

Improved synthesis of cyclohexane backbone iridium-complexes of quinoline-phosphine and their applications in asymmetric hydrogenation

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Supplemental Materials

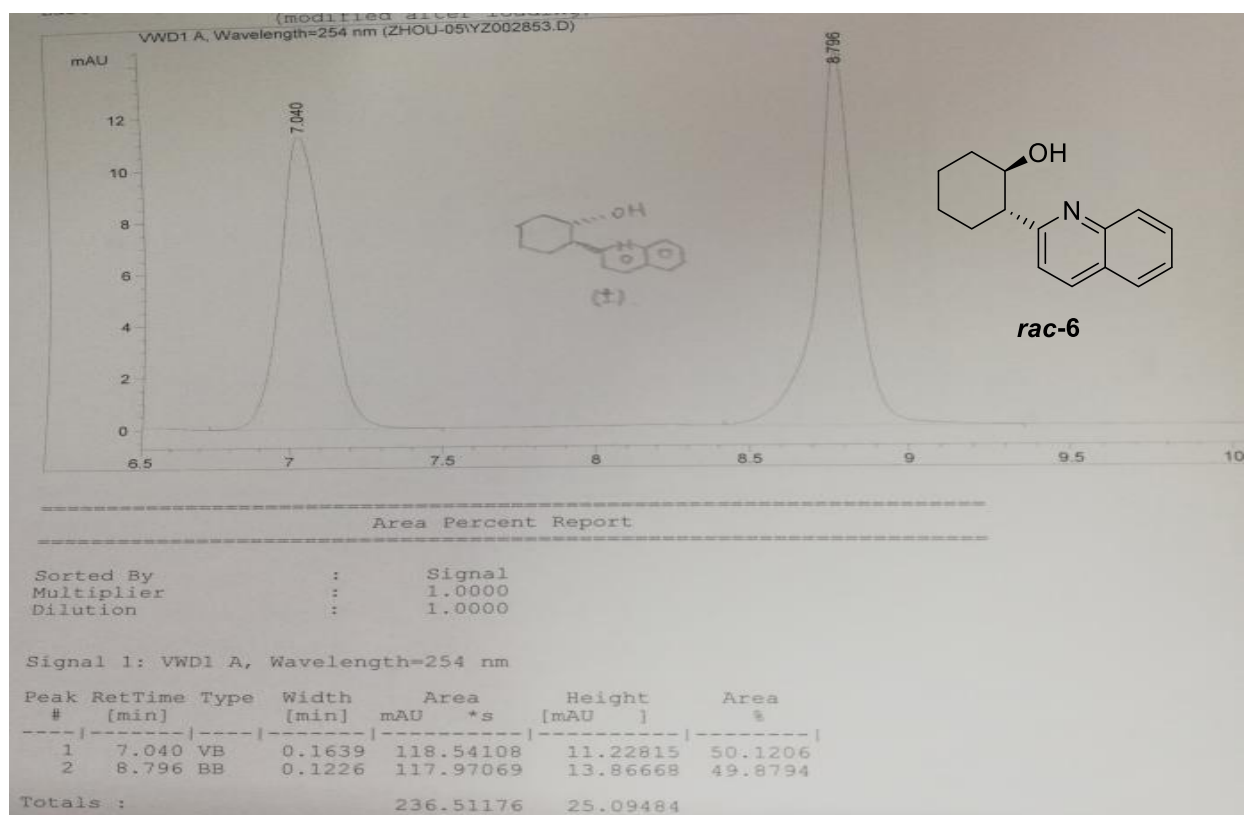


Figure S 1. Chiral HPLC spectrum of compound *rac-6*

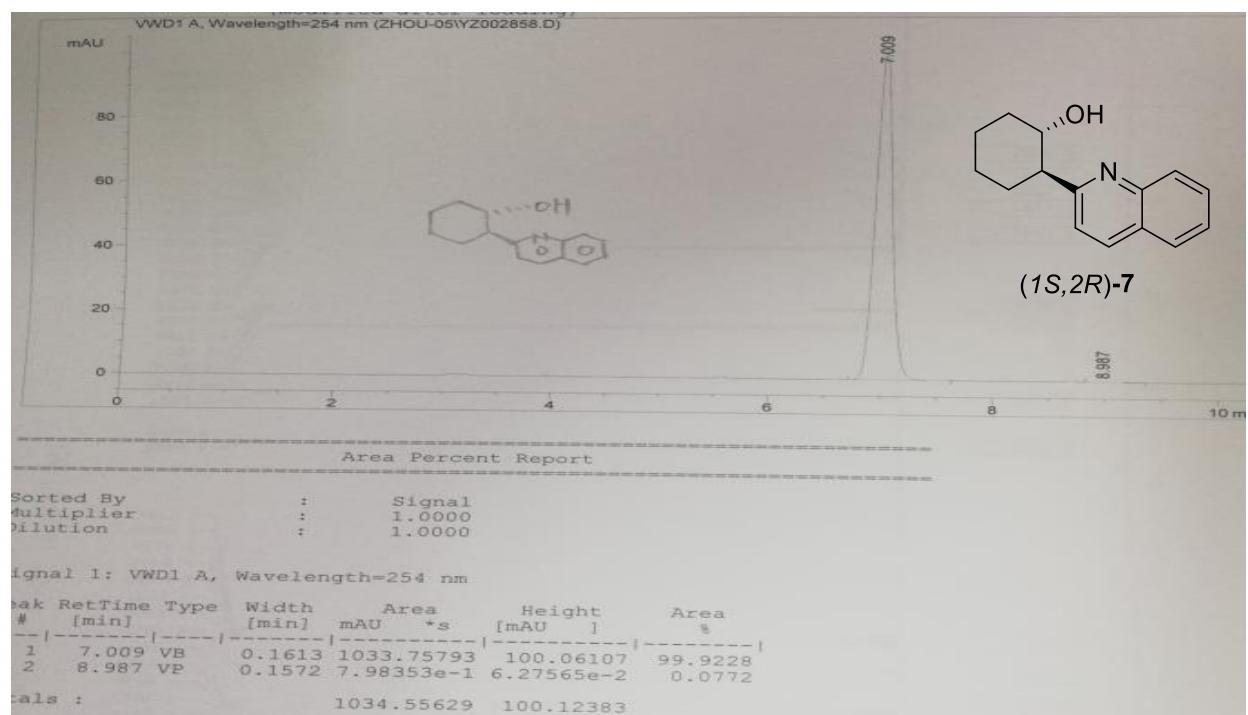


Figure S 2. Chiral HPLC spectrum of compound (1S,2R)-7

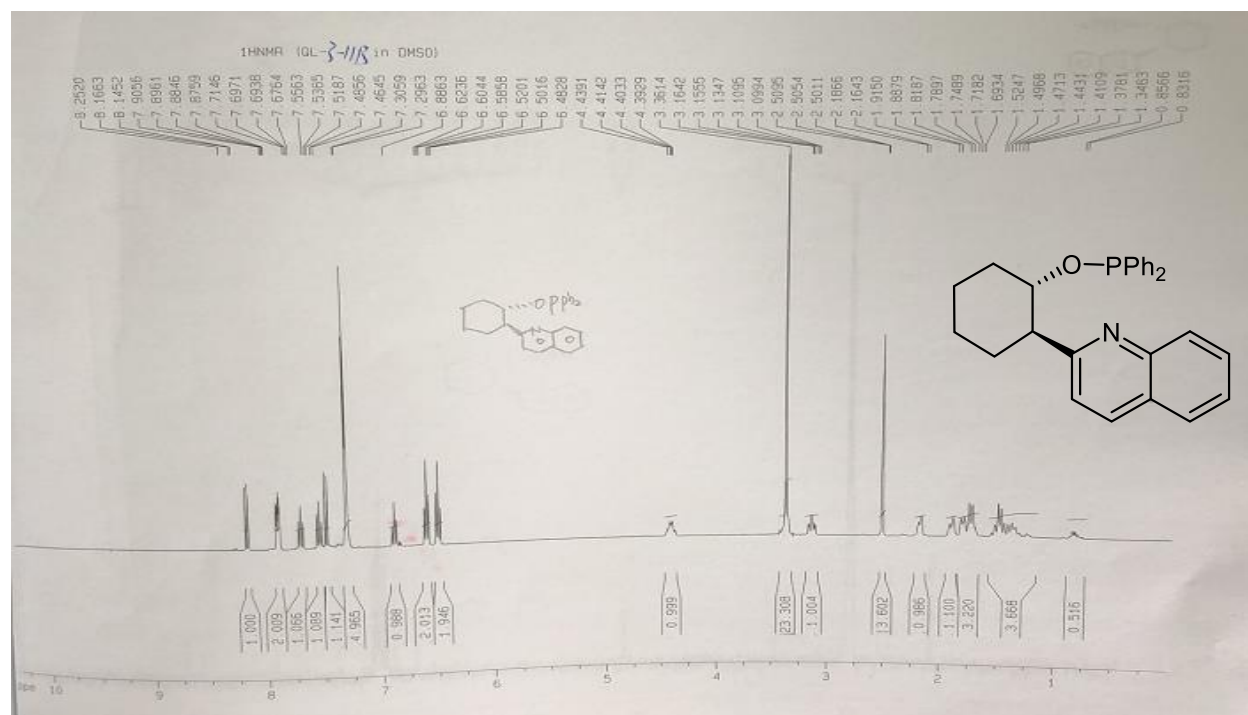


Figure S 3. ¹H-NMR spectrum of [(1S,2R)-trans-2-Quinolin-2-ylcyclohexan-1-oxy]diphenyl phosphine

