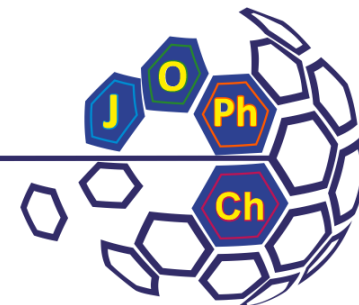


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The Synthesis and Physicochemical Characteristics of 6,6-Difluorobicyclo[3.2.0]heptane Derivatives

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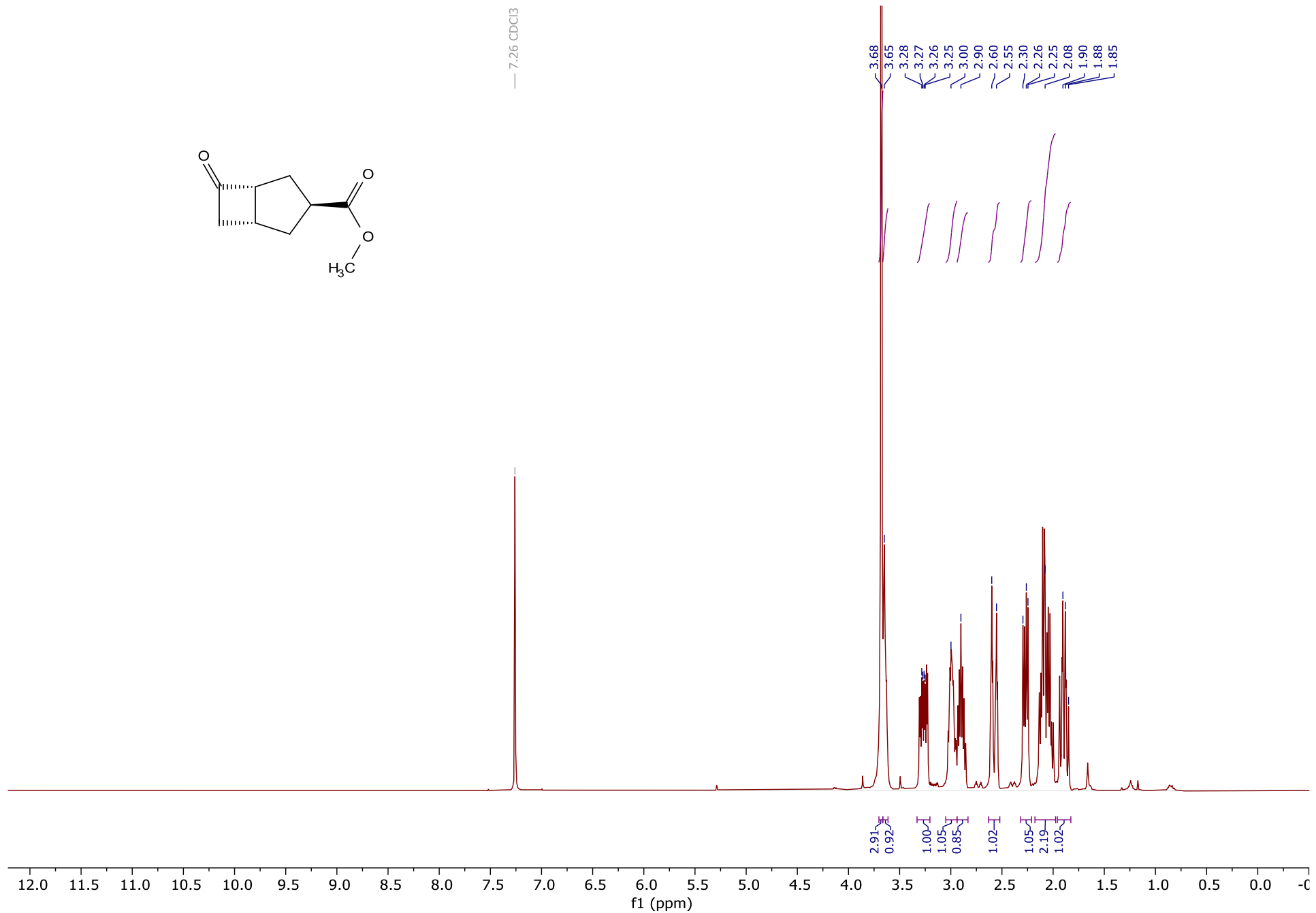


Figure 1. Methyl (1*R**,3*S**,5*R**)-6-oxobicyclo[3.2.0]heptane-3-carboxylate **3**, ¹H NMR (400 MHz, CDCl₃)

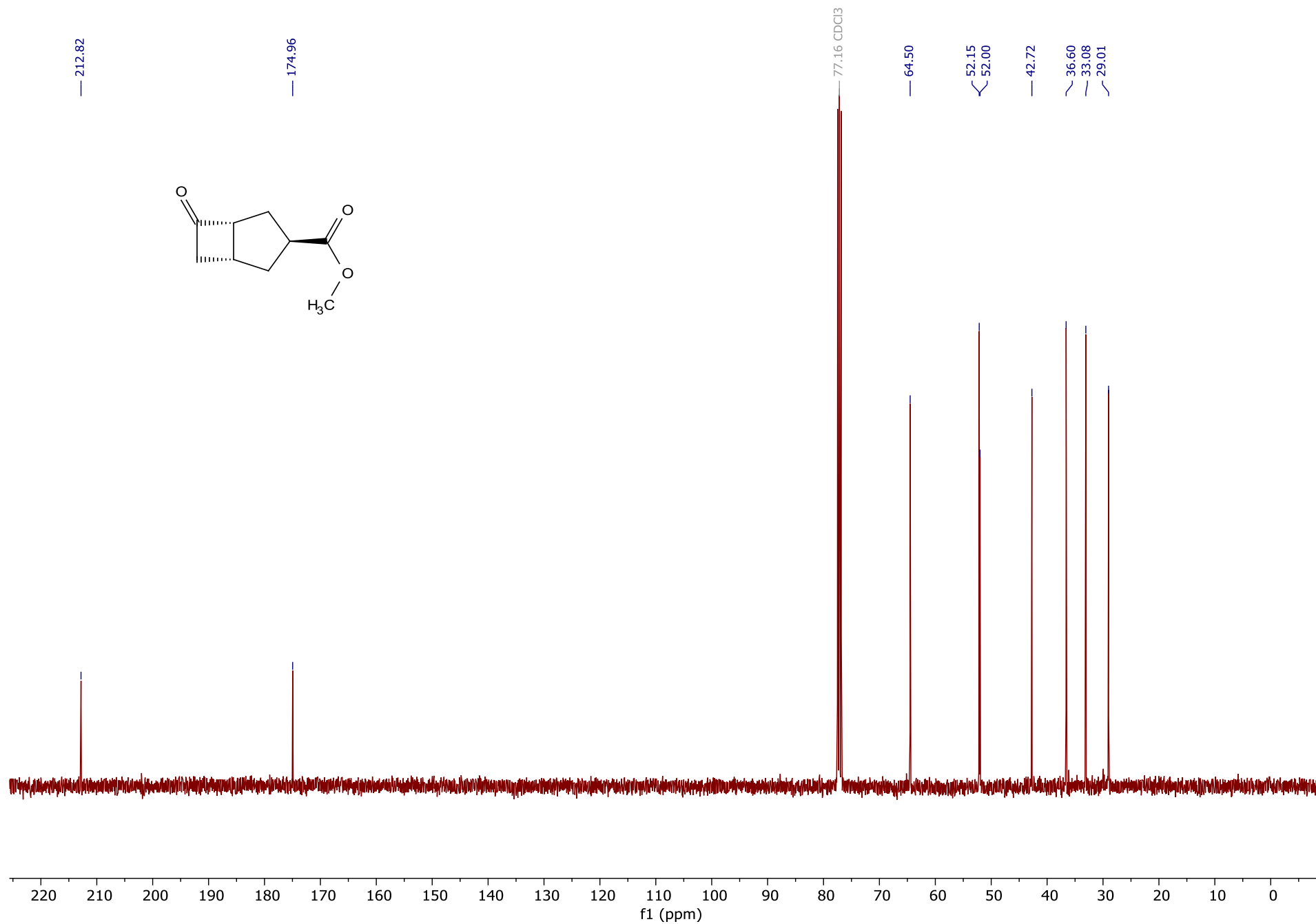


Figure 2. Methyl (1*R**,3*S**,5*R**)-6-oxobicyclo[3.2.0]heptane-3-carboxylate **3**, $^{13}\text{C}\{^1\text{H}\}$ NMR (101 MHz, CDCl_3)

