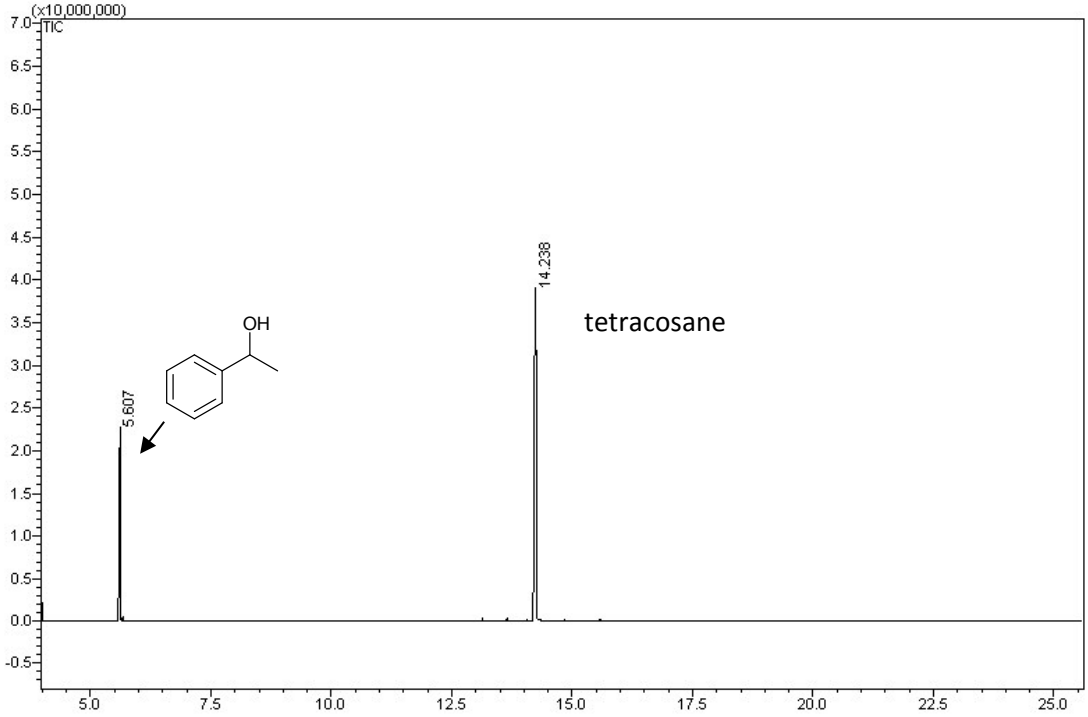


Figure S23. (*S*)-1-phenylethanol and tetracosane.

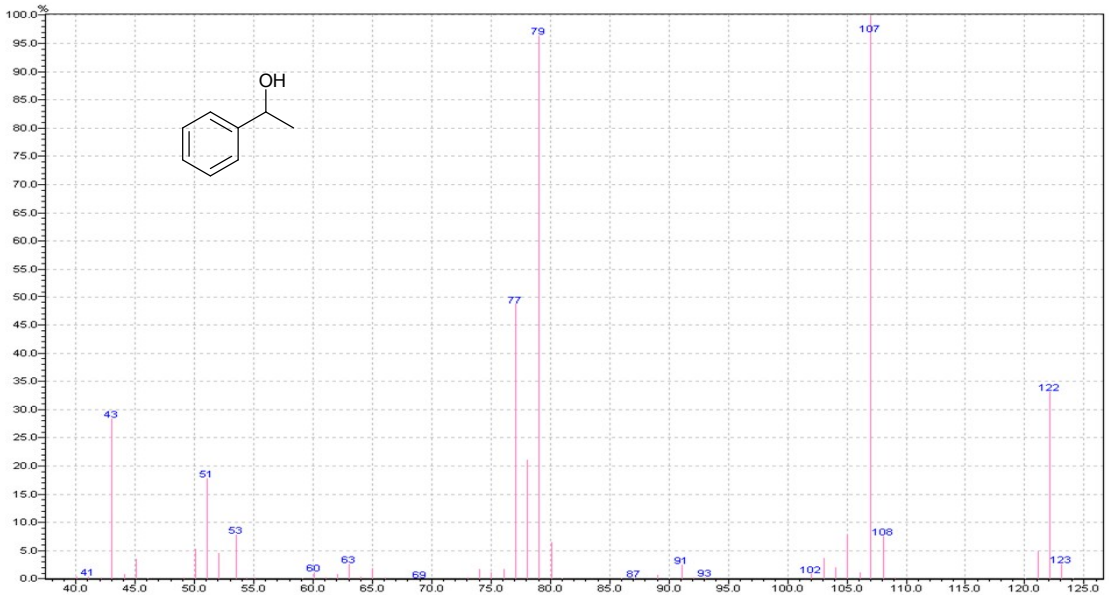


Figure S24. Mass spectrum relative to peak at 5.607 min.

