Supplementary Material

One-pot highly diastereoselective five-component synthesis of polysubstituted 2-hydroxy-2-trifluoromethylpiperidines with four and five stereogenic centers

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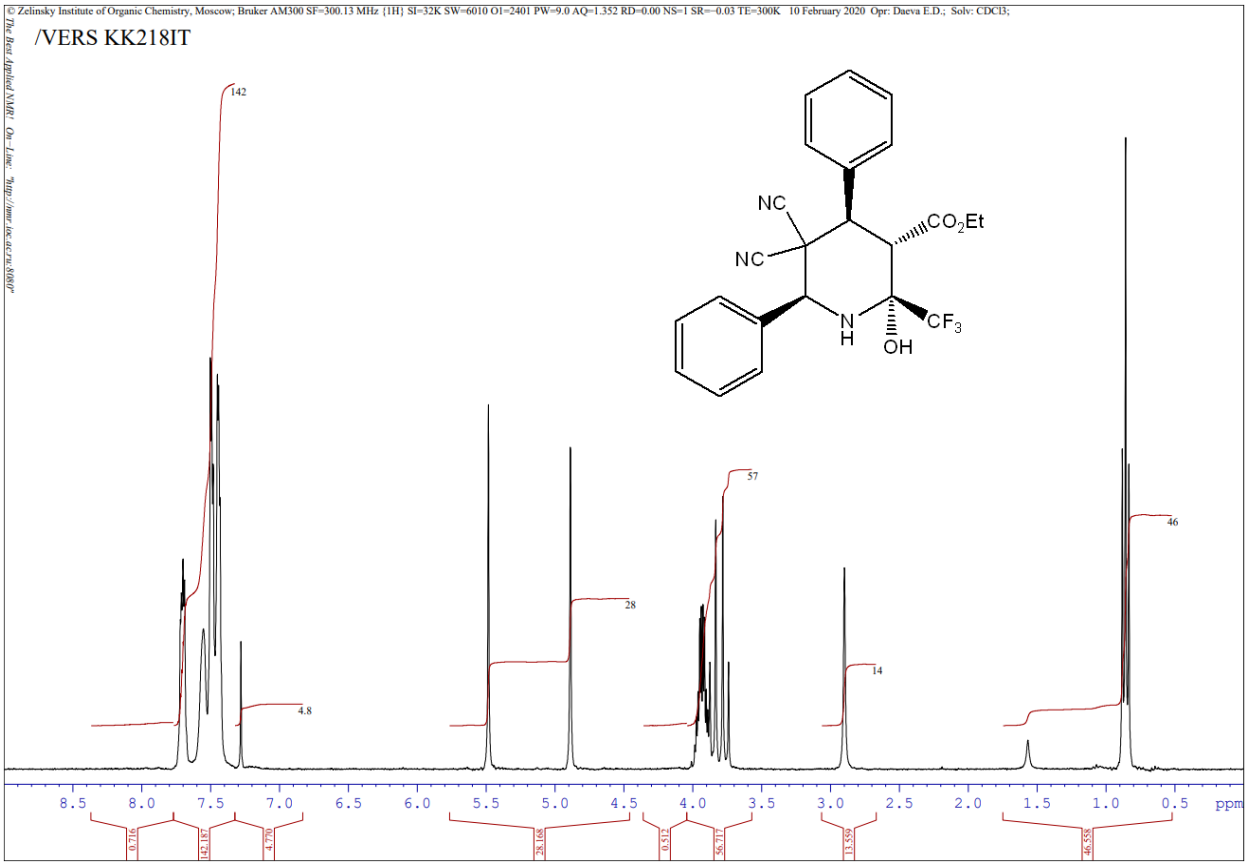