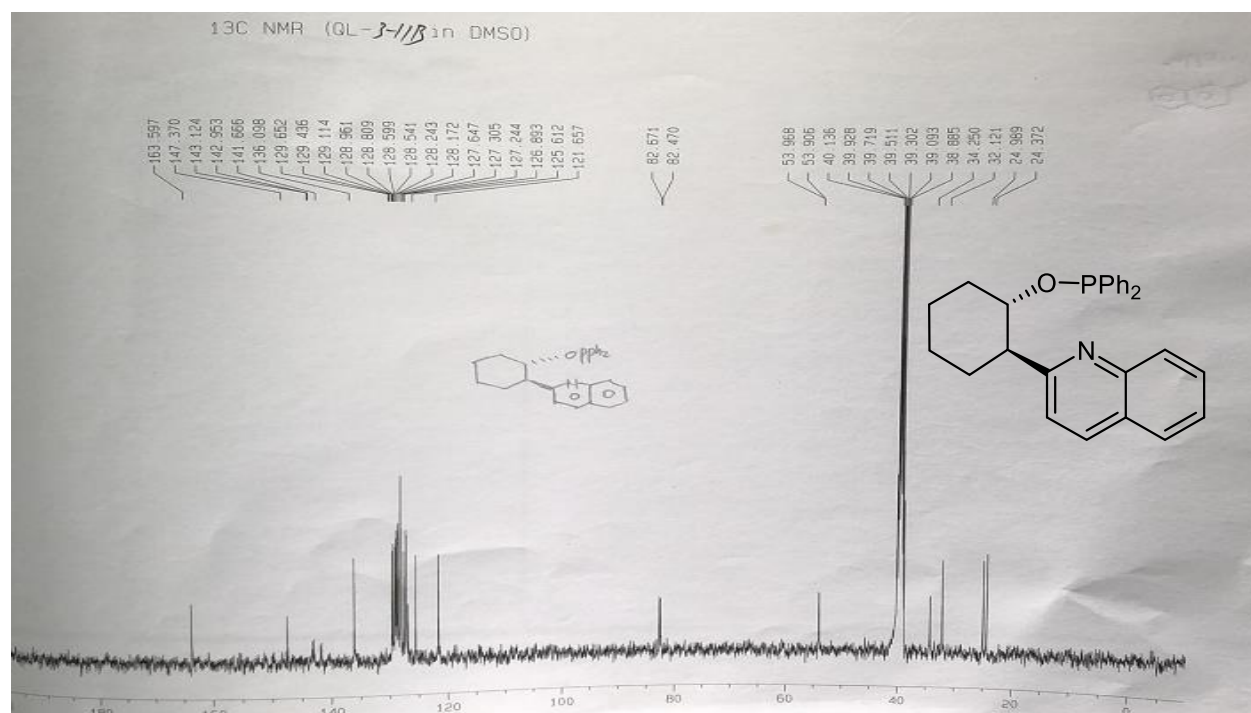


Figure S 4. ^{13}C -NMR spectrum of [(1*S*,2*R*)-*trans*-2-Quinolin-2-ylcyclohexan-1-oxyl]diphenyl phosphine

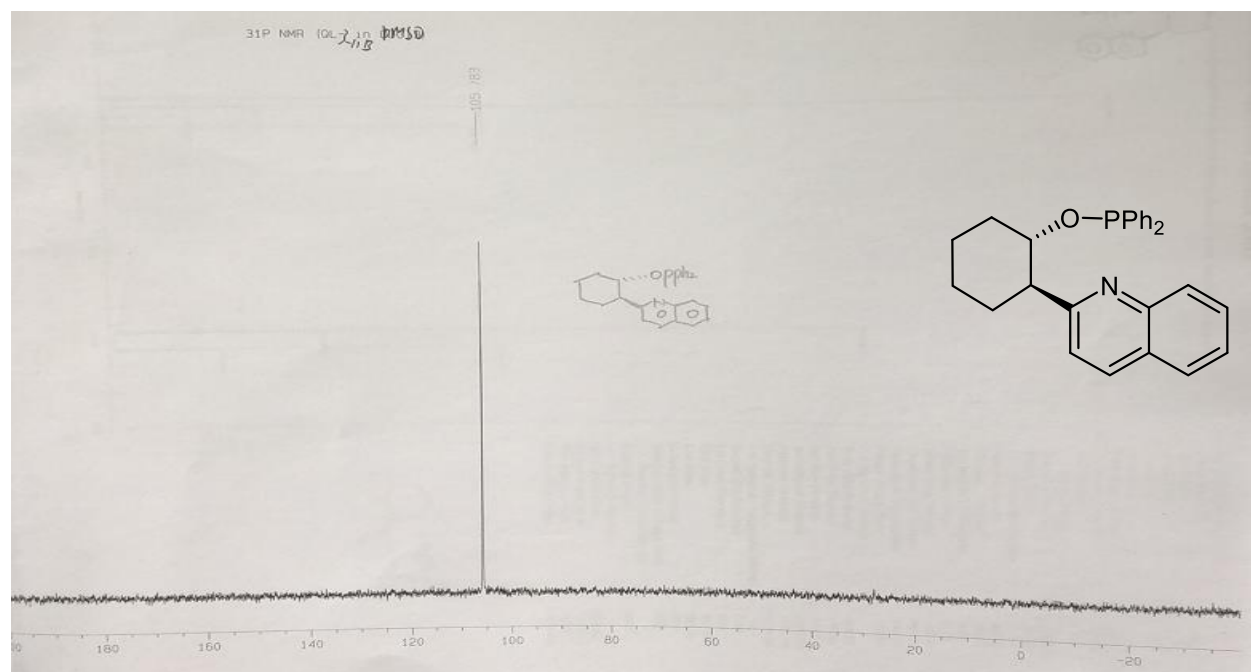


Figure S 5. ^{31}P -NMR spectrum of [(1*S*,2*R*)-*trans*-2-Quinolin-2-ylcyclohexan-1-oxyl]diphenyl phosphine