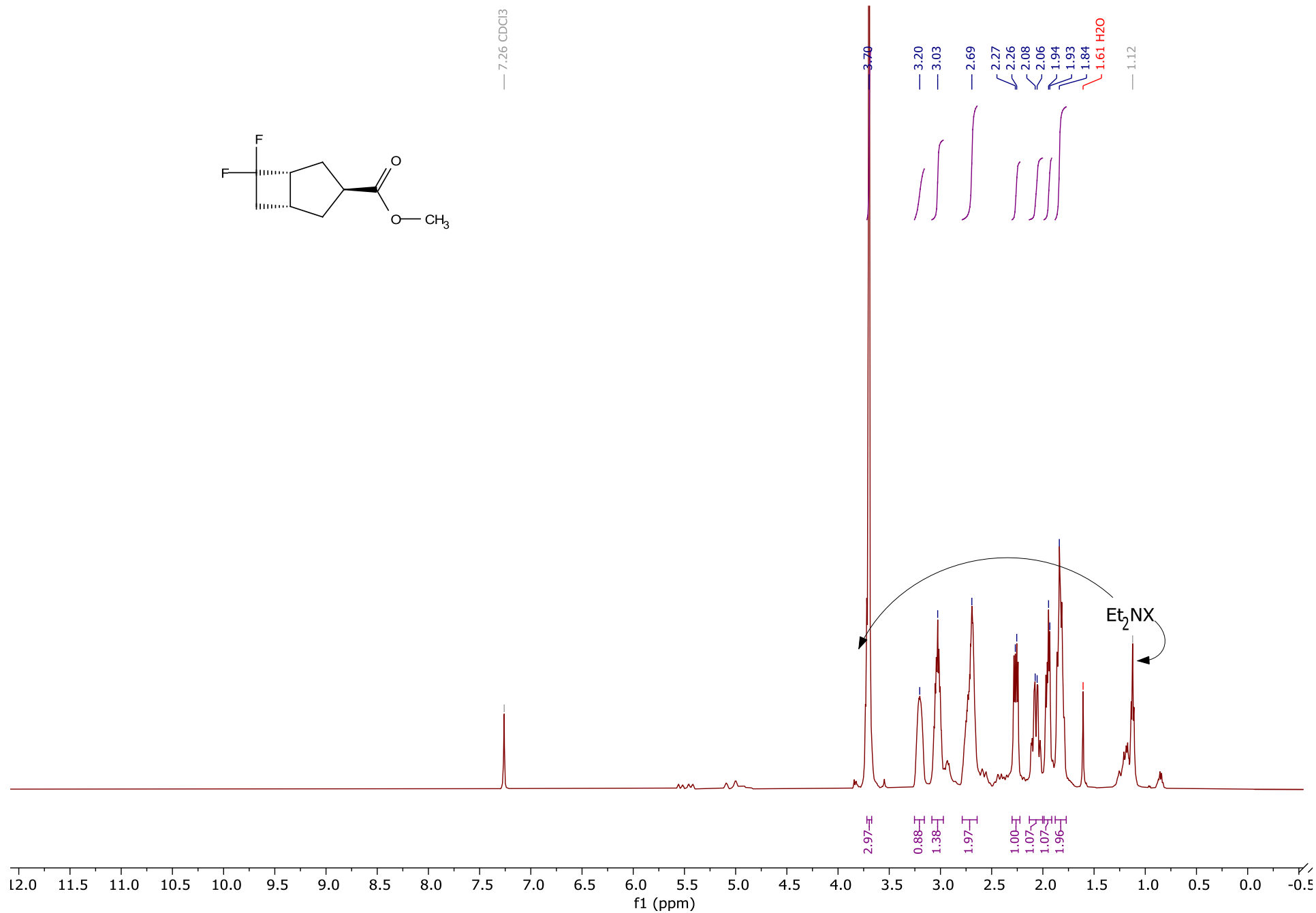


Figure 3. Methyl (1*R**,3*S**,5*R**)-6,6-difluorobicyclo[3.2.0]heptane-3-carboxylate **4**, ¹H NMR (500 MHz, CDCl₃).

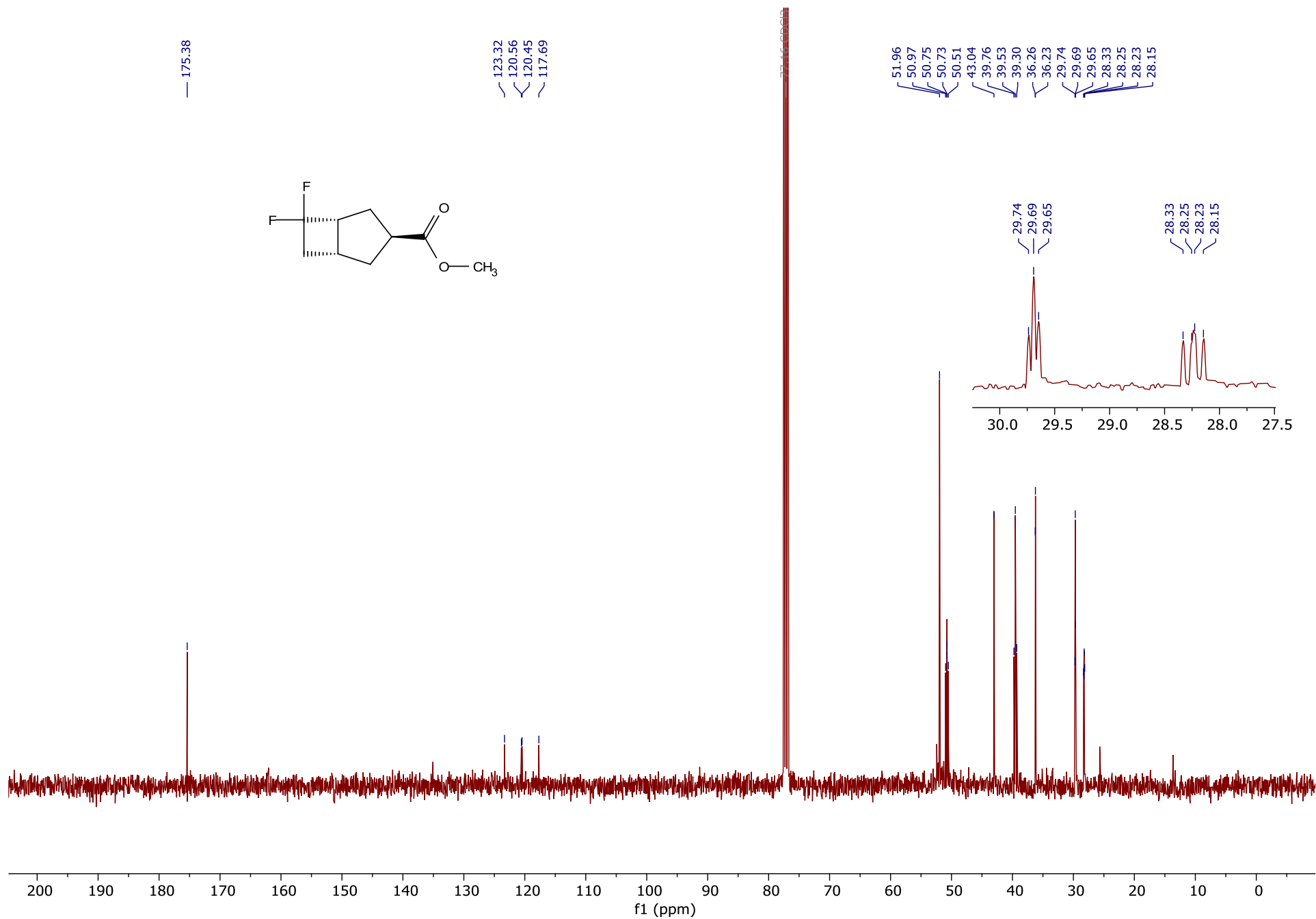


Figure 4. Methyl (1*R**,3*S**,5*R**)-6,6-difluorobicyclo[3.2.0]heptane-3-carboxylate **4**, $^{13}\text{C}\{^1\text{H}\}$ NMR (101 MHz, CDCl_3)

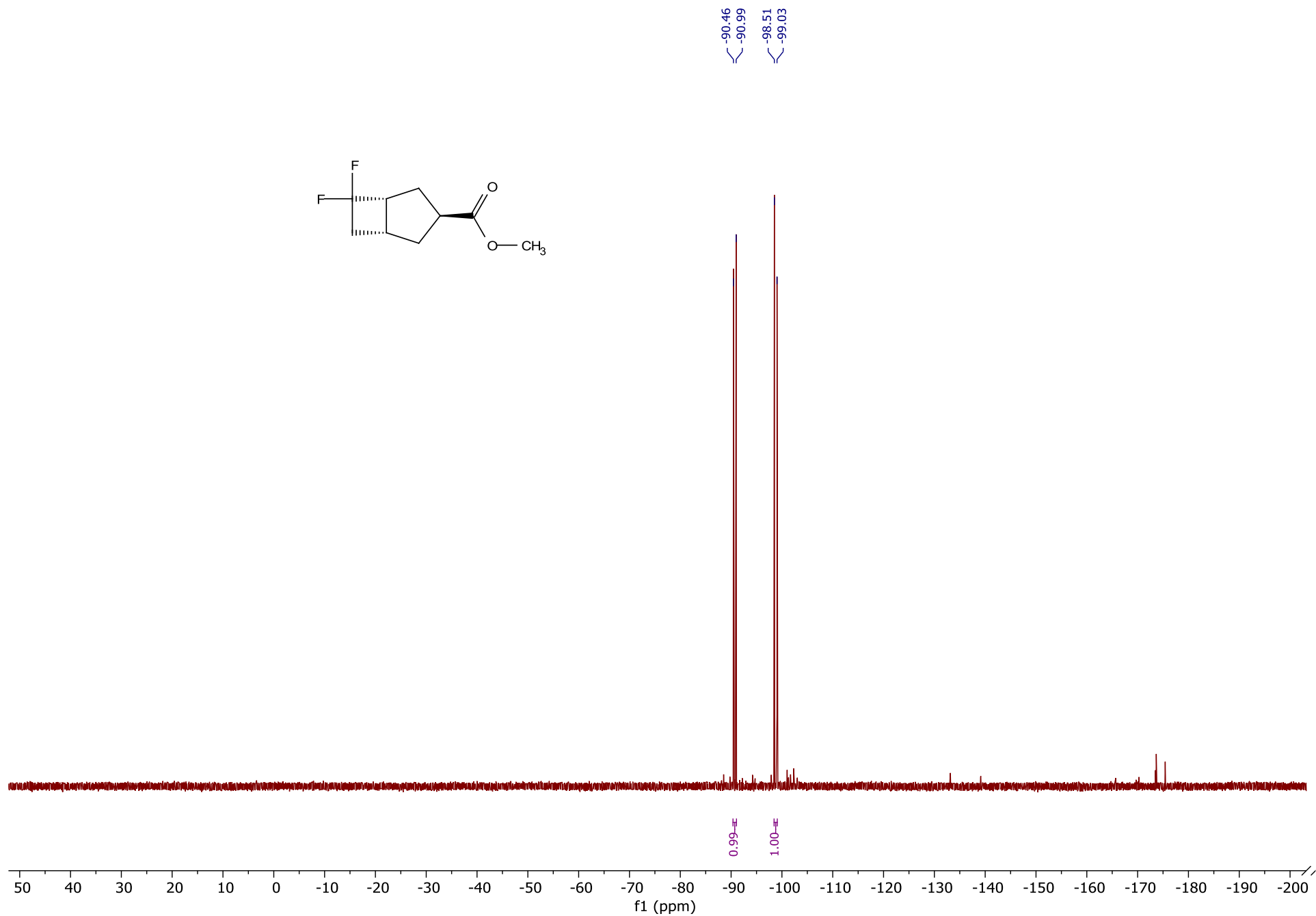


Figure 5. Methyl (1*R**,3*S**,5*R**)-6,6-difluorobicyclo[3.2.0]heptane-3-carboxylate **4**, ^{19}F { ^1H } NMR (376 MHz, CDCl_3)