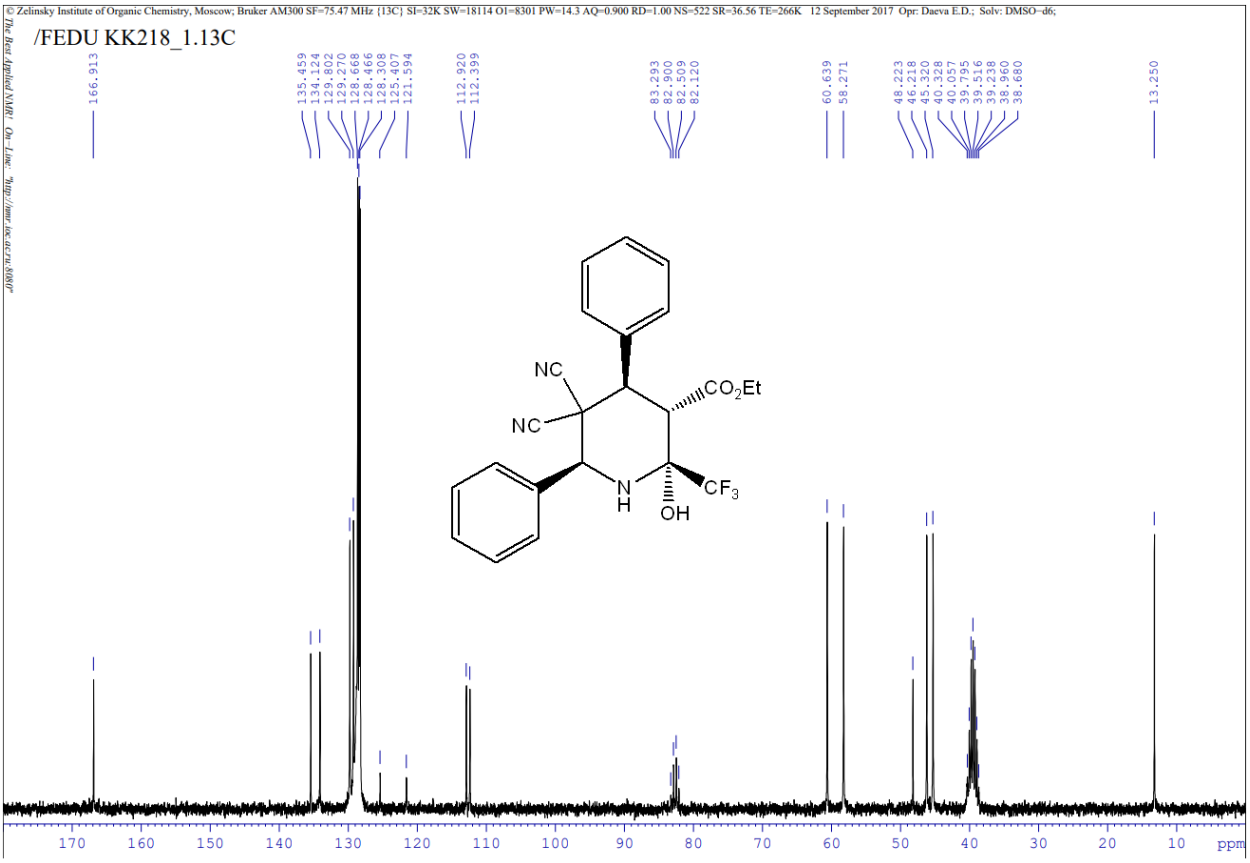
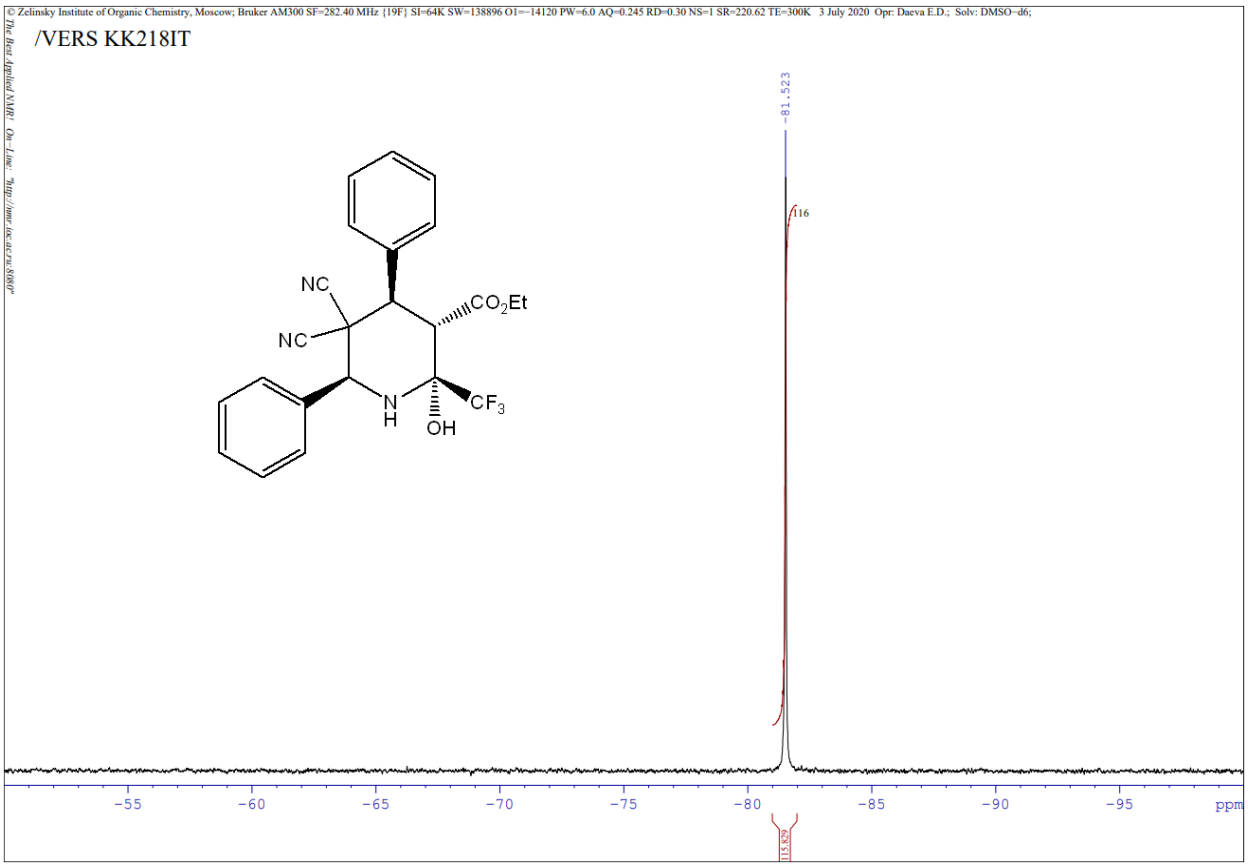
^{1}H NMR of ethyl (2*RS*,3*SR*,4*RS*,6*SR*)-5,5-dicyano-2-hydroxy-4,6-diphenyl-2-(trifluoromethyl)piperidine-3-carboxylate **(3a)**