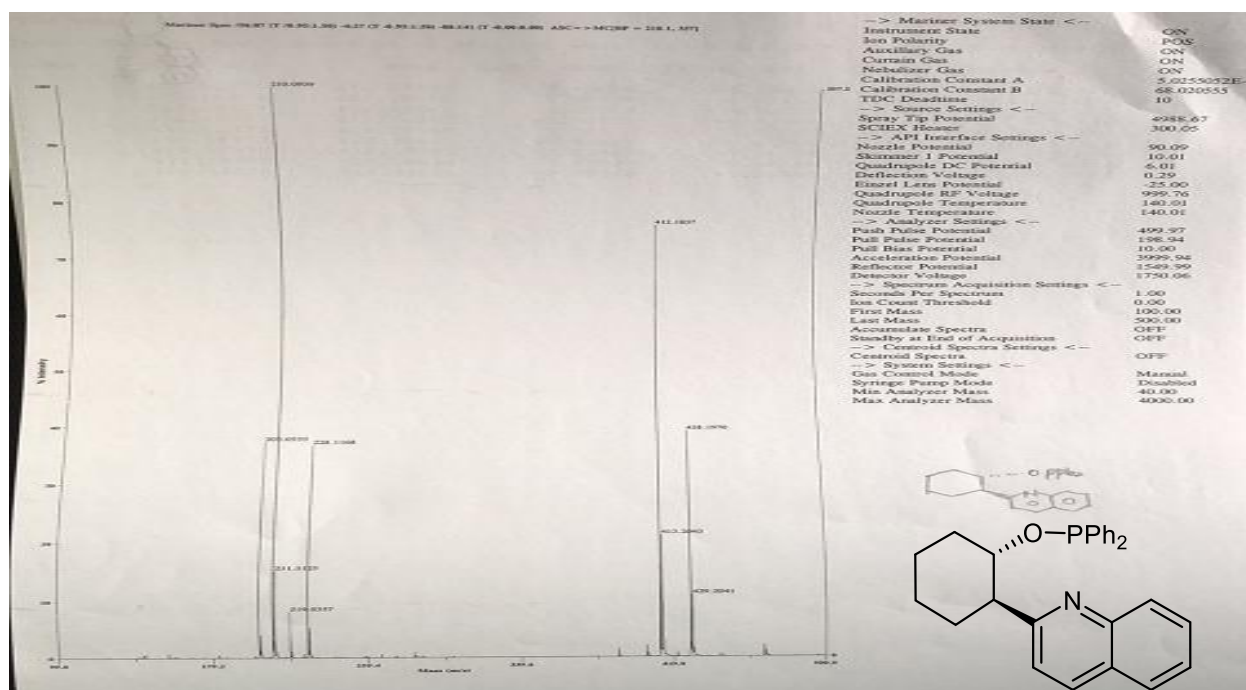


Figure S 6. HRMS spectrum of [(1S,2R)-trans-2-Quinolin-2-ylcyclohexan-1-oxy]diphenyl phosphine

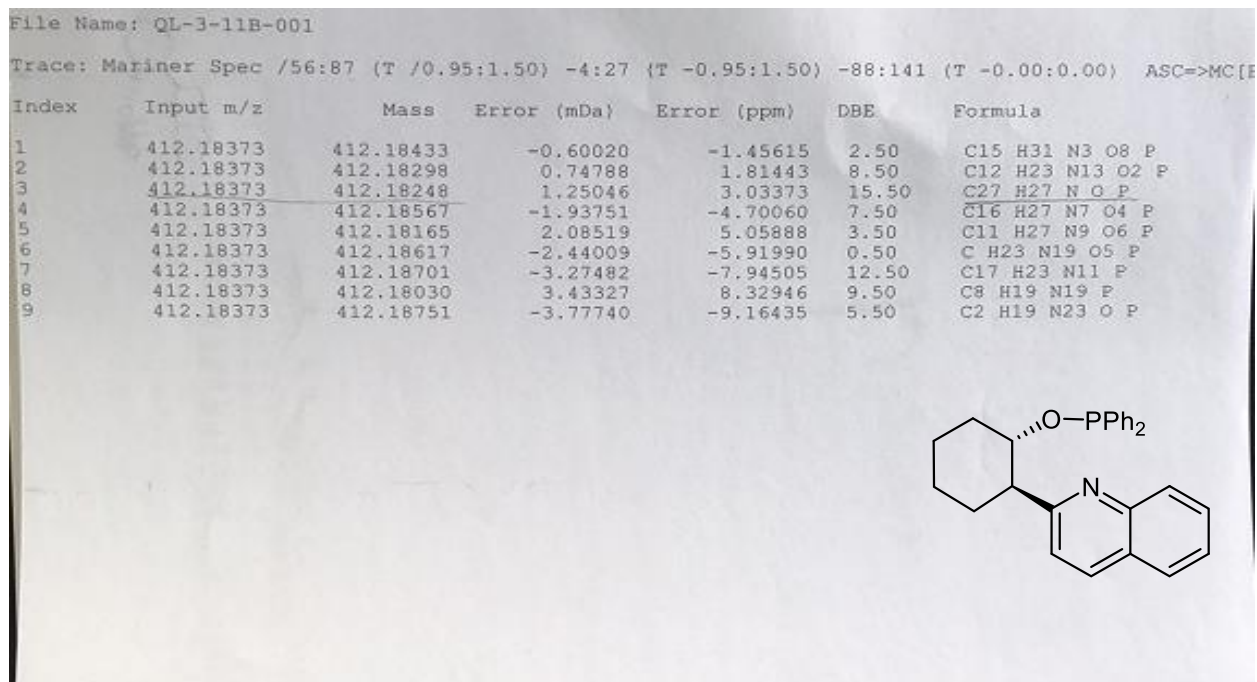


Figure S 7. HRMS spectrum of [(1S,2R)-trans-2-Quinolin-2-ylcyclohexan-1-oxy]diphenyl phosphine

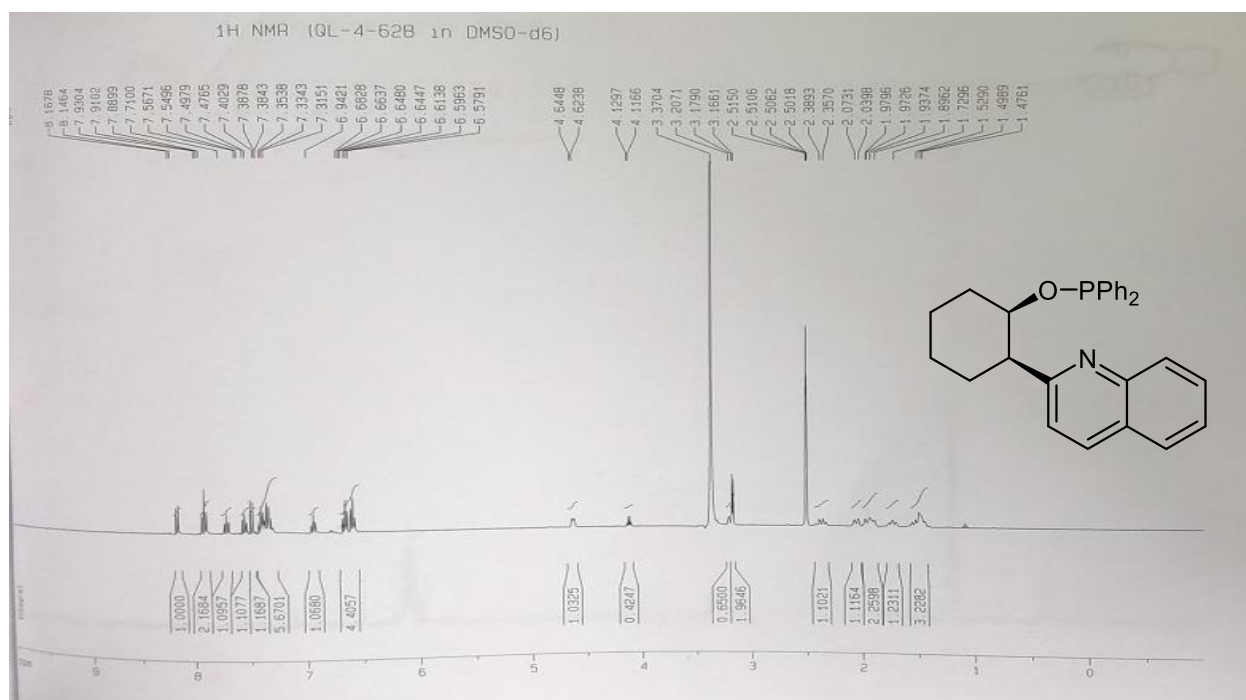


Figure S 8. ^1H -NMR spectrum of [(1*R*,2*R*)-*cis*-2-Quinolin-2-ylcyclohexan-1-oxyl]diphenyl phosphine