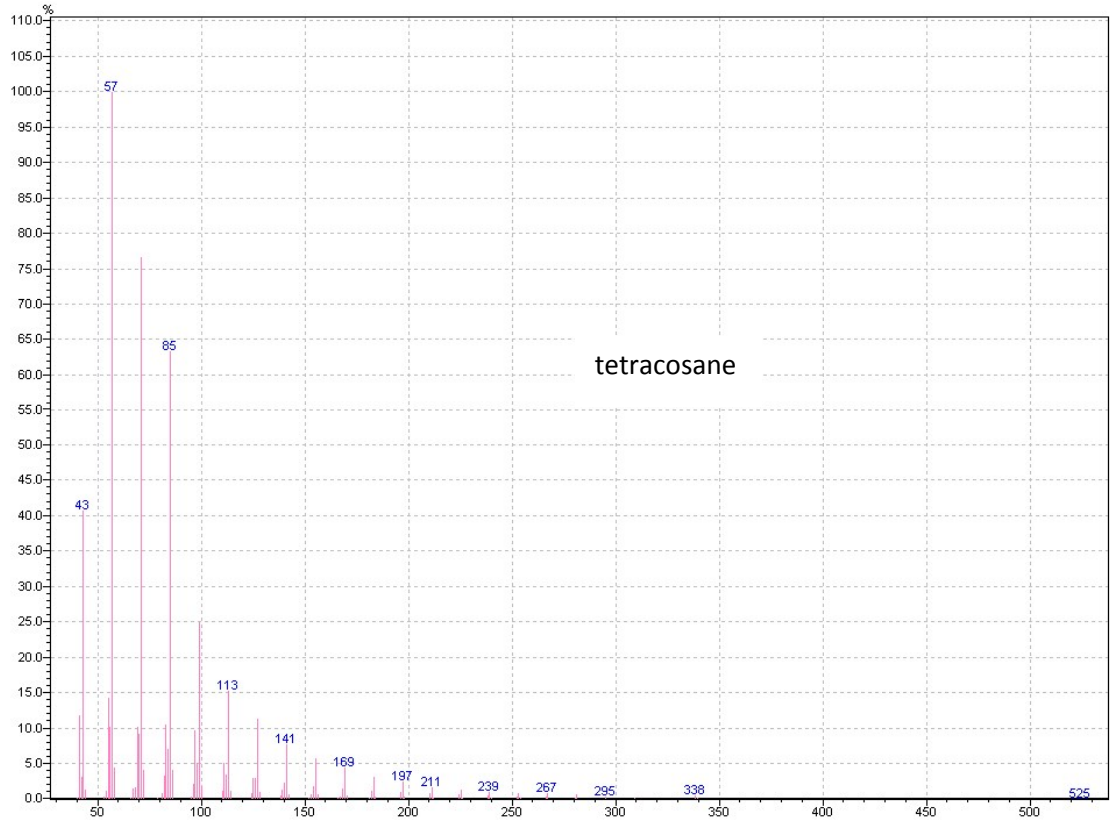


Figure S25. Mass spectrum relative to peak at 14.238 min

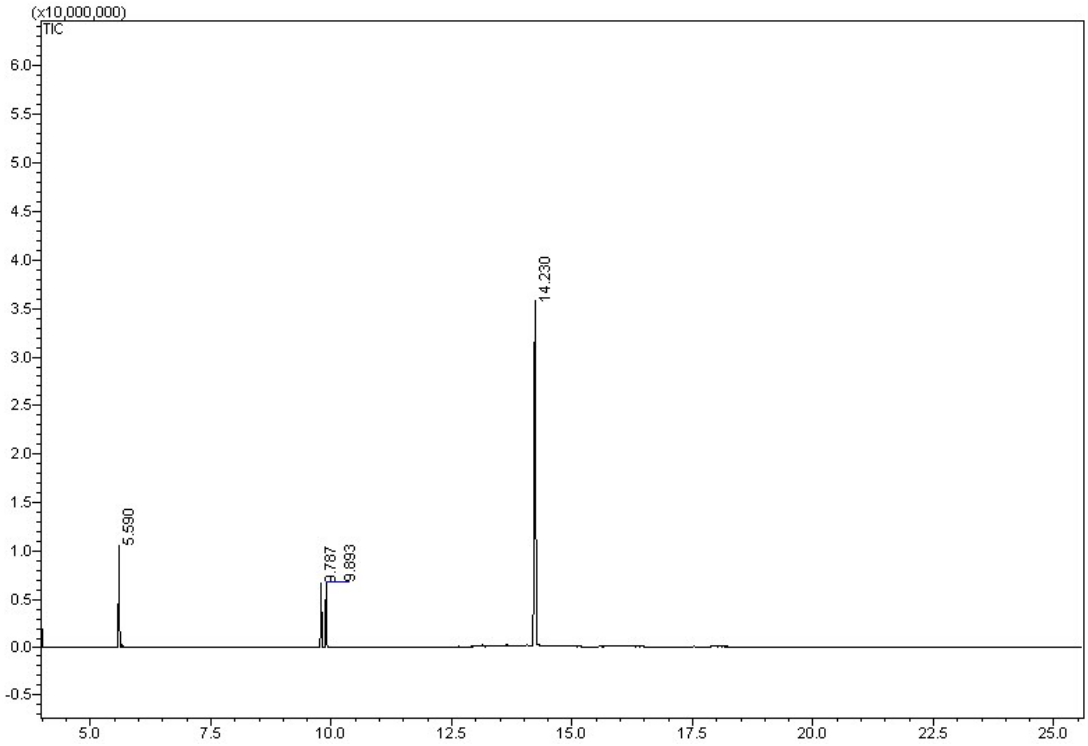


Figure S26. Racemization of (*S*)-1-phenylethanol catalyzed by $VOSO_4$ (10.3 mg. mL^{-1}) in toluene at 70º C, 1.5h.