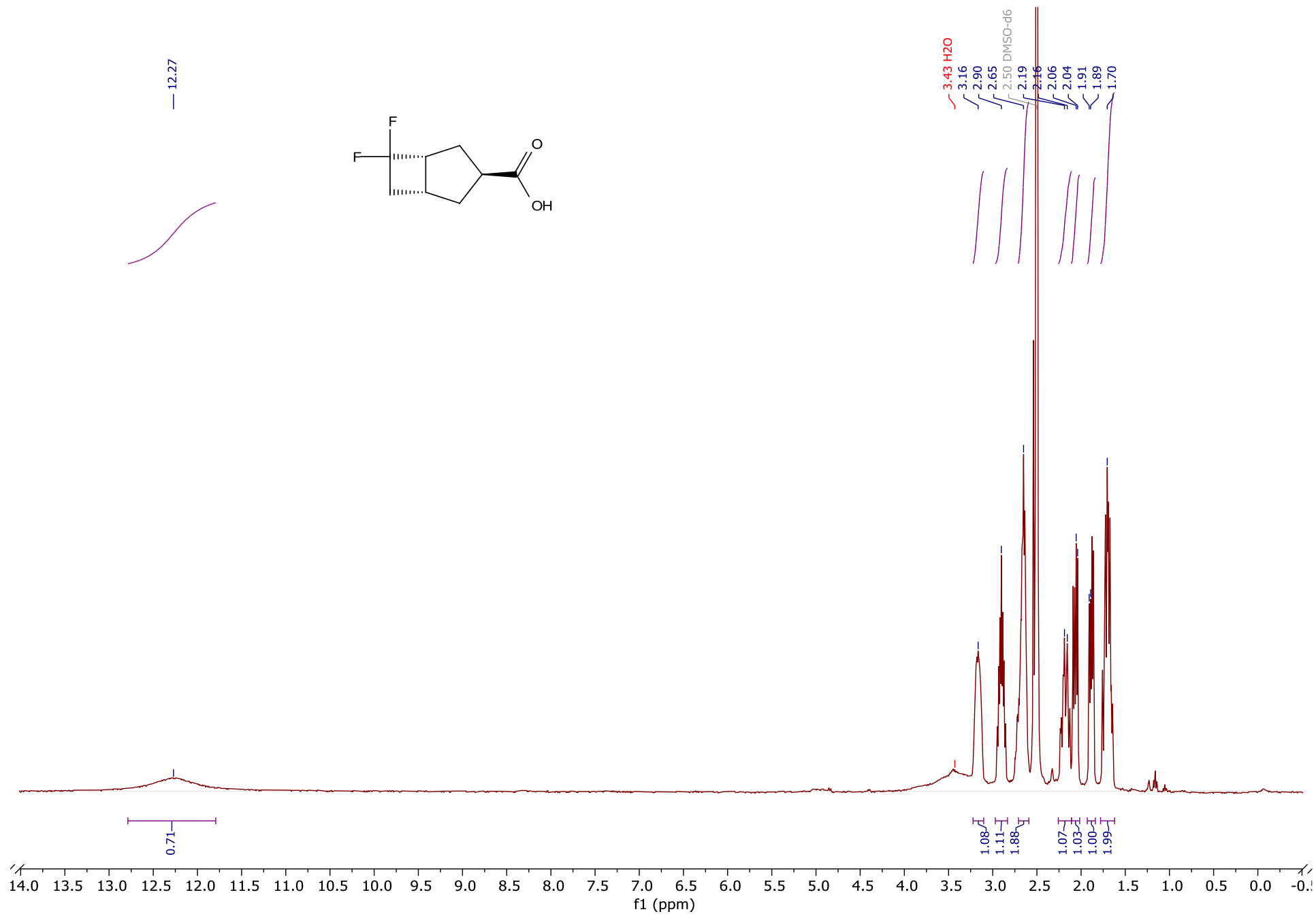


Figure 6. (1*R**,3*S**,5*R**)-6,6-Difluorobicyclo[3.2.0]heptane-3-carboxylic acid **1**, ¹H NMR (400 MHz, DMSO-*d*₆)

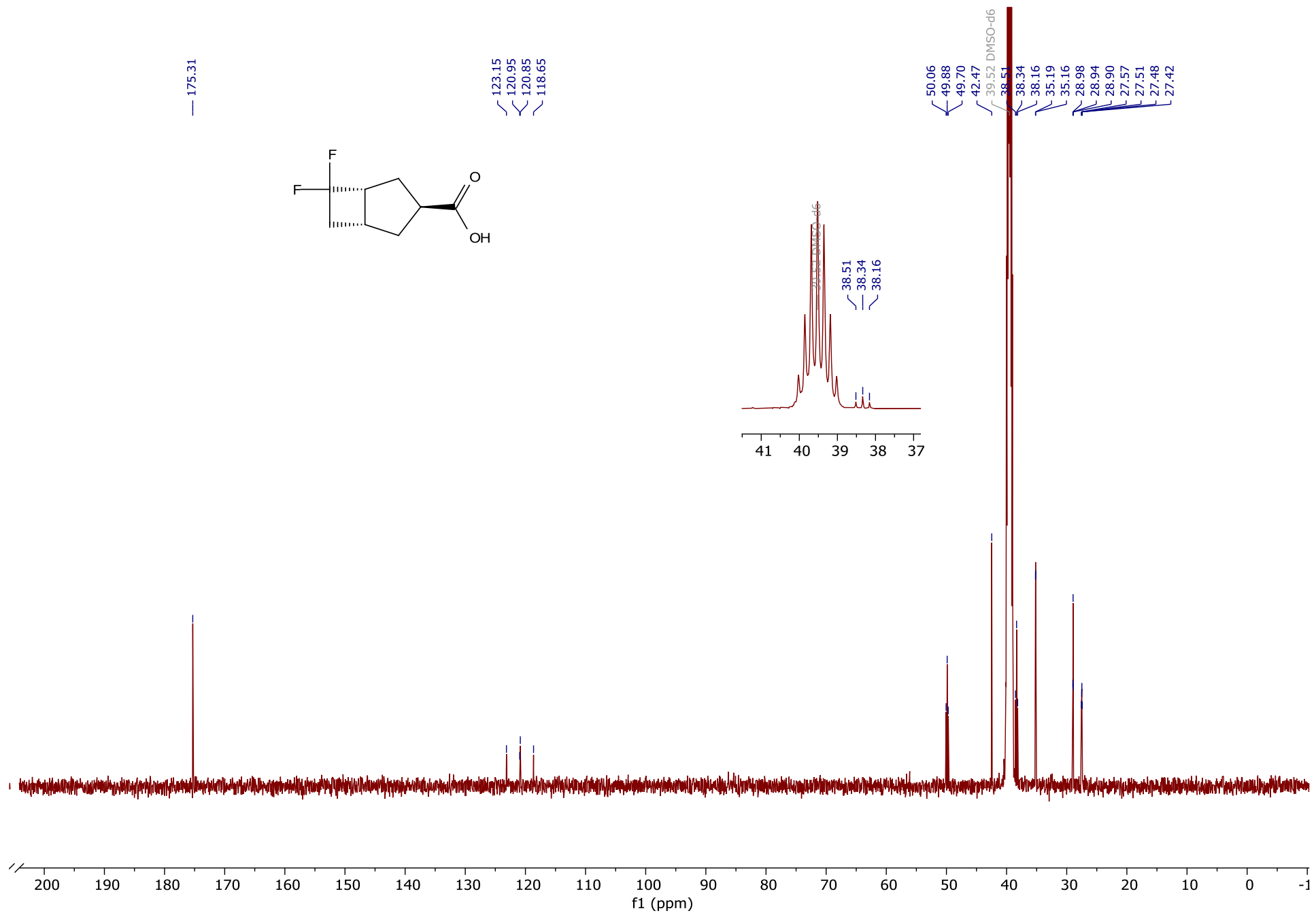


Figure 7. (1*R**,3*S**,5*R**)-6,6-Difluorobicyclo[3.2.0]heptane-3-carboxylic acid **1**, $^{13}\text{C}\{^1\text{H}\}$ NMR (126 MHz, DMSO- d_6)

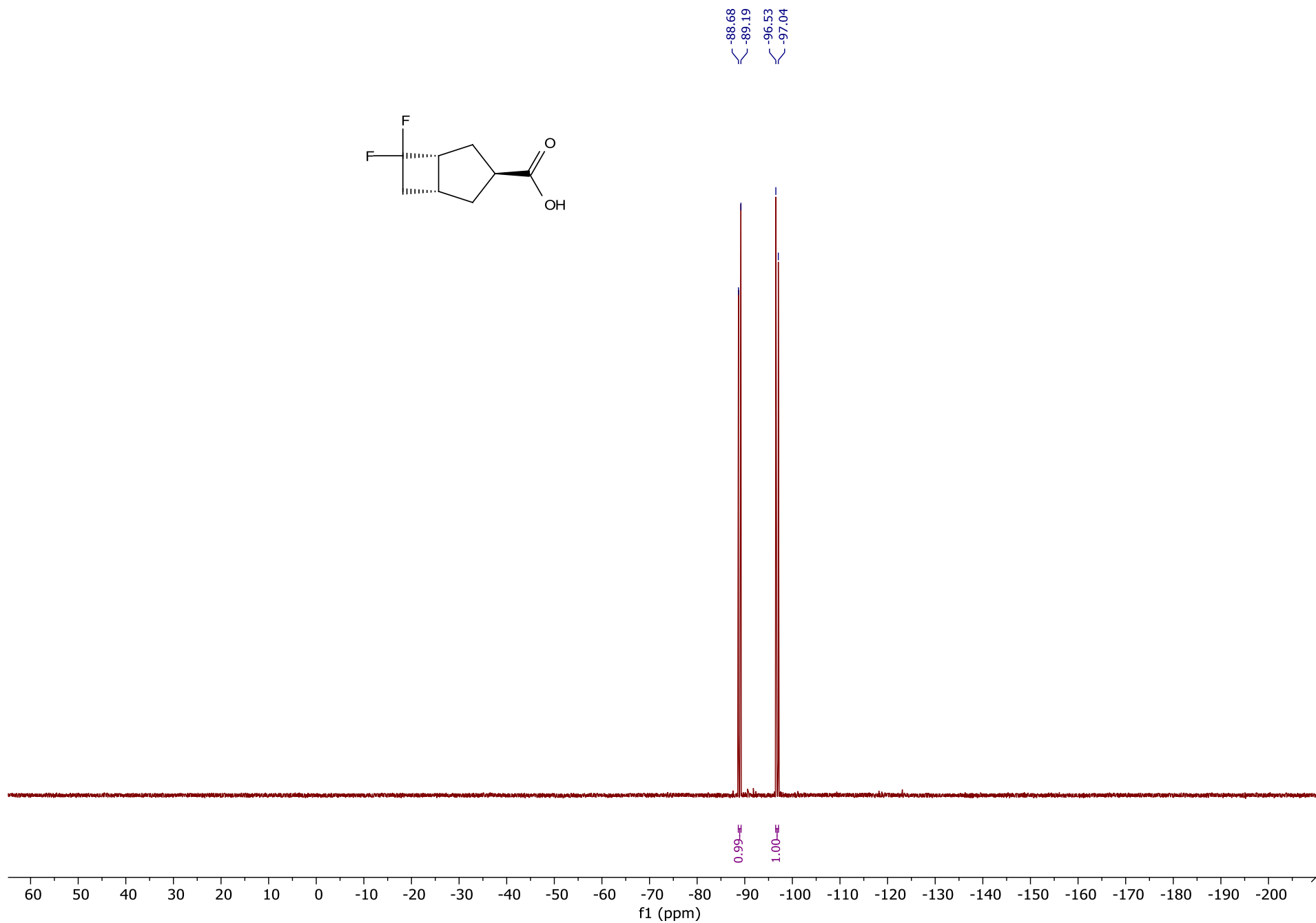


Figure 8. (1*R**,3*S**,5*R**)-6,6-Difluorobicyclo[3.2.0]heptane-3-carboxylic acid **1**, $^{19}\text{F}\{^1\text{H}\}$ NMR (376 MHz, $\text{DMSO-}d_6$)