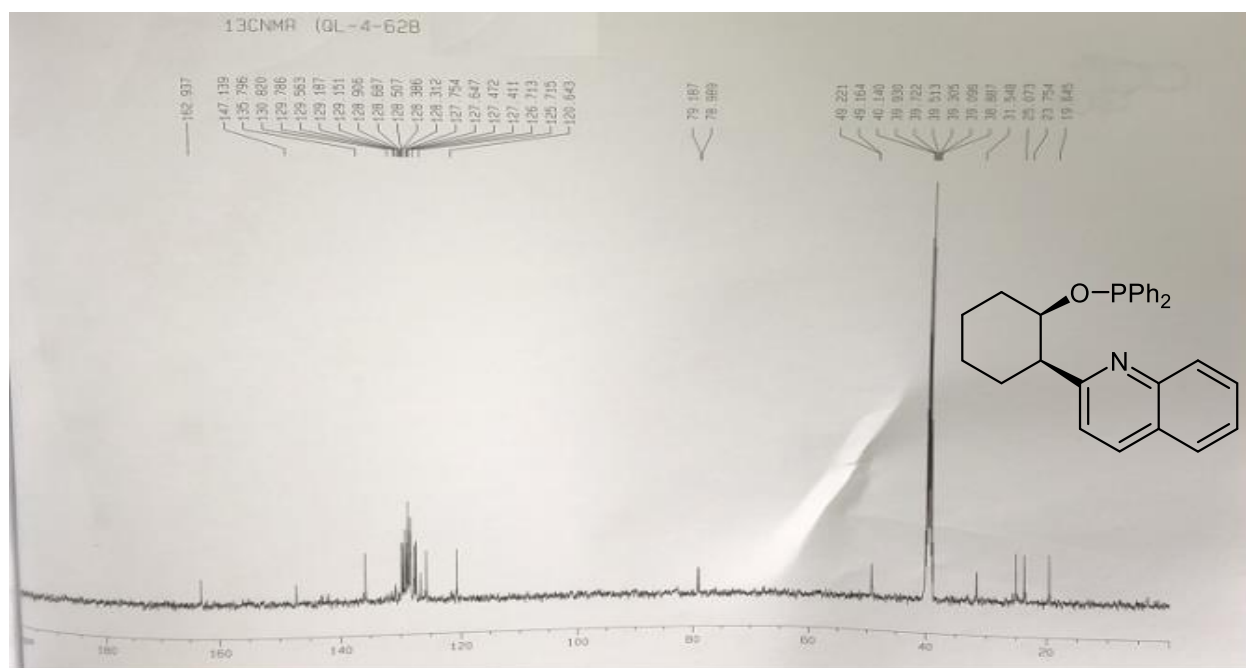


Figure S 9. ^{13}C -NMR spectrum of [(1*R*,2*R*)-*cis*-2-Quinolin-2-ylcyclohexan-1-oxyl]diphenyl phosphine

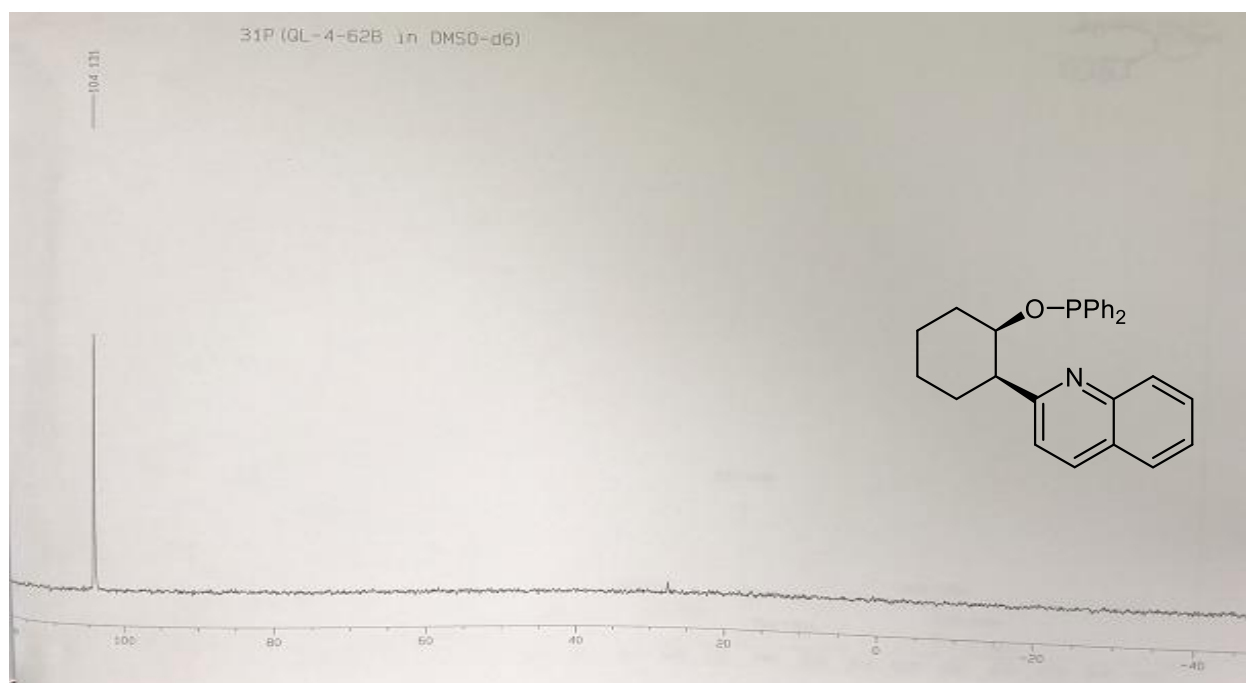


Figure S 10. ^{31}P -NMR spectrum of [(1*R*,2*R*)-*cis*-2-Quinolin-2-ylcyclohexan-1-yl]diphenyl phosphine

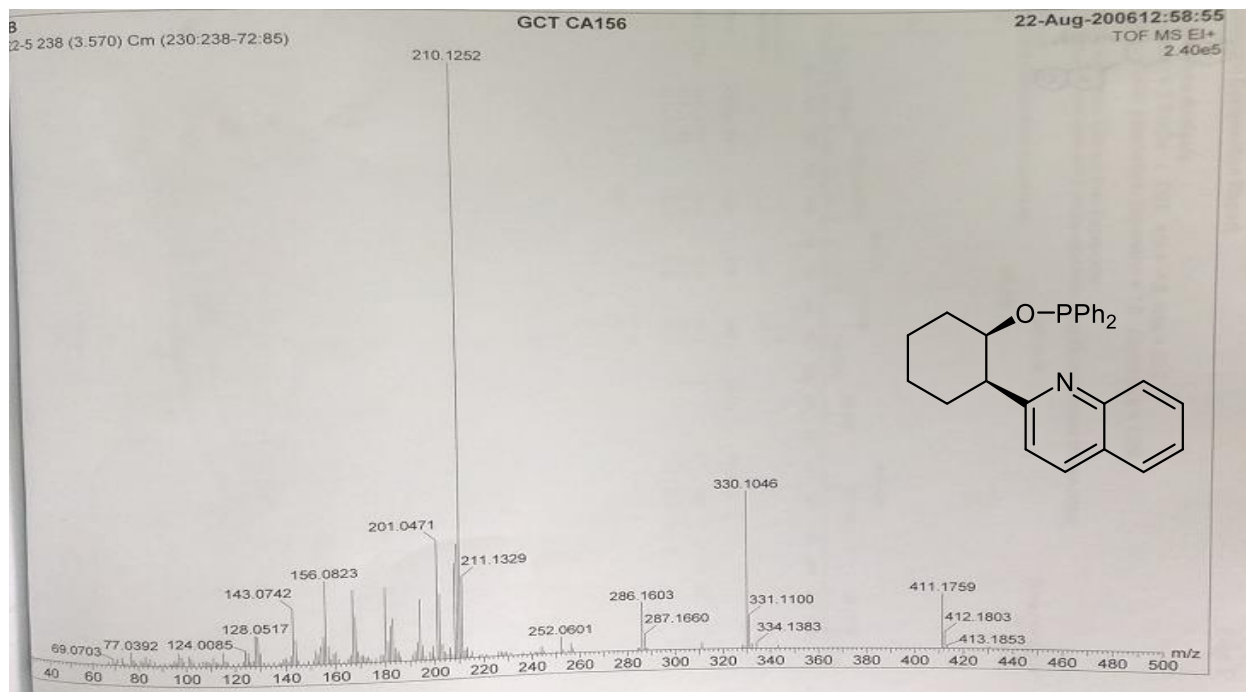


Figure S 11. HRMS spectrum of [(1*R*,2*R*)-*cis*-2-Quinolin-2-ylcyclohexan-1-yl]diphenyl phosphine