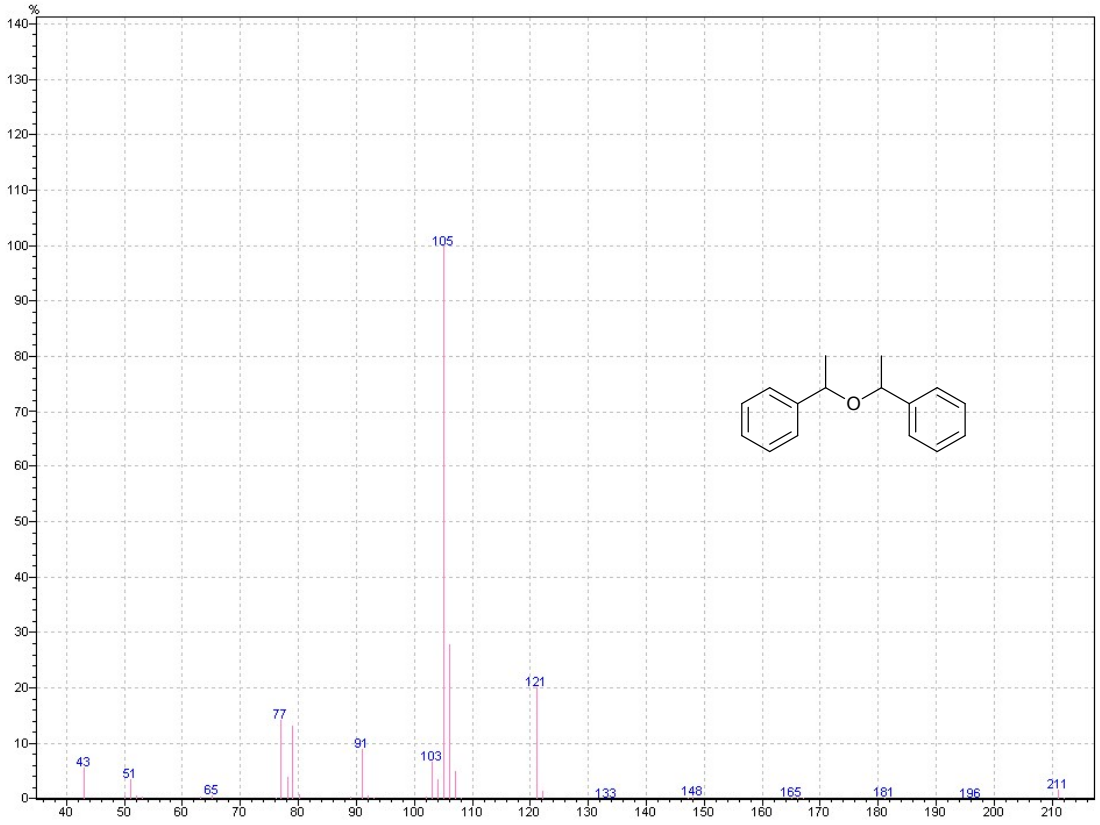


Figure S27. Mass spectrum relative to peak at 9.787 min.

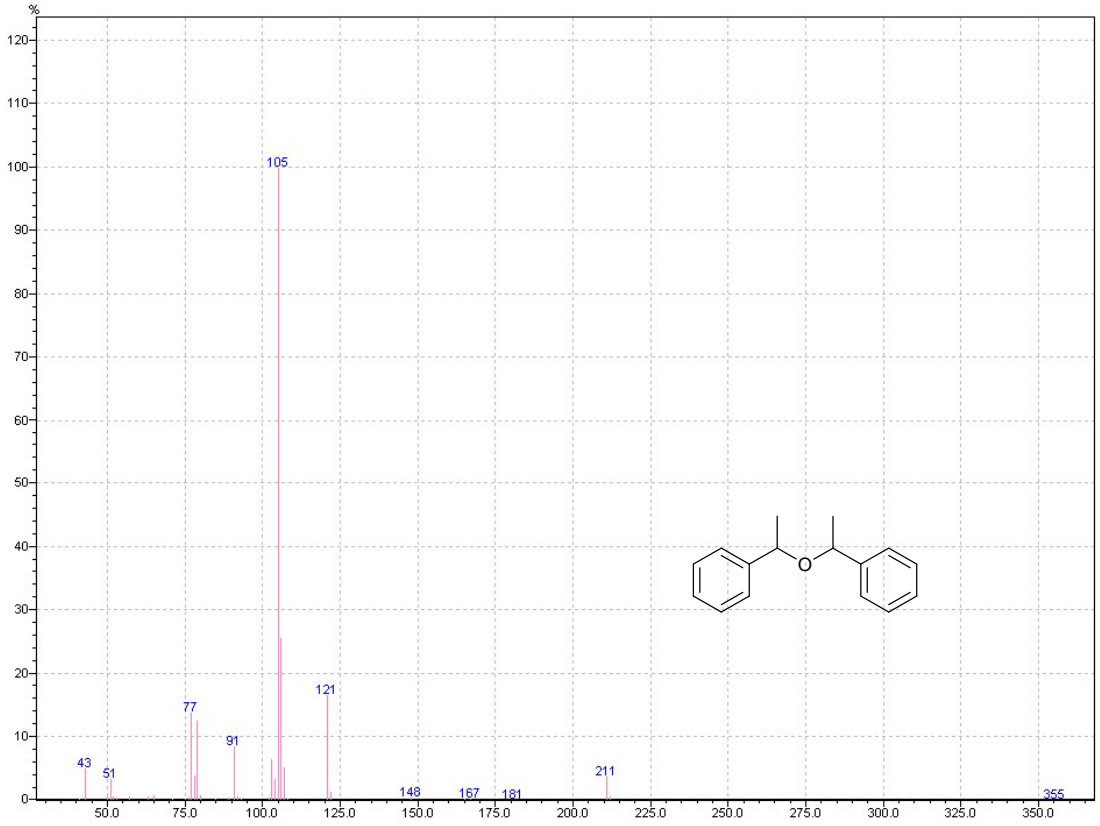


Figure S28. Mass spectrum relative to peak at 9.893 min.