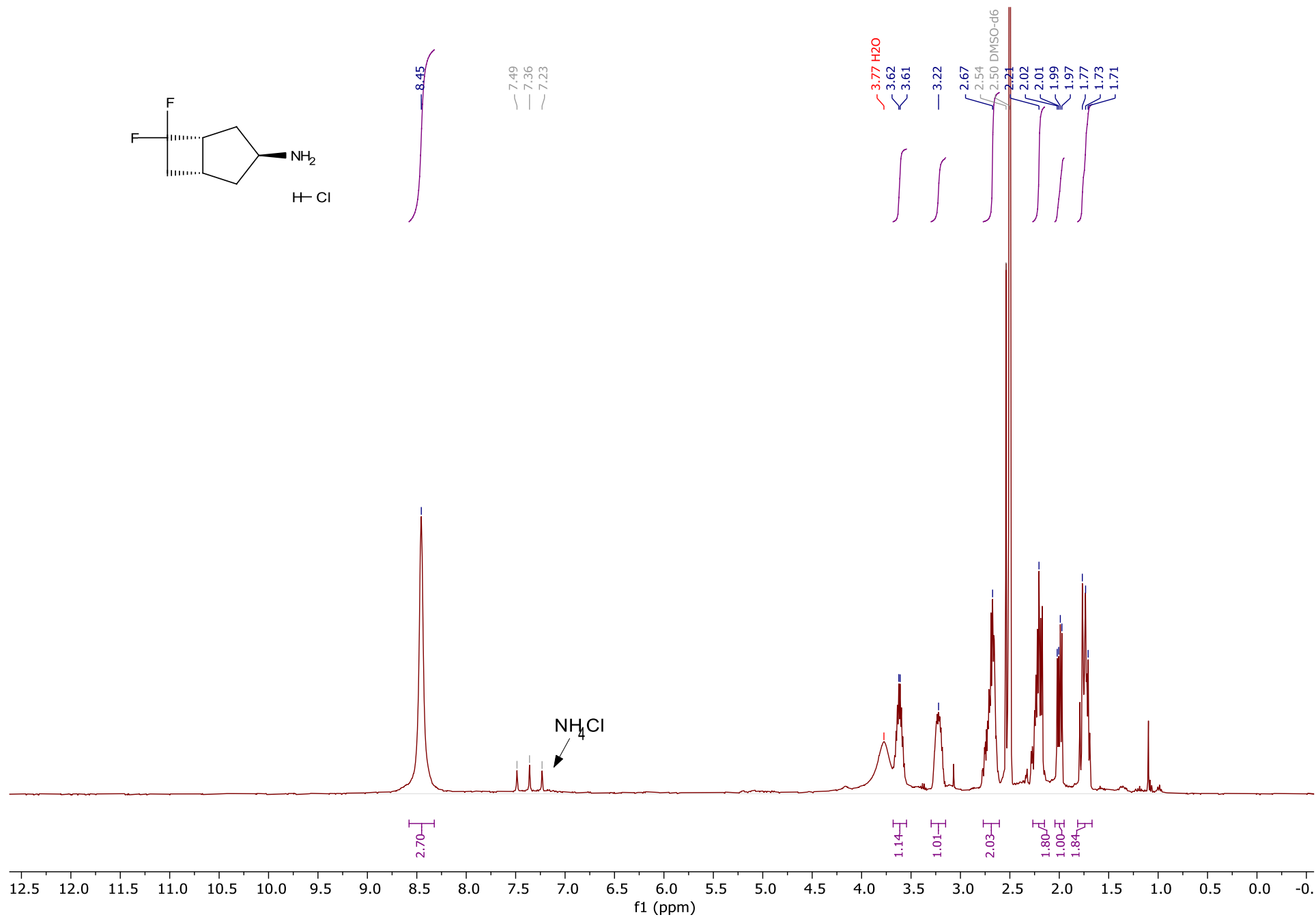


Figure 9. (1R*,3S*,5R*)-6,6-Difluorobicyclo[3.2.0]heptan-3-amine hydrochloride 2-HCl, ^1H NMR (400 MHz, $\text{DMSO-}d_6$)

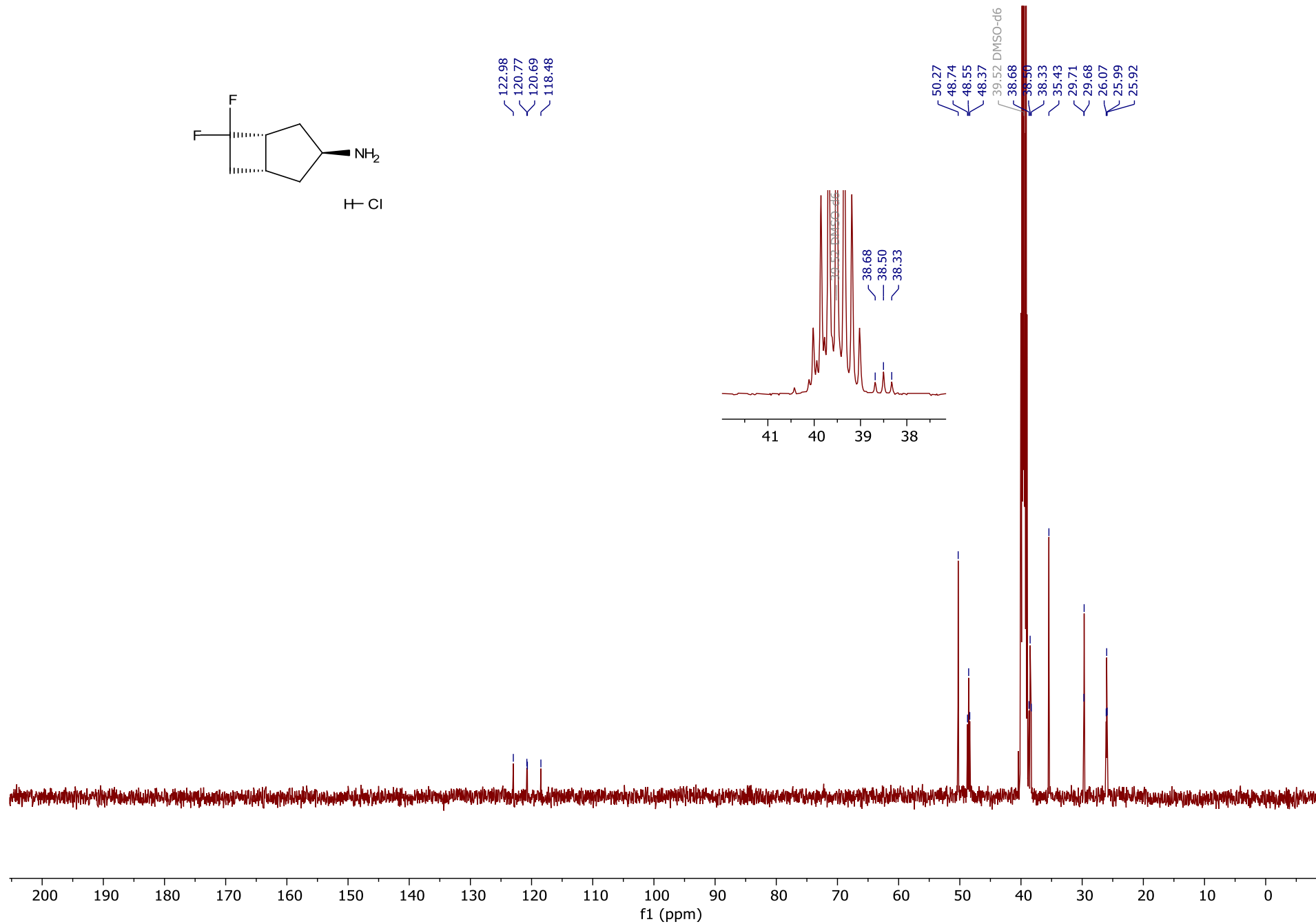


Figure 10. (1*R**,3*S**,5*R**)-6,6-Difluorobicyclo[3.2.0]heptan-3-amine hydrochloride 2·HCl, $^{13}\text{C}\{^1\text{H}\}$ NMR (126 MHz, DMSO- d_6)