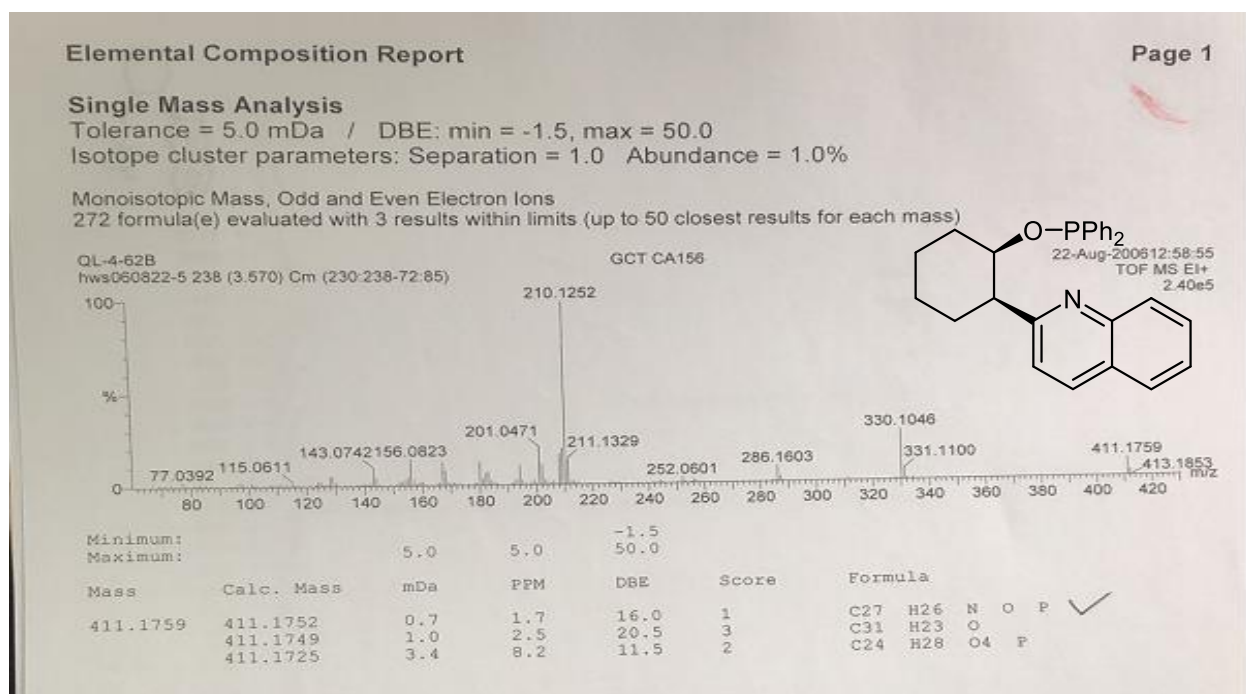


Figure S 12. HRMS spectrum of [(1*R*,2*R*)-*cis*-2-Quinolin-2-ylcyclohexan-1-oxyl]diphenyl phosphine