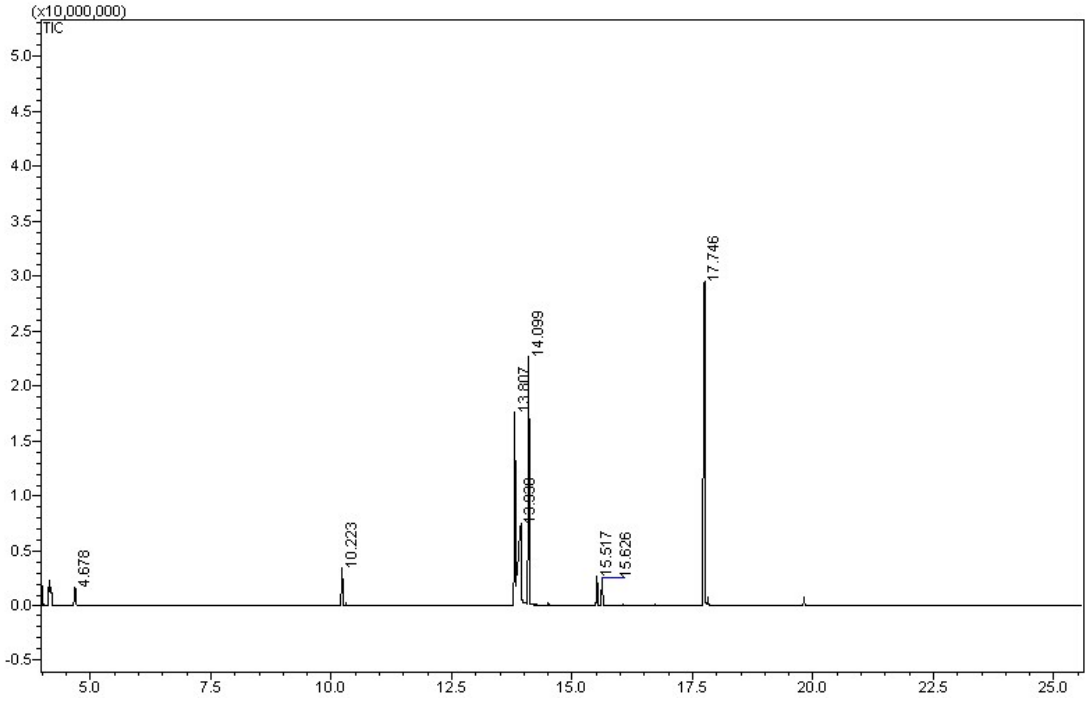


Figure S29. Semi-continuous DKR of *rac-1-Phenylethanol* with vinyl decanoate catalyzed by CAL-B and $VOSO_4$ in a loop-like reactor (3h)

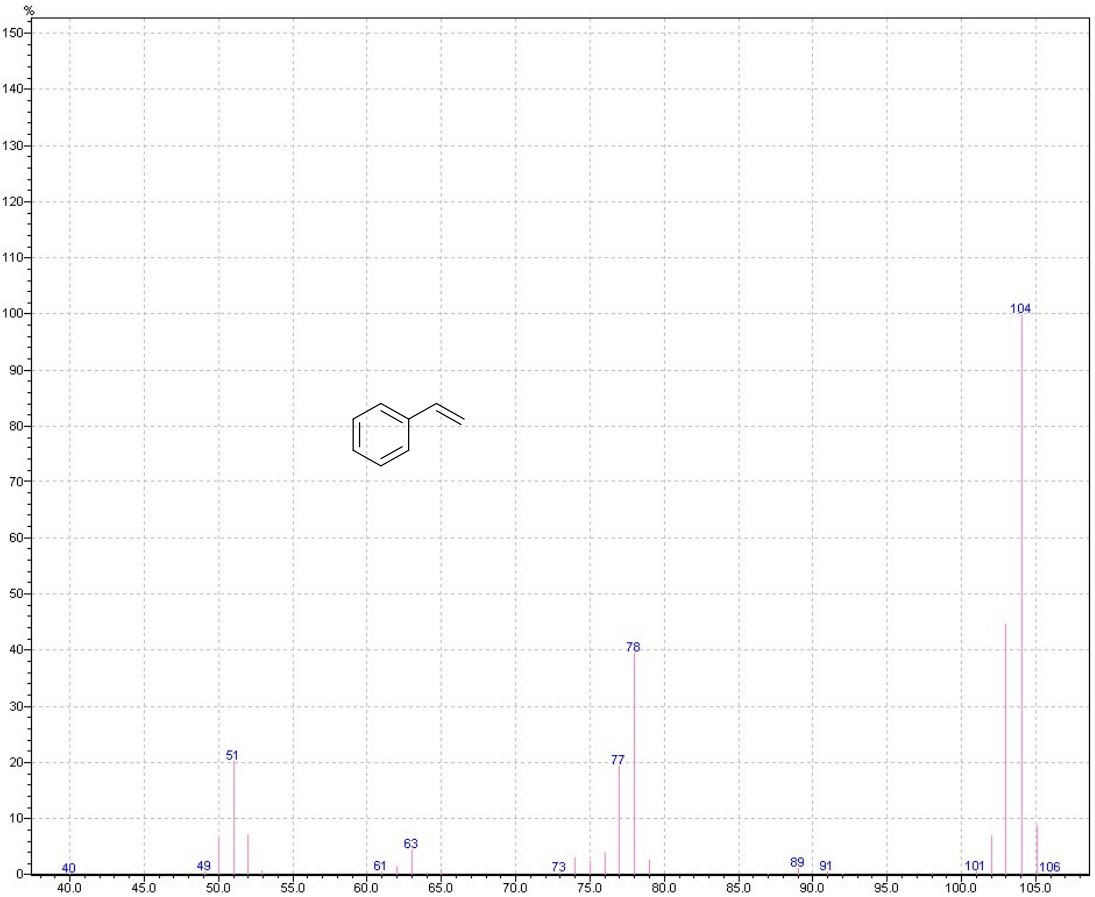


Figure S30. Mass spectrum relative to peak at 4.678 min.