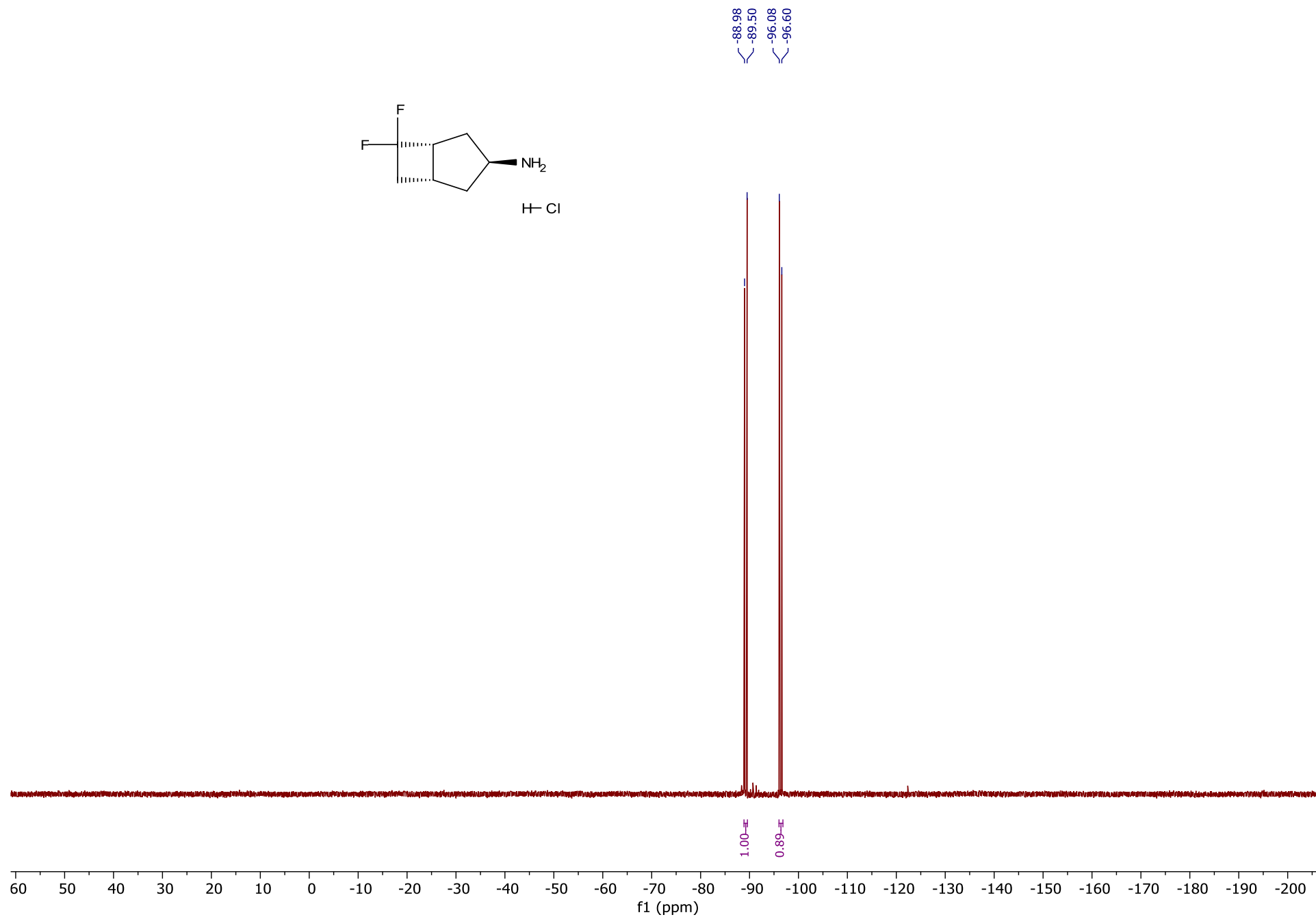


Figure 11. $(1R^*,3S^*,5R^*)$ -6,6-Difluorobicyclo[3.2.0]heptan-3-amine hydrochloride $2 \cdot \text{HCl}$, $^{19}\text{F}\{^1\text{H}\}$ NMR (376 MHz, $\text{DMSO}-d_6$)

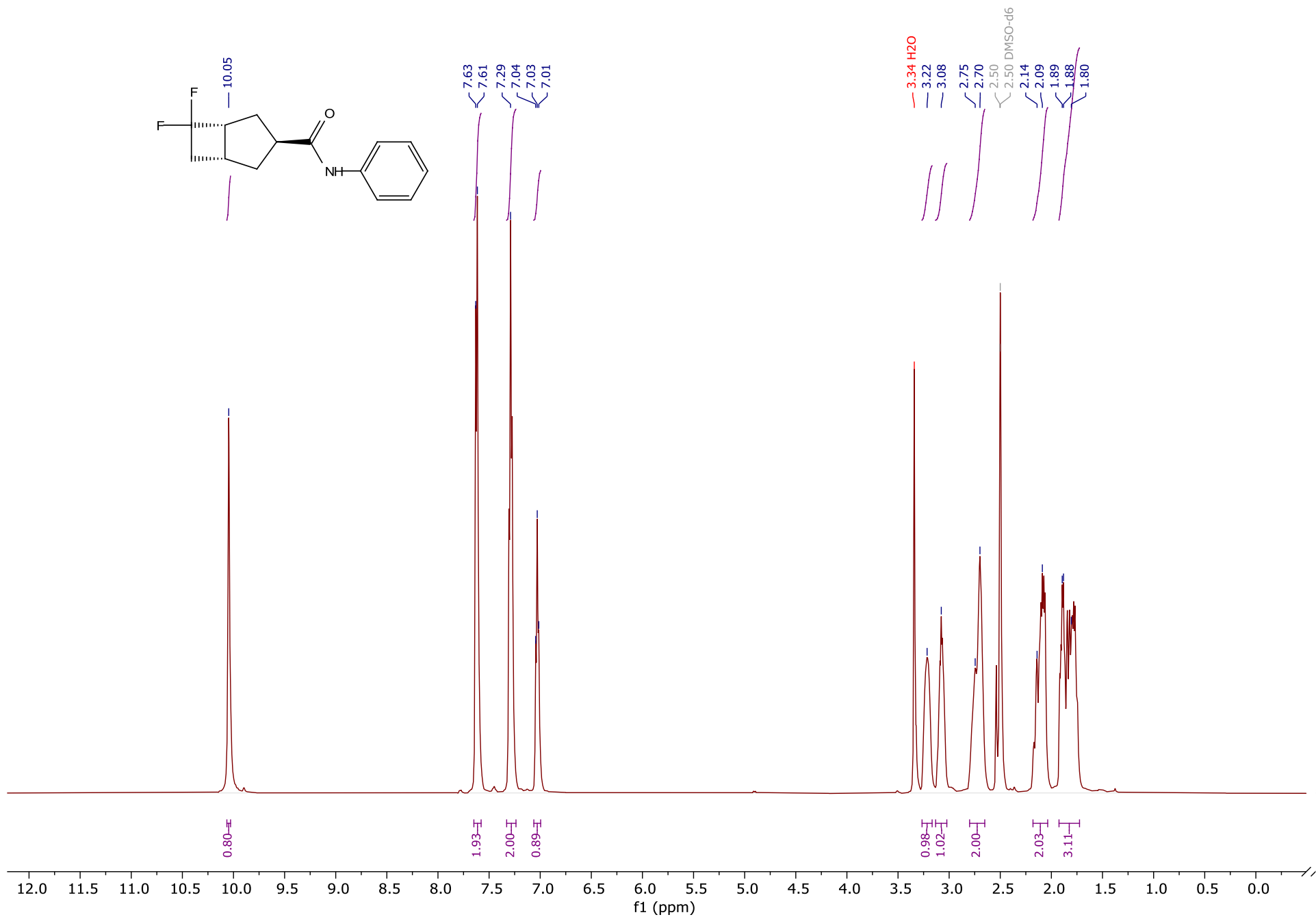


Figure 12. (1*R**,3*S**,5*R**)-6,6-Difluoro-N-phenylbicyclo[3.2.0]heptane-3-carboxamide **11**, ¹H NMR (500 MHz, DMSO-*d*₆)

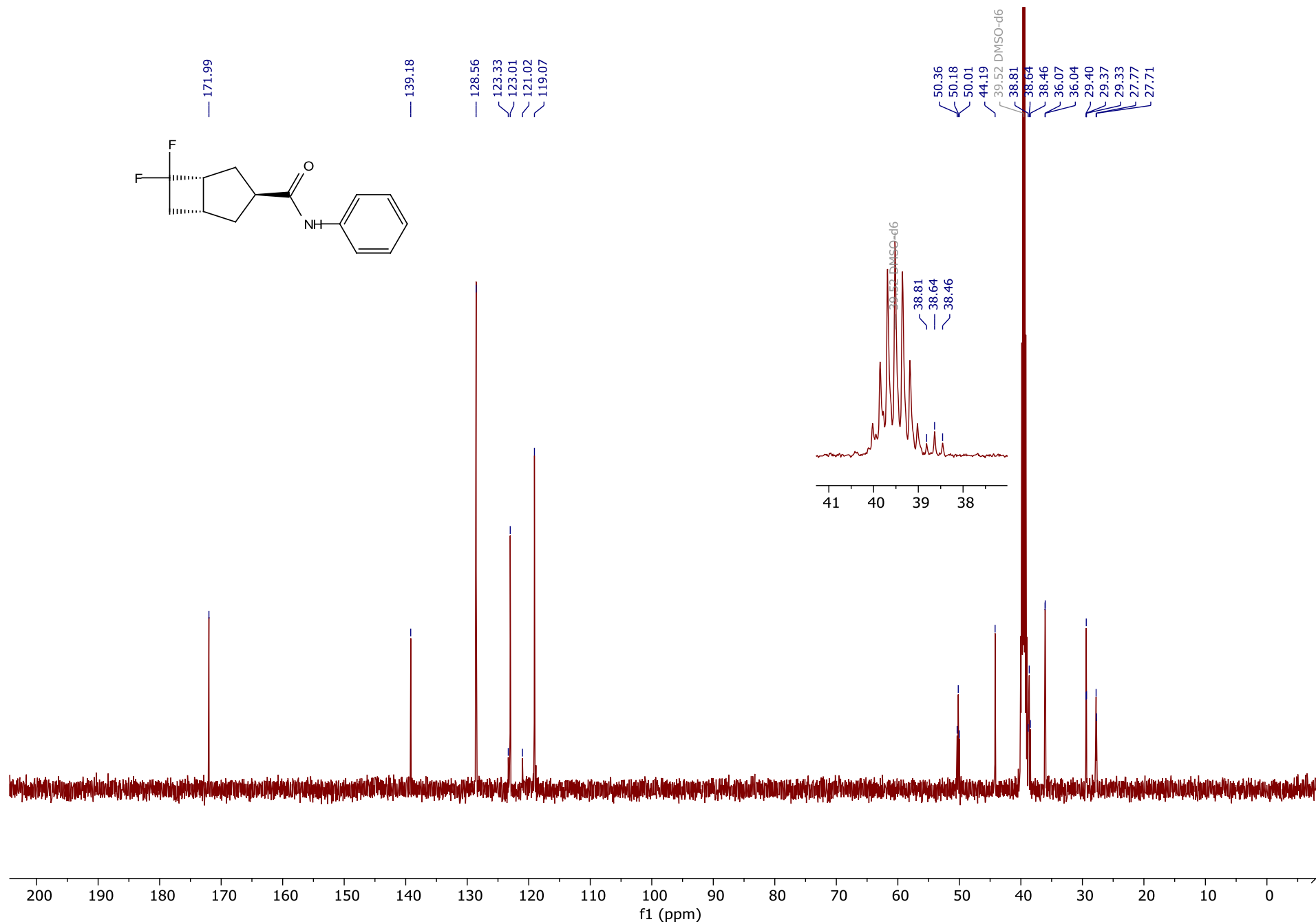


Figure 13. (1*R**,3*S**,5*R**)-6,6-Difluoro-N-phenylbicyclo[3.2.0]heptane-3-carboxamide **11**, $^{13}\text{C}\{^1\text{H}\}$ NMR (126 MHz, DMSO- d_6)