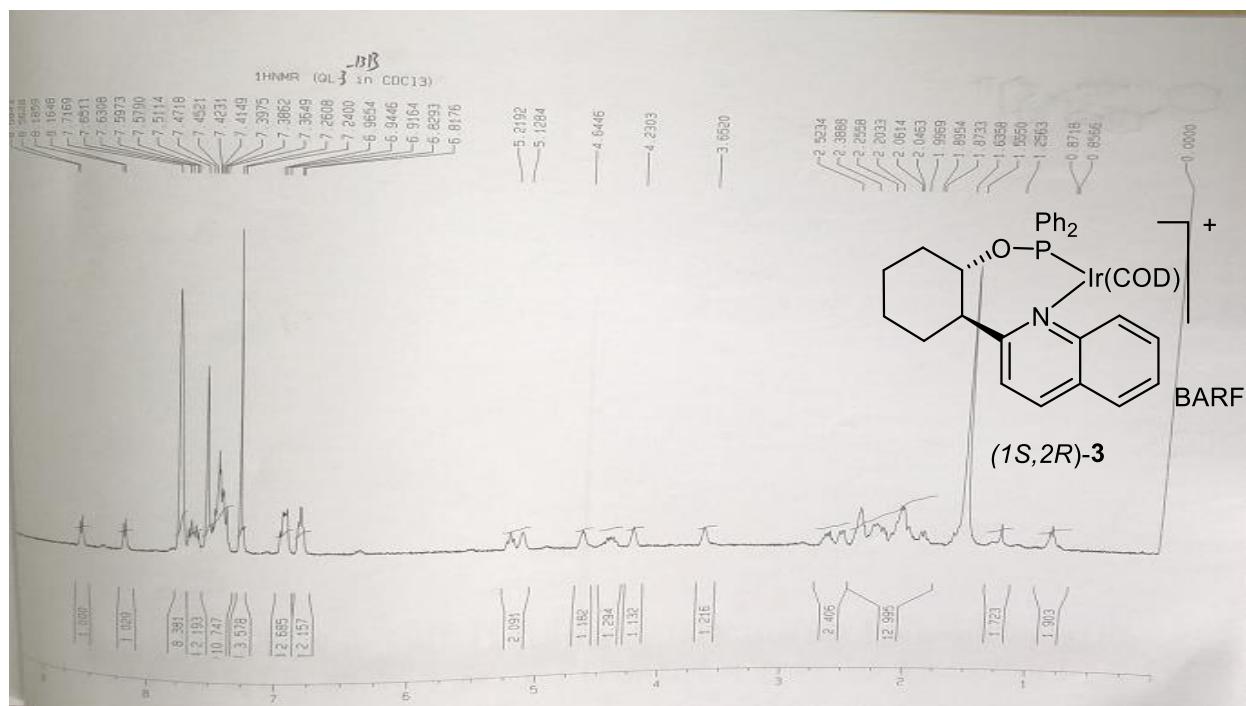


Figure S 13. ¹H-NMR spectrum of Iridium-complex (1*S*,2*R*)-3

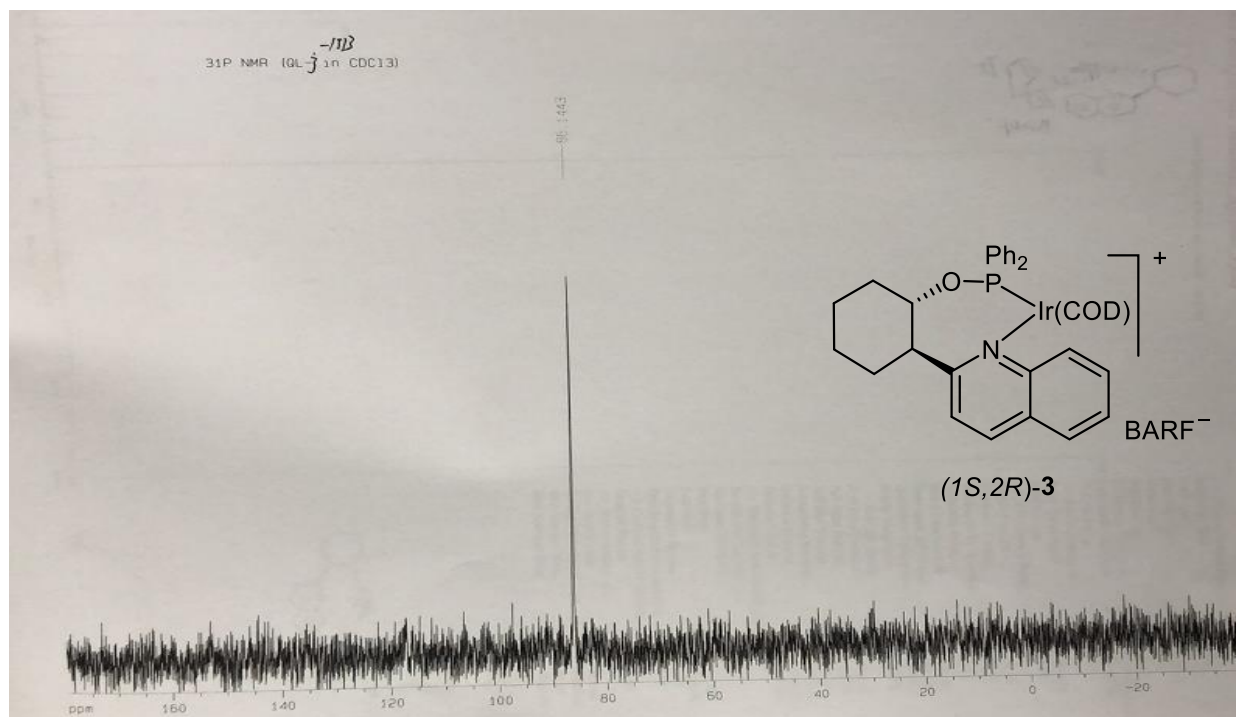


Figure S 14. ³¹P-NMR spectrum of Iridium-complex (1*S*,2*R*)-3

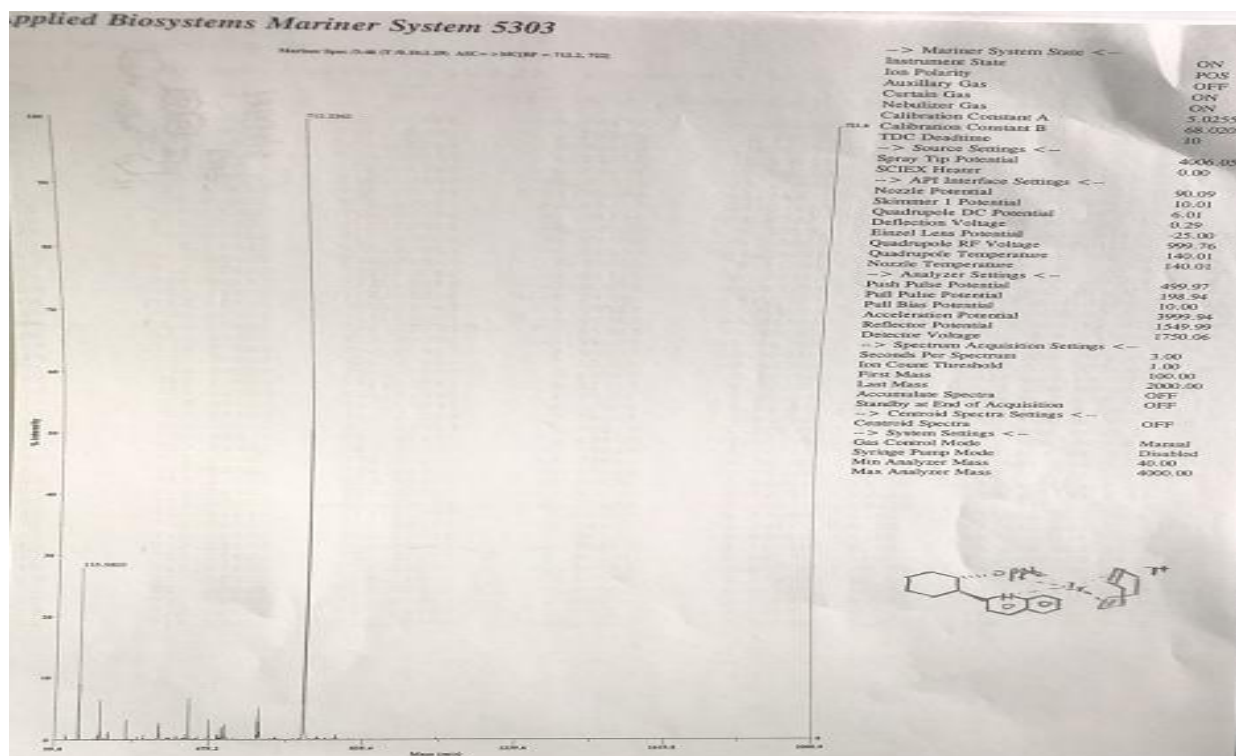


Figure S 15. HRMS (cation) spectrum of Iridium-complex (1*S*,2*R*)-3

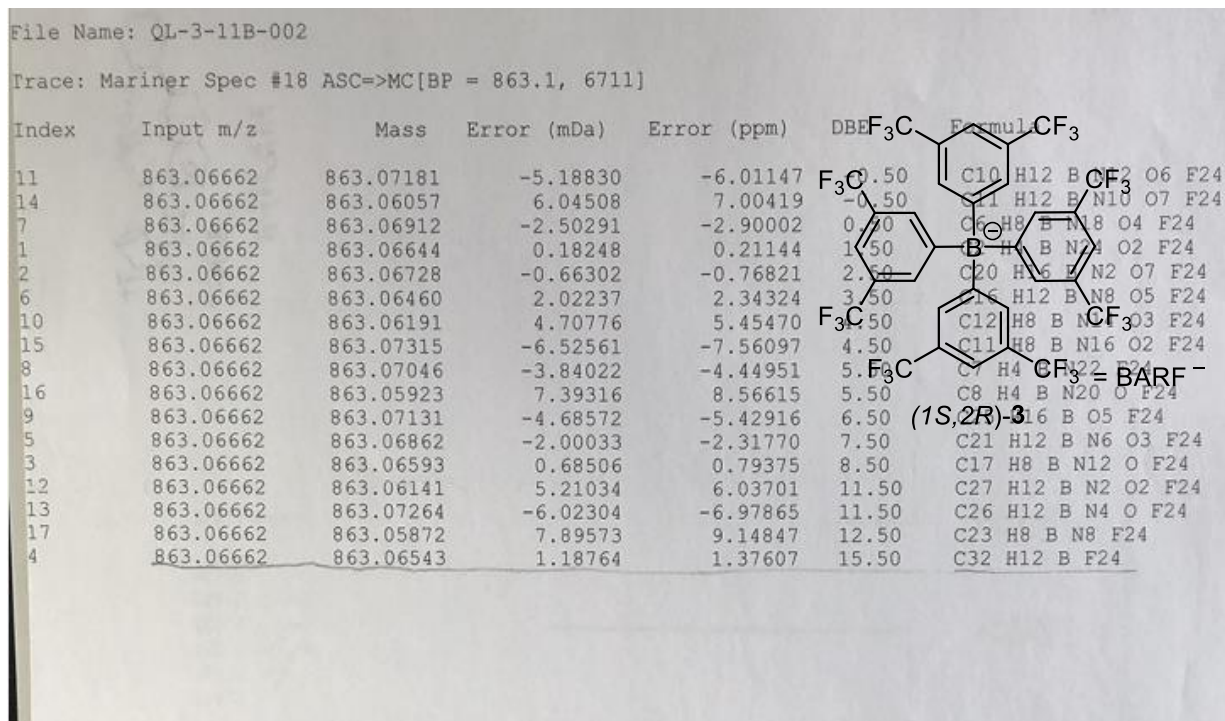