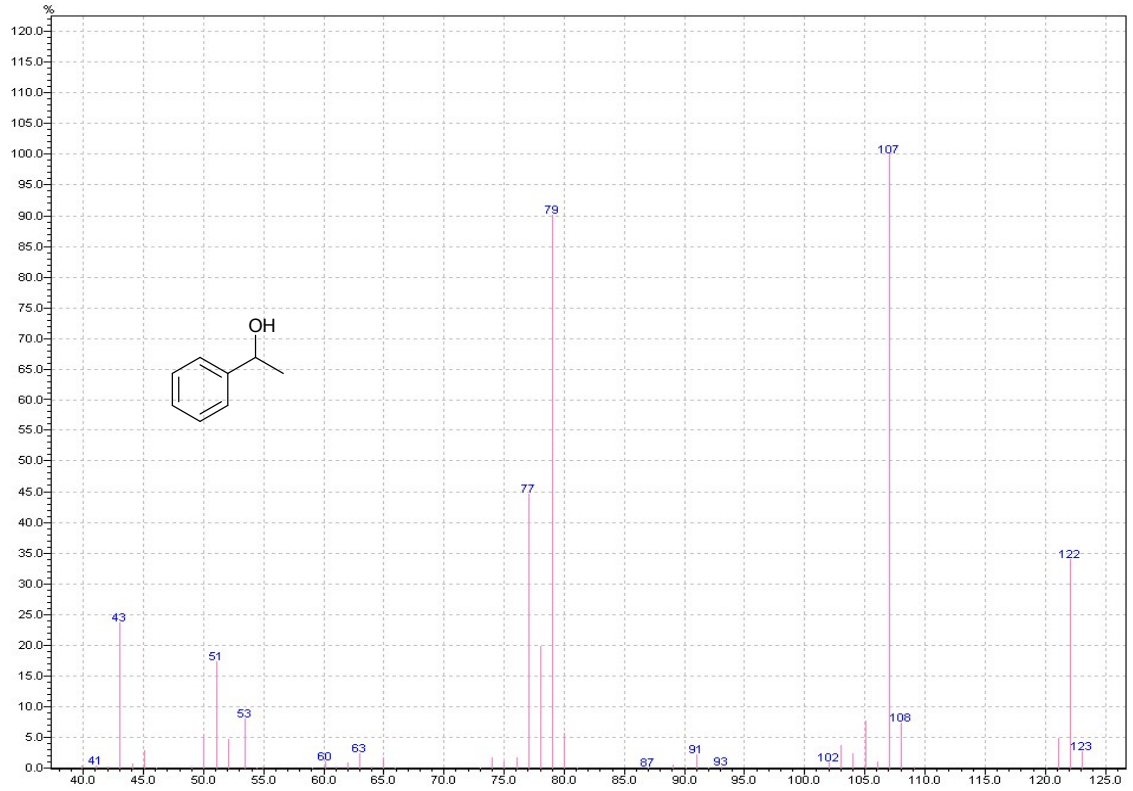


Figure S31. Mass spectrum relative to peak at 10.223 min.

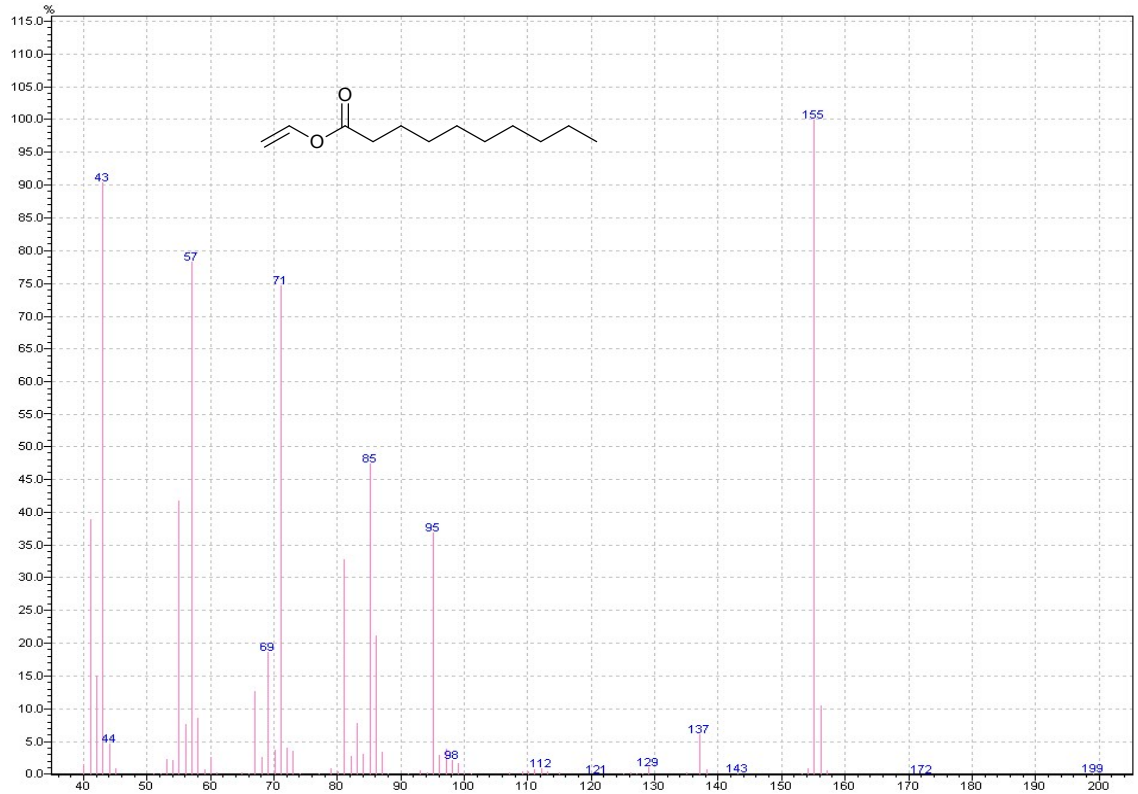


Figure S32. Mass spectrum relative to peak at 13.807 min.