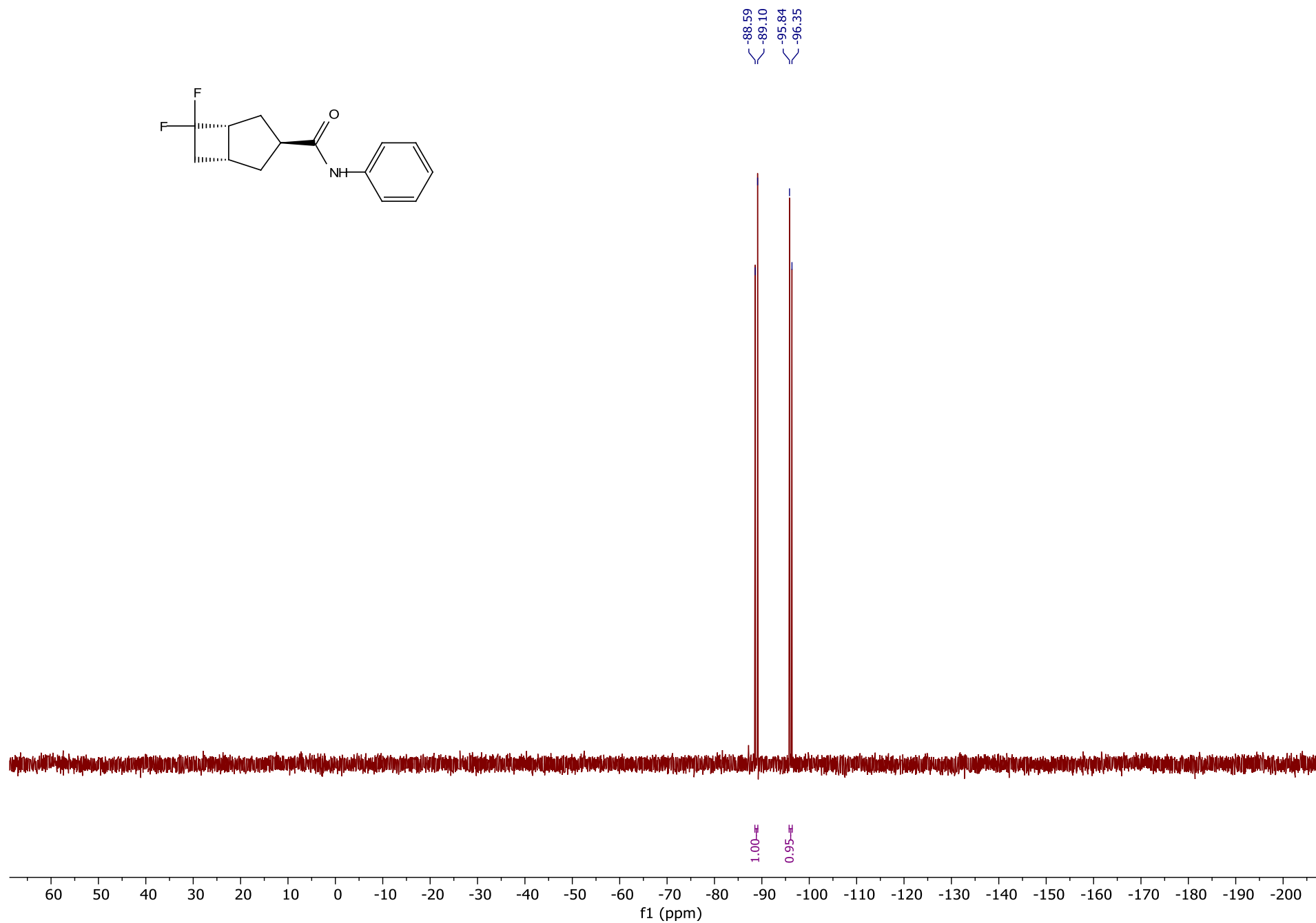


Figure 14. (1*R**,3*S**,5*R**)-6,6-Difluoro-N-phenylbicyclo[3.2.0]heptane-3-carboxamide **11**, ^{19}F $\{^1\text{H}\}$ NMR (376 MHz, $\text{DMSO-}d_6$)

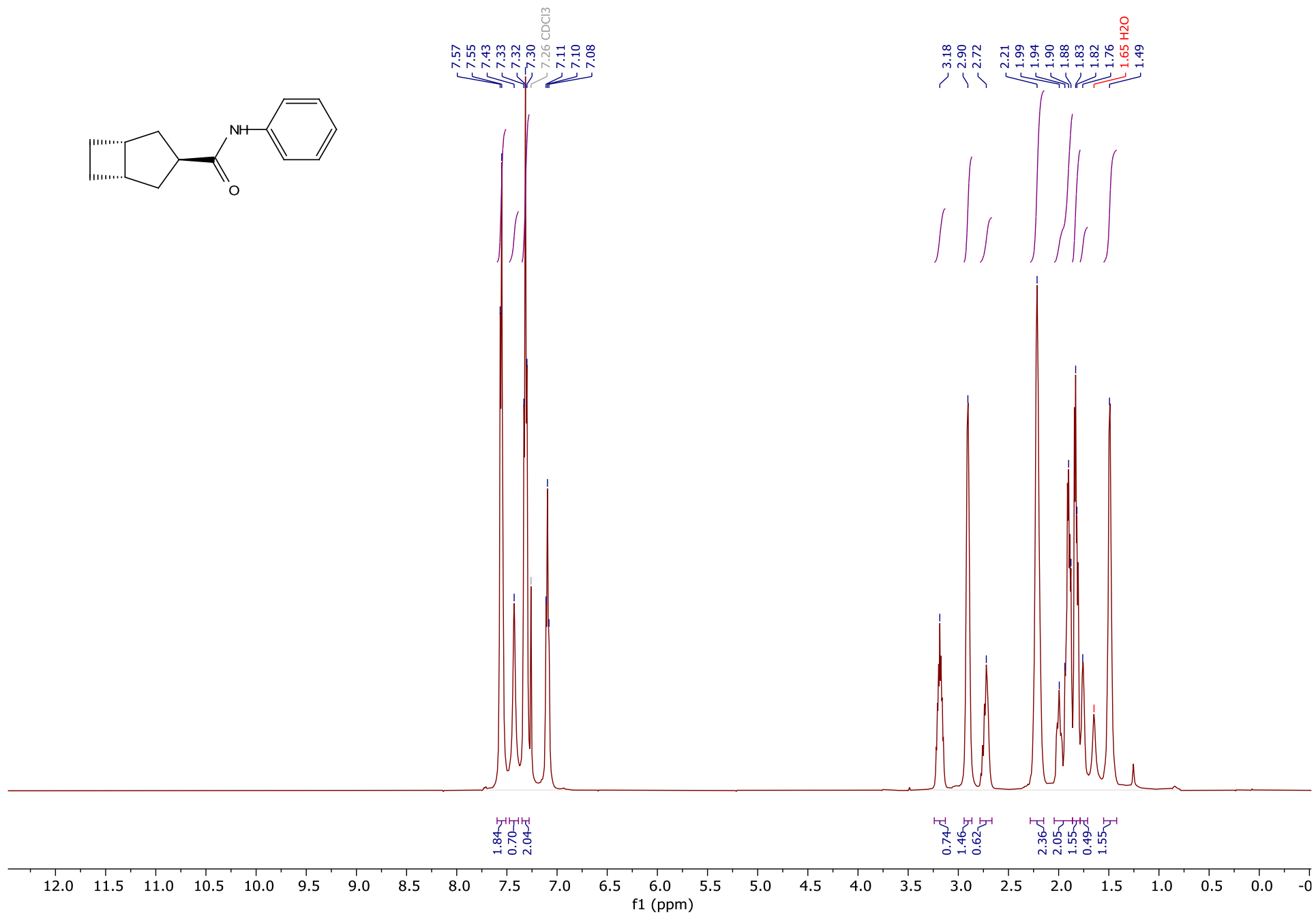


Figure 15. (1*R**,3*S**,5*S**)-N-Phenylbicyclo[3.2.0]heptane-3-carboxamide **12**, ¹H NMR (500 MHz, CDCl₃).

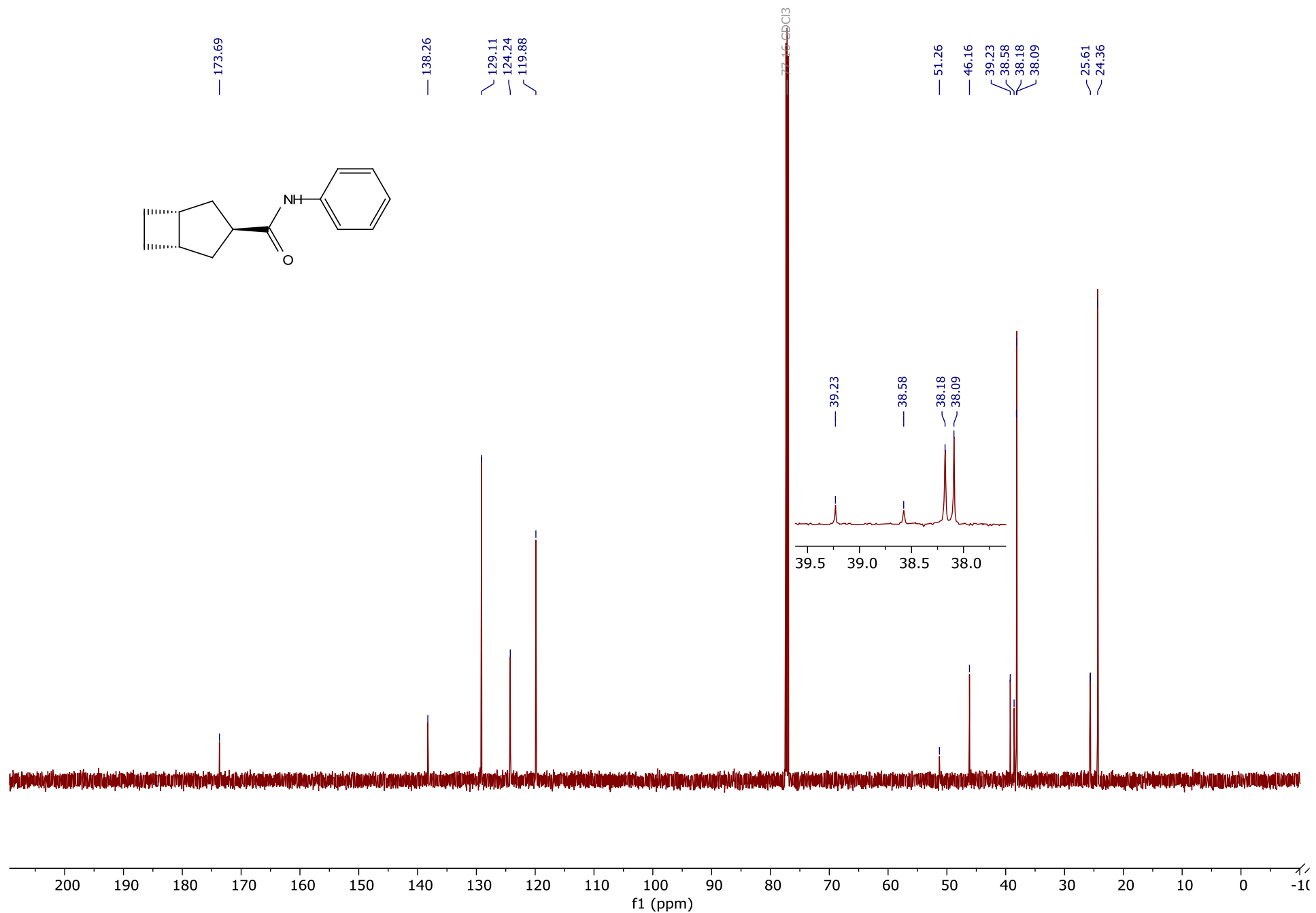


Figure 16. (1*R**,3*S**,5*S**)-N-Phenylbicyclo[3.2.0]heptane-3-carboxamide **12**, ¹³C{¹H} NMR (151 MHz, CDCl₃).