Figure S 18. HRMS (anion) spectrum of Iridium-complex (1S,2R)-3

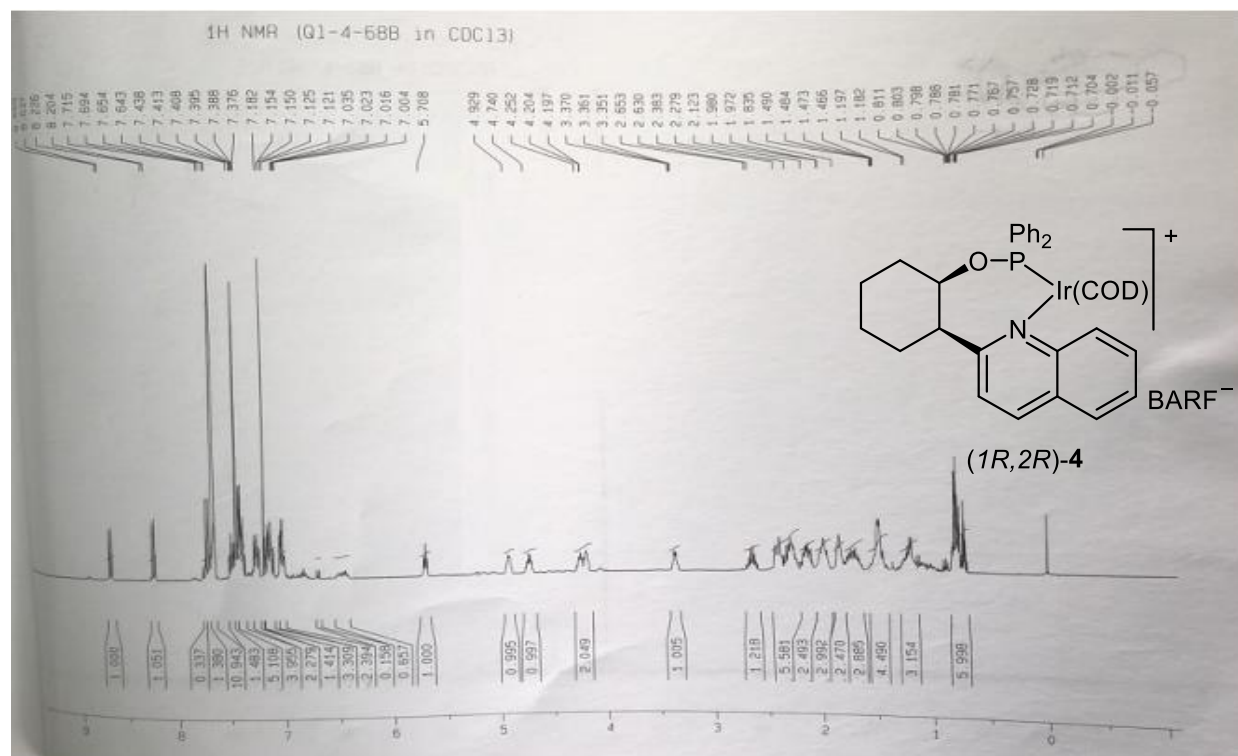


Figure S 19. ¹H-NMR spectrum of Iridium-complex (1R,2R)-4

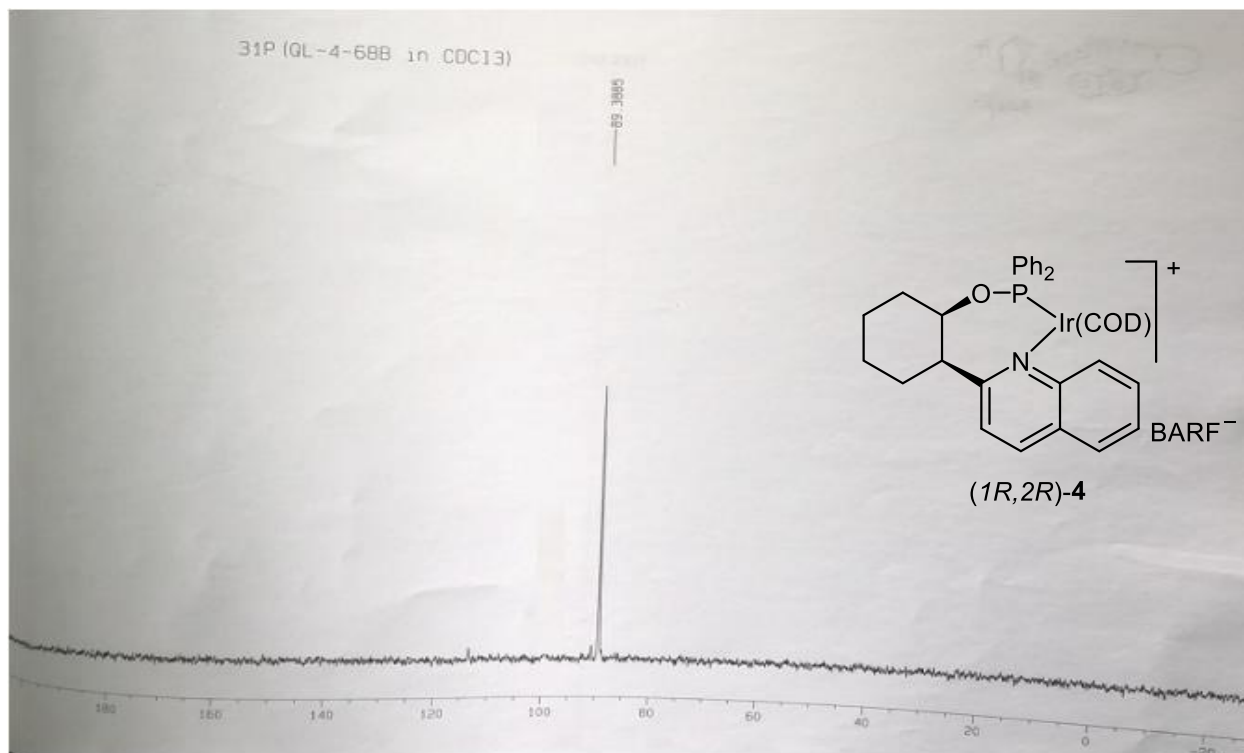


Figure S 20. ³¹P-NMR spectrum of Iridium-complex (1R,2R)-4

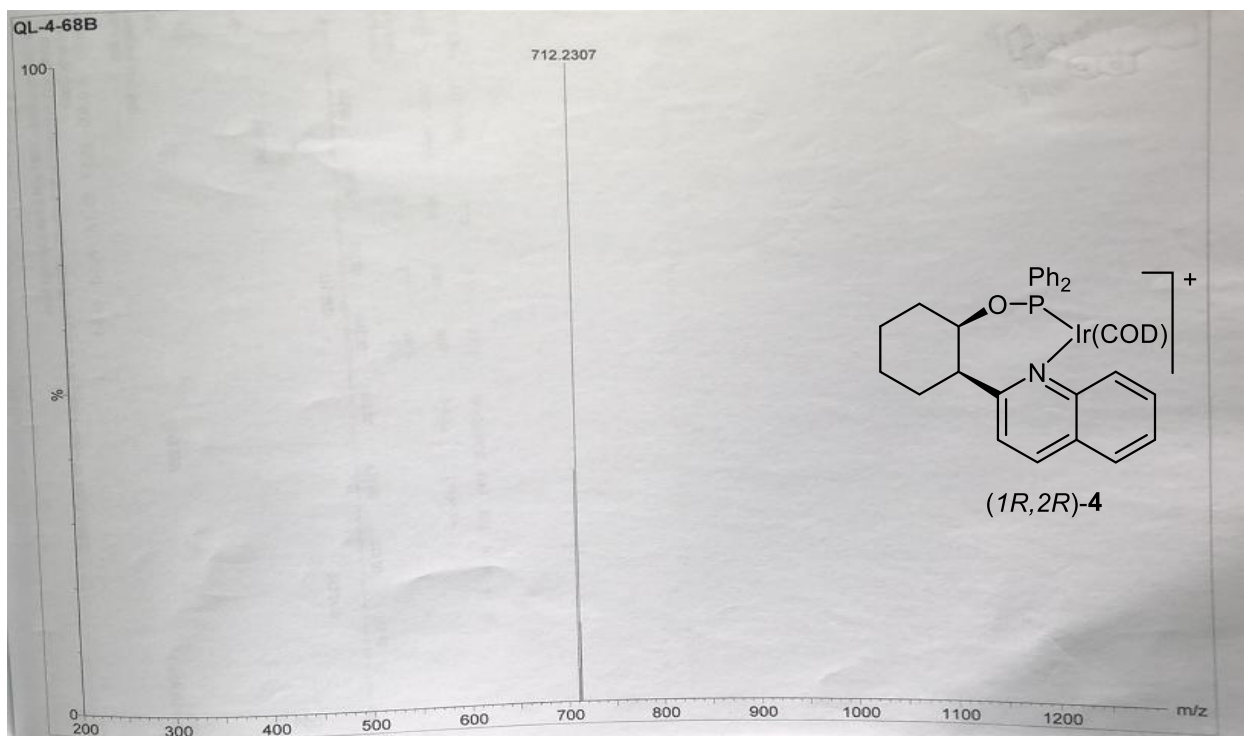


Figure S 21. HRMS (cation) spectrum of Iridium-complex (1R,2R)-4