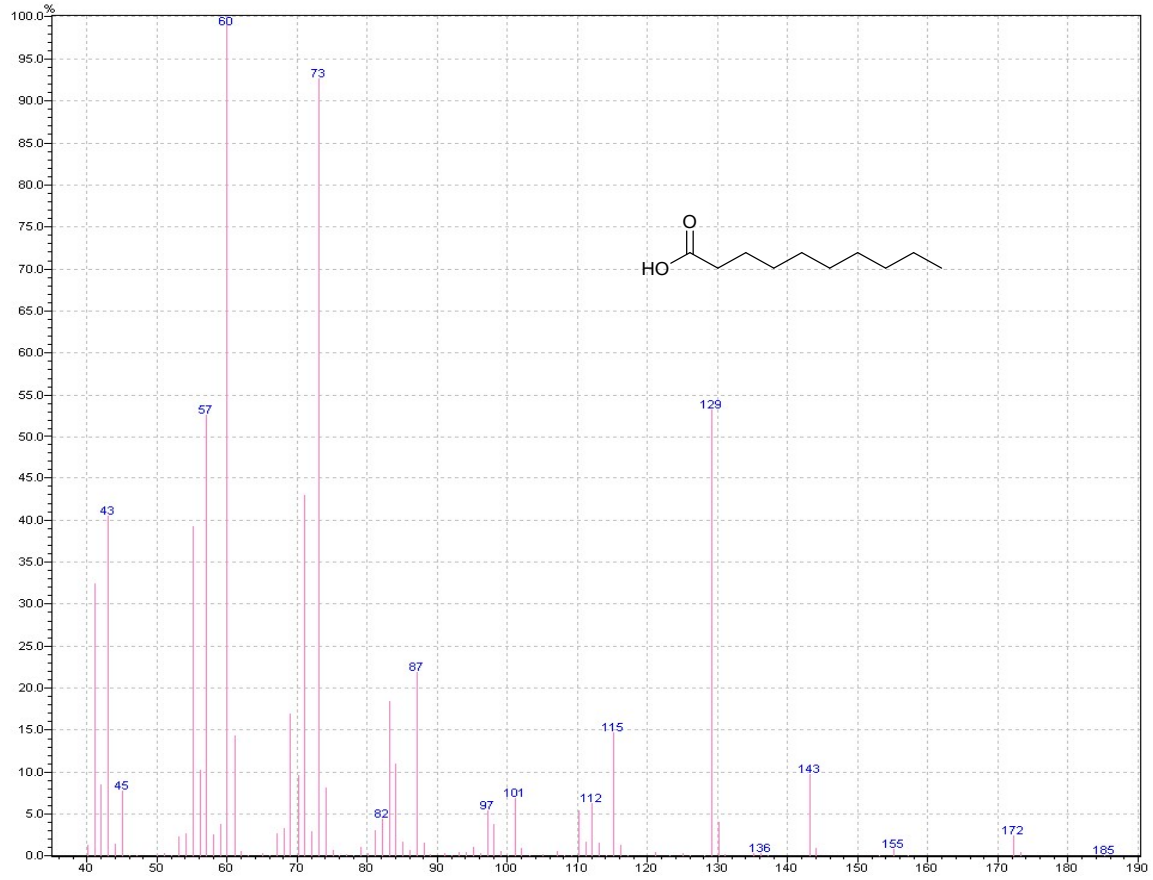


Figure S33. Mass spectrum relative to peak at 13.930 min.