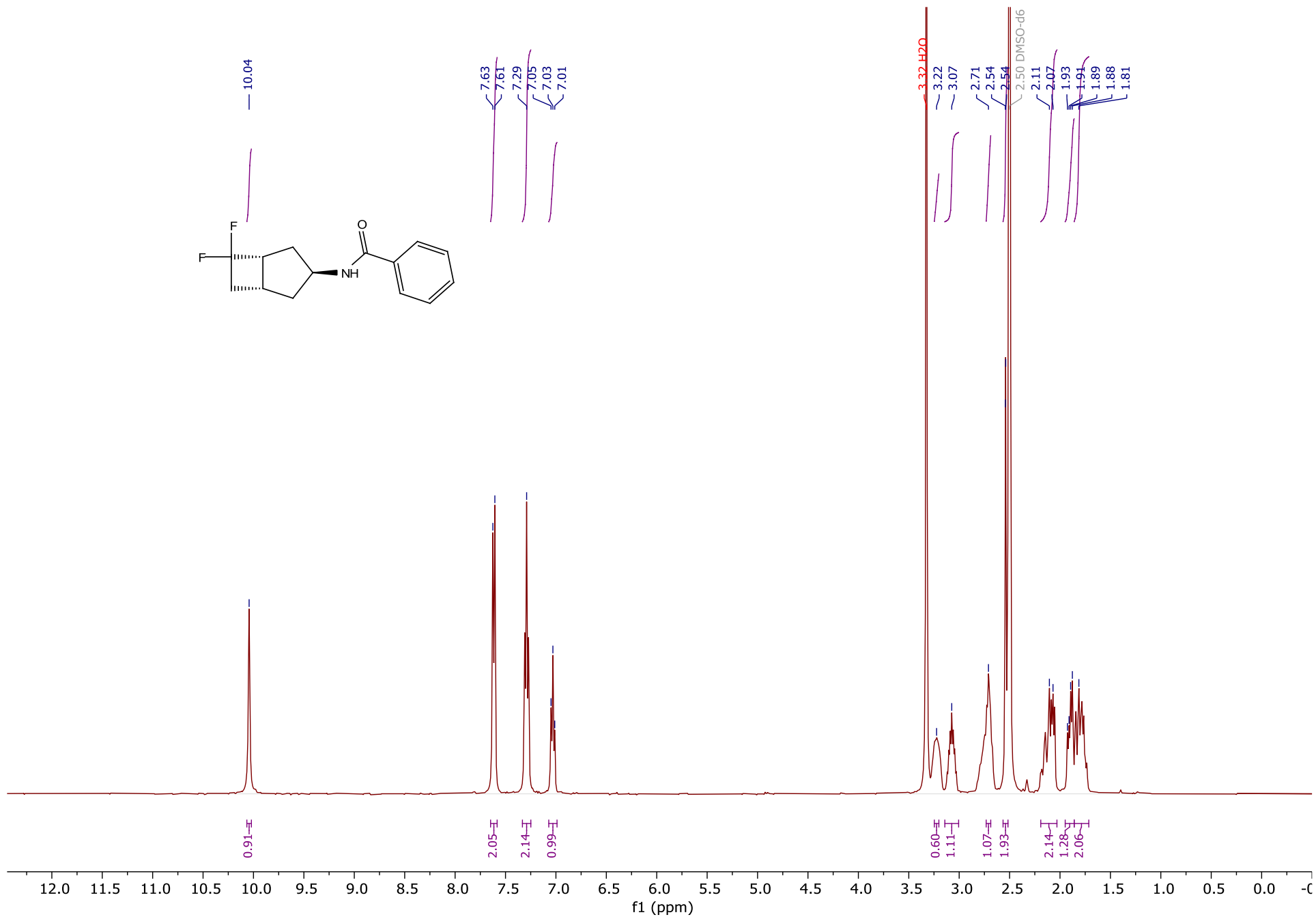


Figure 17. *N*-[(1*R**,3*S**,5*R**)-6,6-difluorobicyclo[3.2.0]heptan-3-yl]benzamide **13**, ¹H NMR (400 MHz, DMSO-*d*₆)

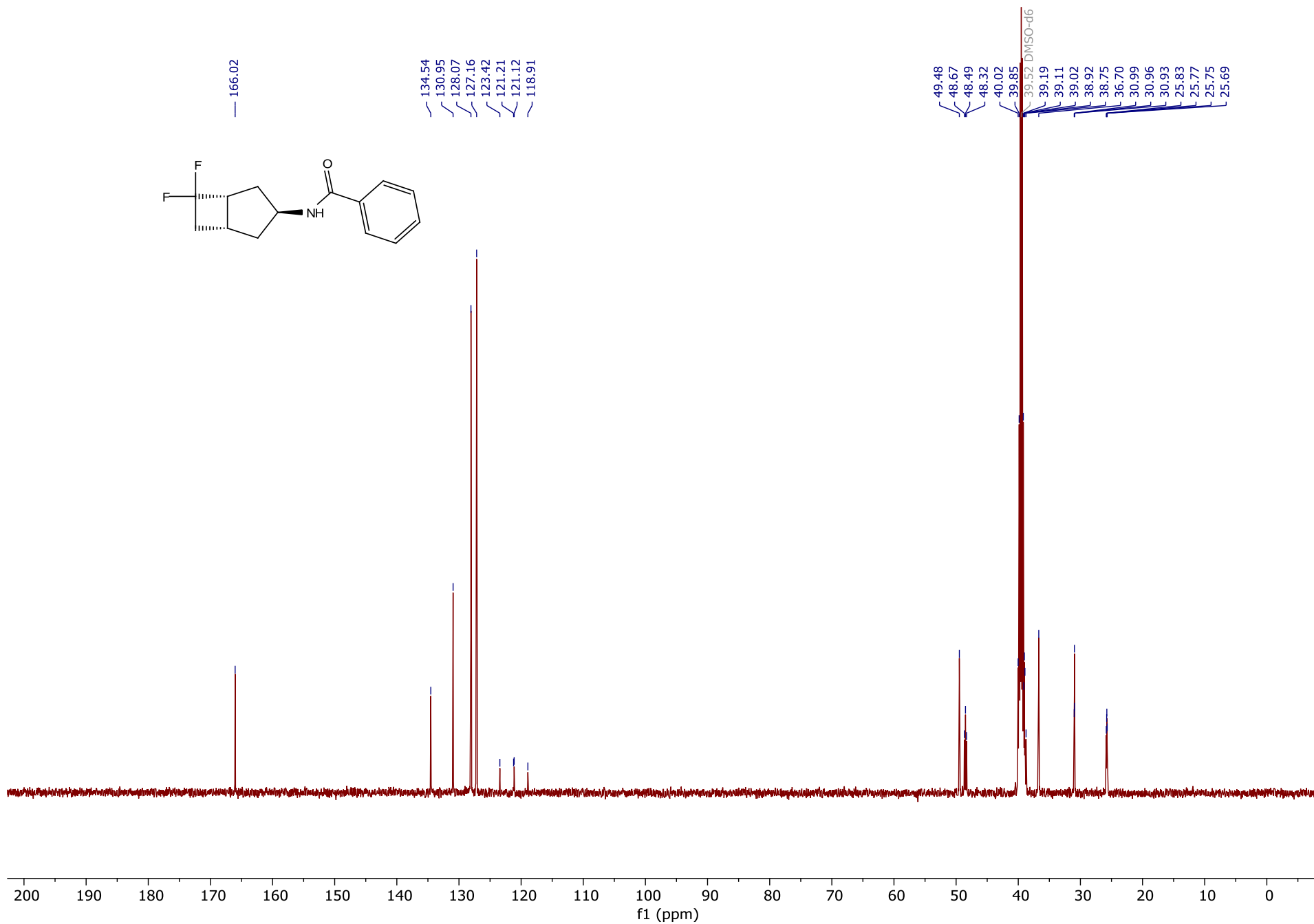


Figure 18. *N*-[(1*R**,3*S**,5*R**)-6,6-difluorobicyclo[3.2.0]heptan-3-yl]benzamide **13**, ¹³C{¹H} NMR (126 MHz, DMSO-*d*₆)