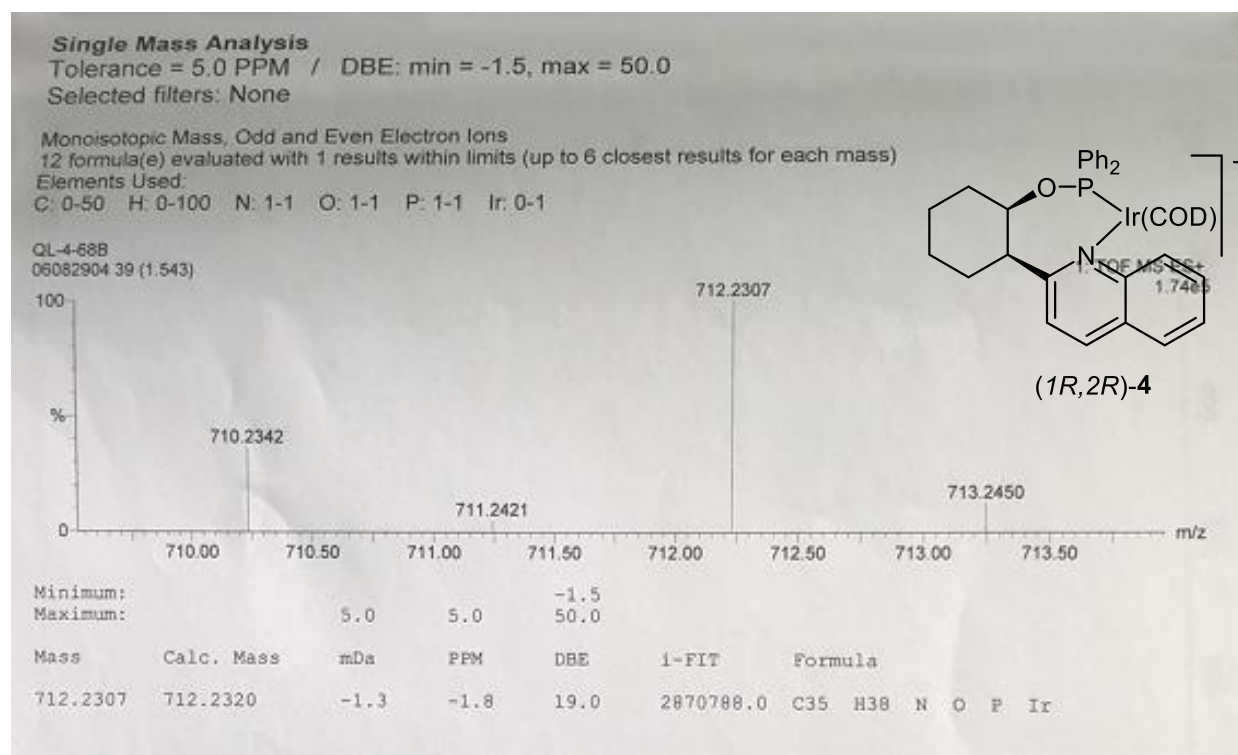


Figure S 22. HRMS (cation) spectrum of Iridium-complex (1R,2R)-4

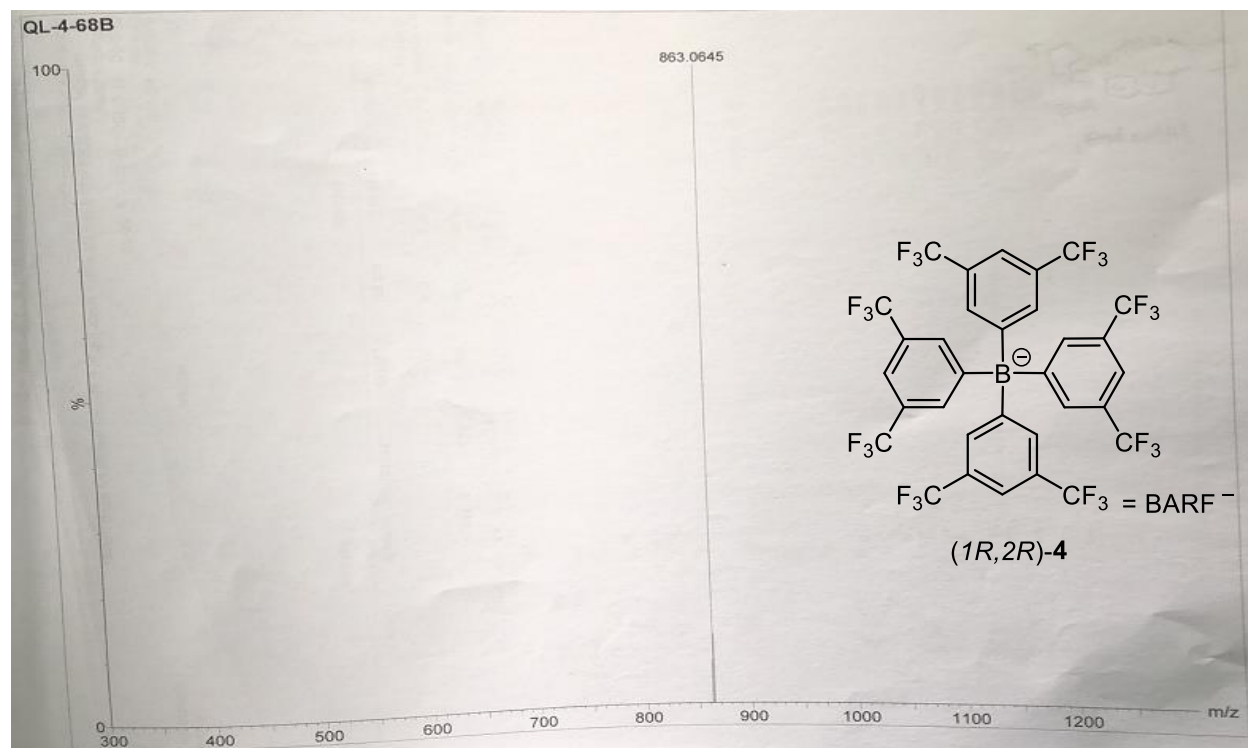


Figure S 23. HRMS (anion) spectrum of Iridium-complex (1R,2R)-4

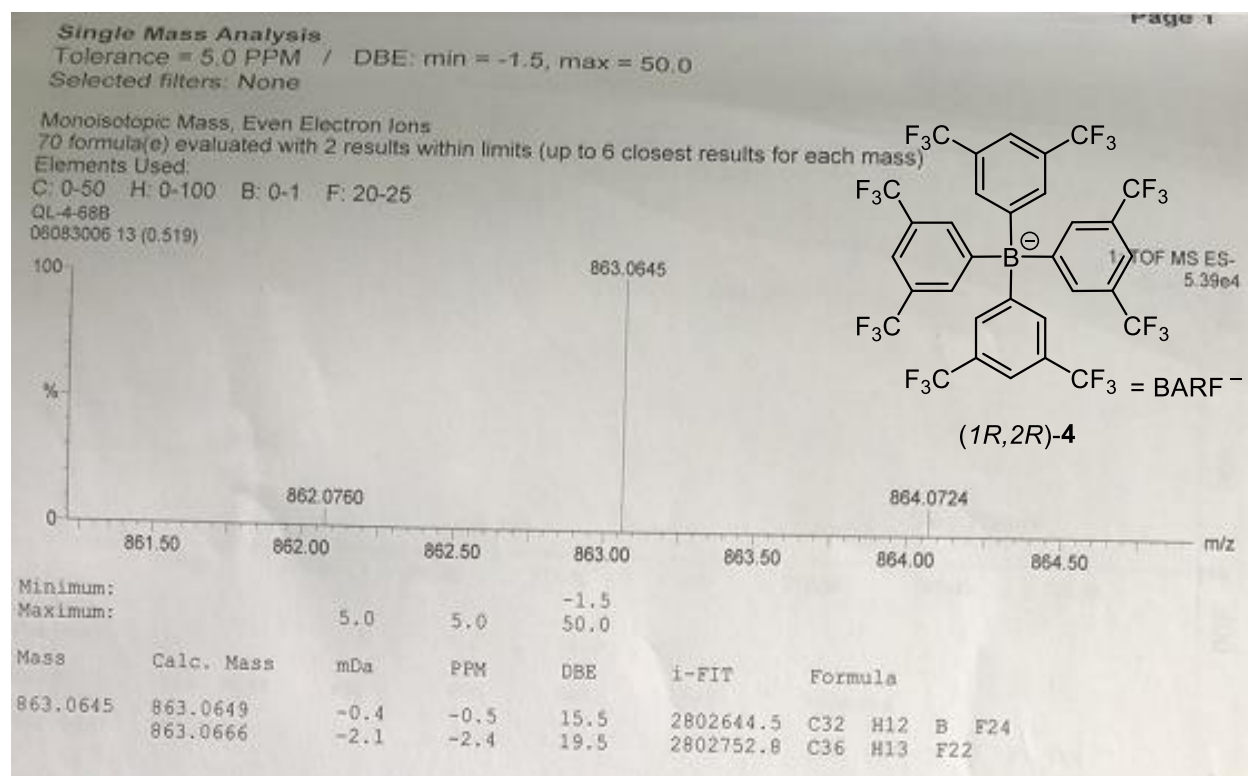


Figure S 24. HRMS (anion) spectrum of Iridium-complex **(1R,2R)-4**