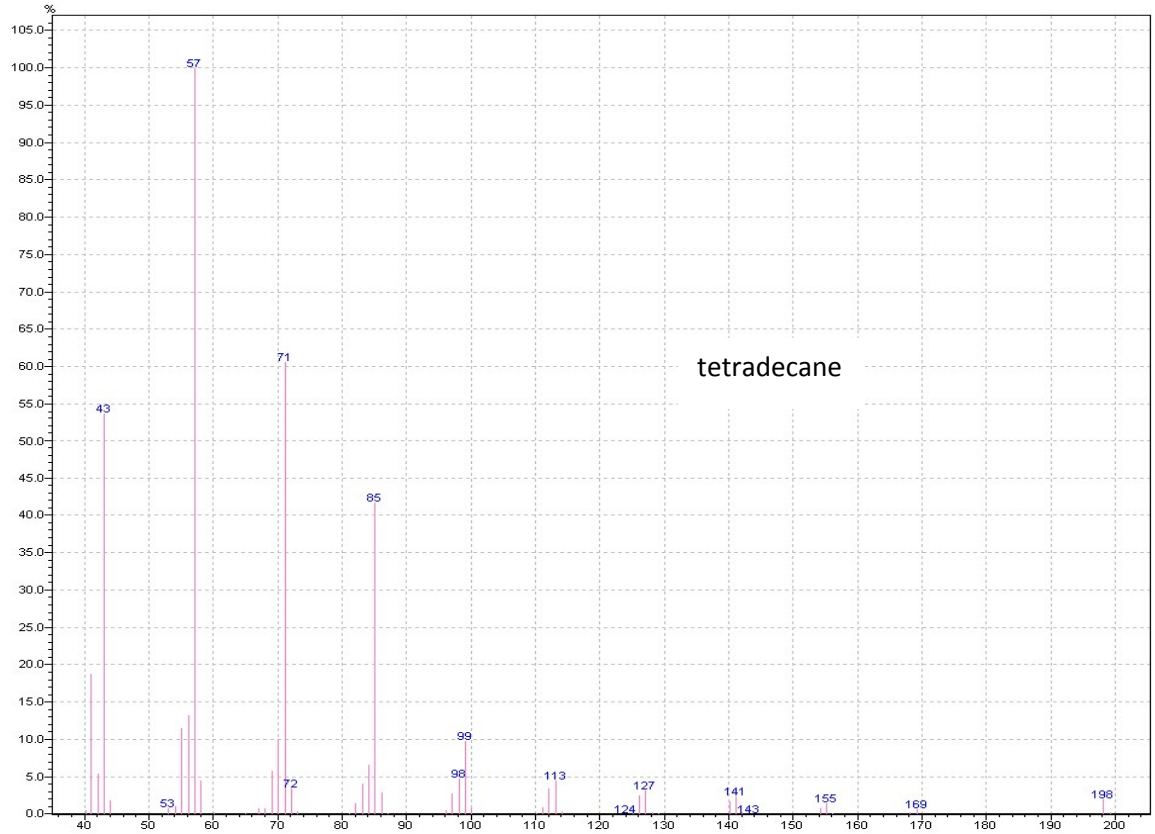


Figure S34. Mass spectrum relative to peak at 14.099 min.