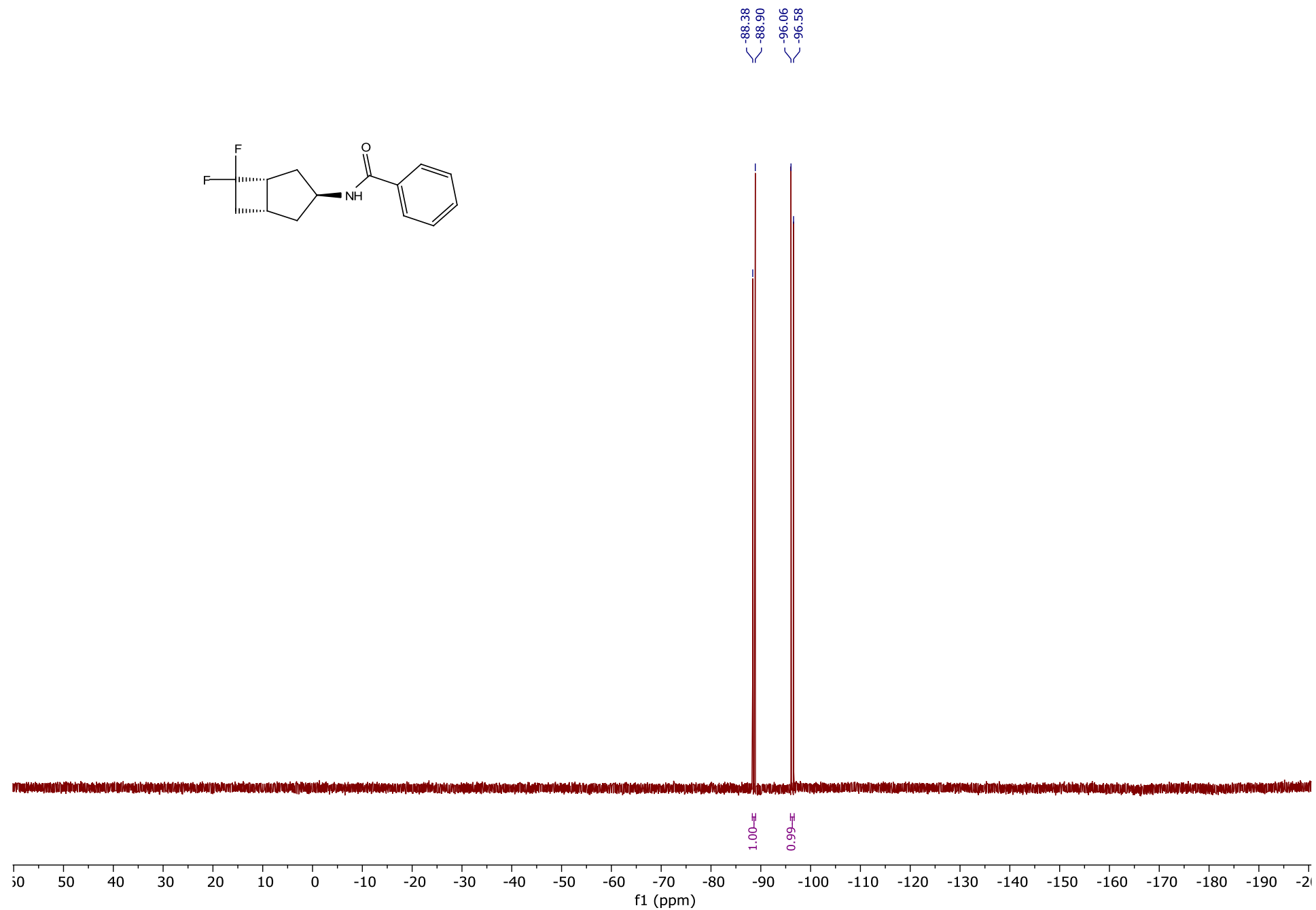


Figure 19. *N*-[(1*R**,3*S**,5*R**)-6,6-difluorobicyclo[3.2.0]heptan-3-yl]benzamide **13**, $^{19}\text{F}\{^1\text{H}\}$ NMR (376 MHz, $\text{DMSO-}d_6$)

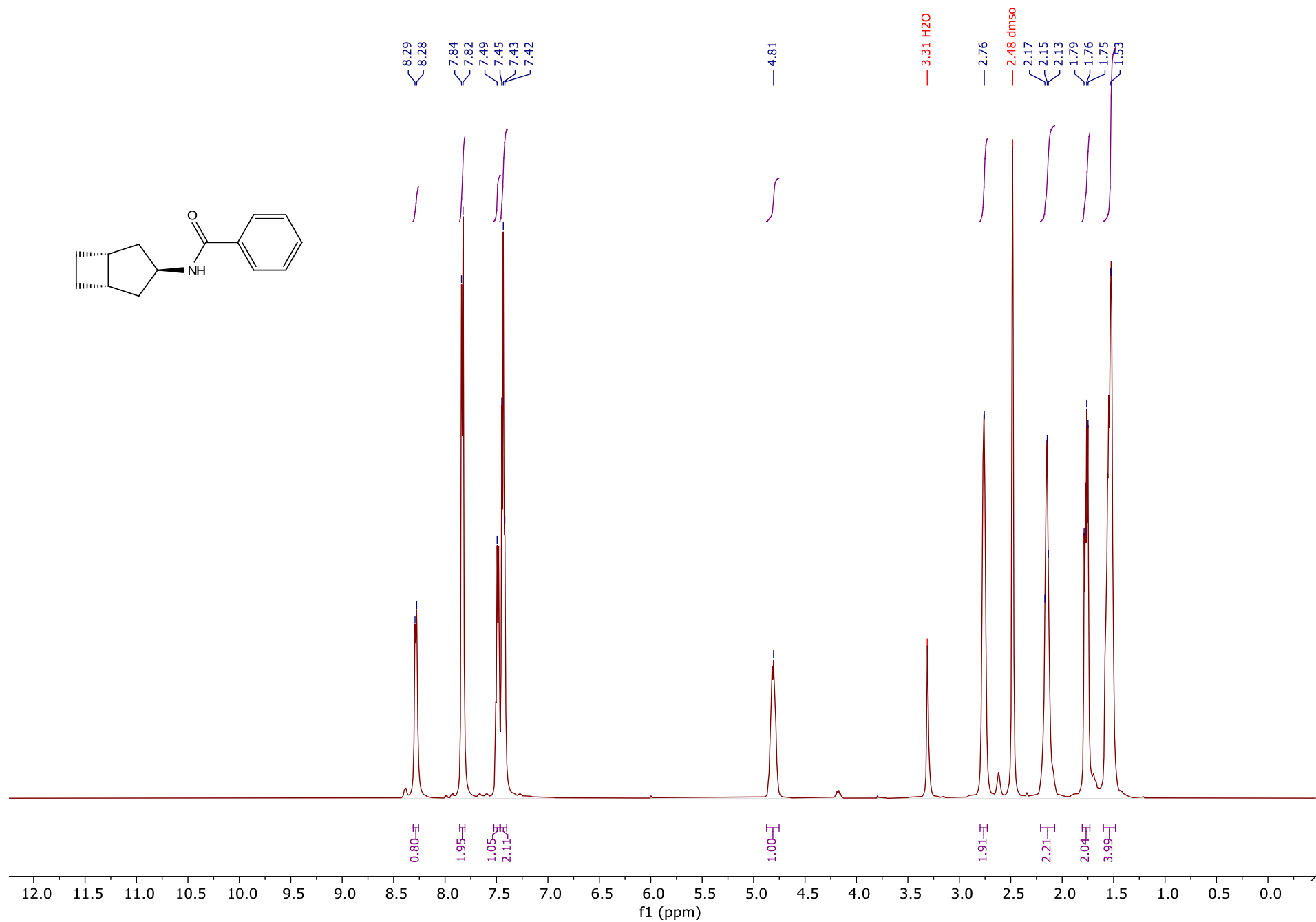


Figure 20. *N*-[(1*R**,3*S**,5*S**)-bicyclo[3.2.0]heptan-3-yl]benzamide **14**, ¹H NMR (500 MHz, DMSO-*d*₆).

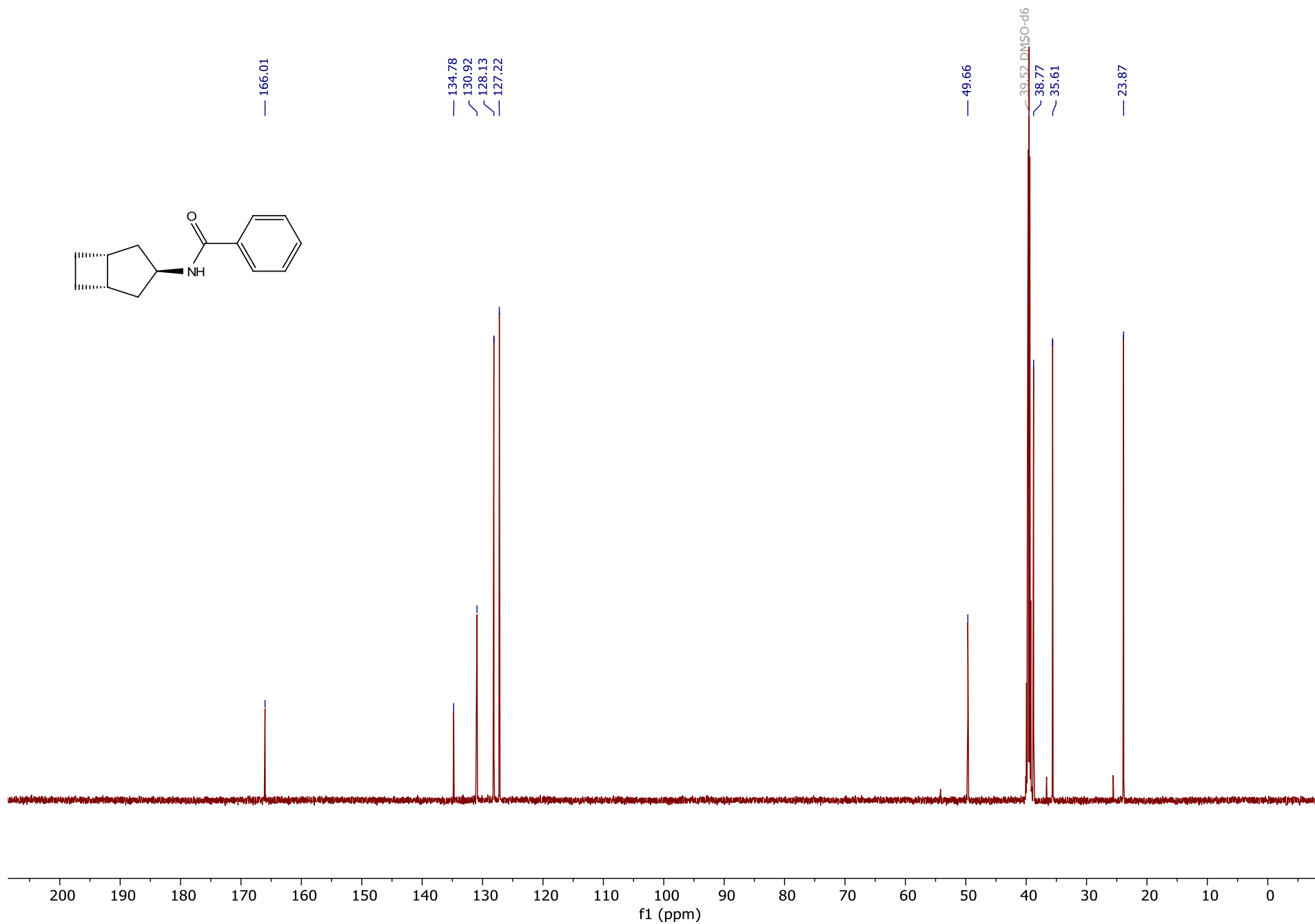


Figure 21. *N*-[(1*R**,3*S**,5*S**)-bicyclo[3.2.0]heptan-3-yl]benzamide **14**, $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, DMSO-*d*₆)