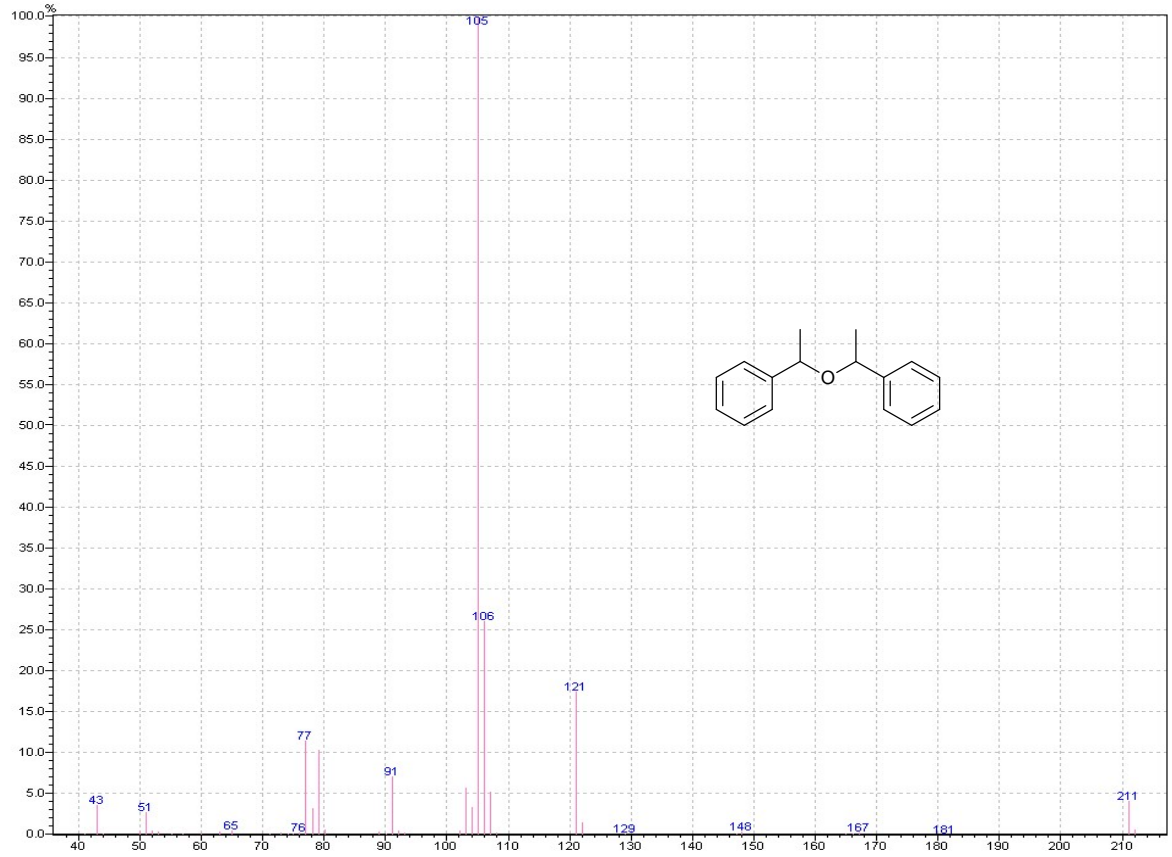


Figure S35. Mass spectrum relative to peak at 15.626 min

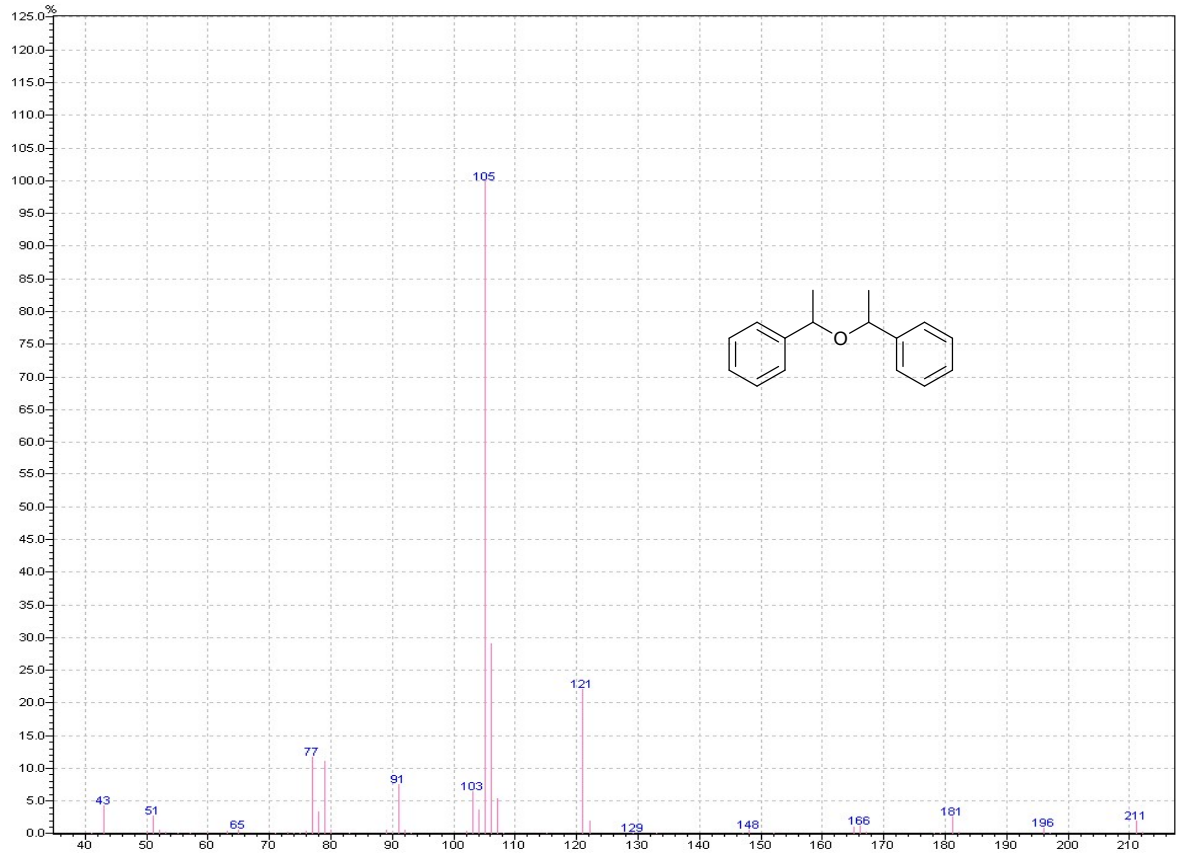


Figure S36. Mass spectrum relative to peak at 15.517 min

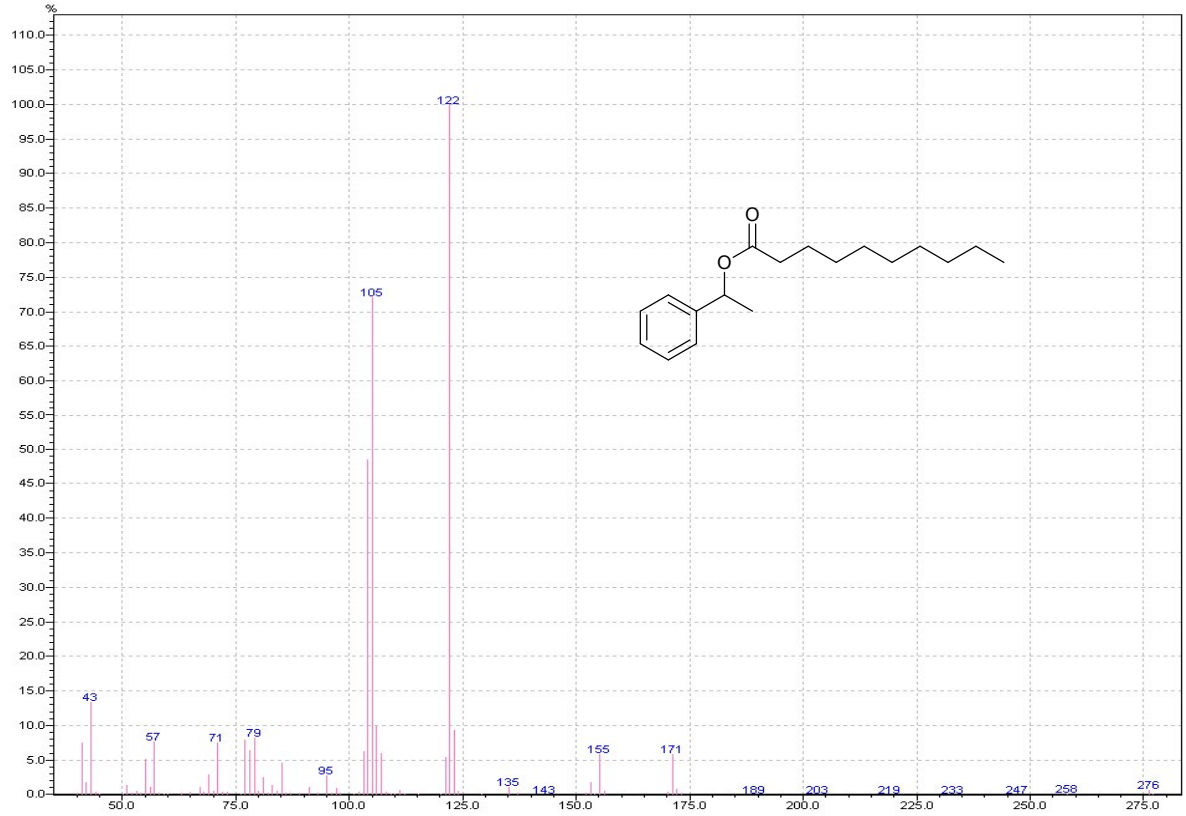


Figure S37. Mass spectrum relative to peak at 17.746 min