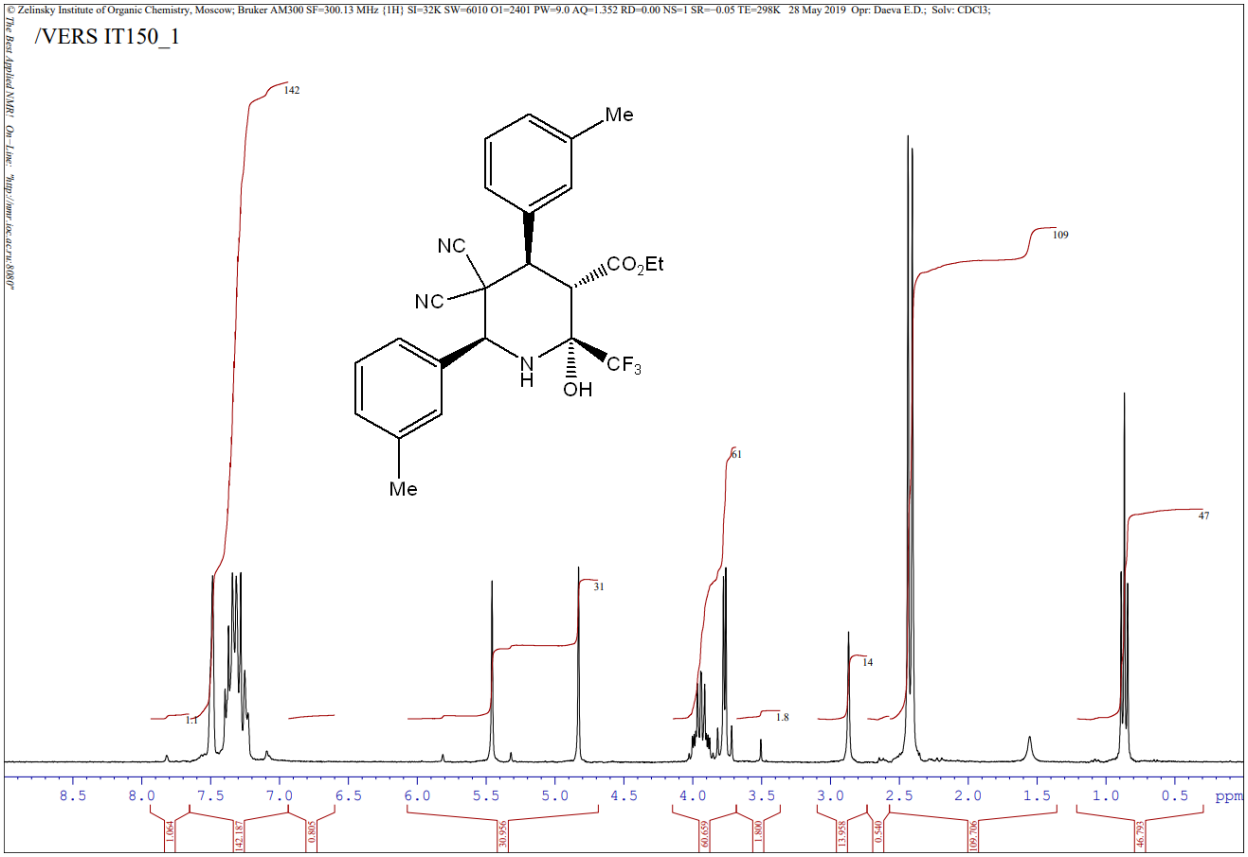
^{13}C NMR of **3a**



^{19}F NMR of **3a**



^{1}H NMR of ethyl (2*RS*,3*SR*,4*RS*,6*SR*)-5,5-dicyano-2-hydroxy-4,6-bis(3-methylphenyl)-2-(trifluoromethyl)piperidine-3-carboxylate **(3b)**



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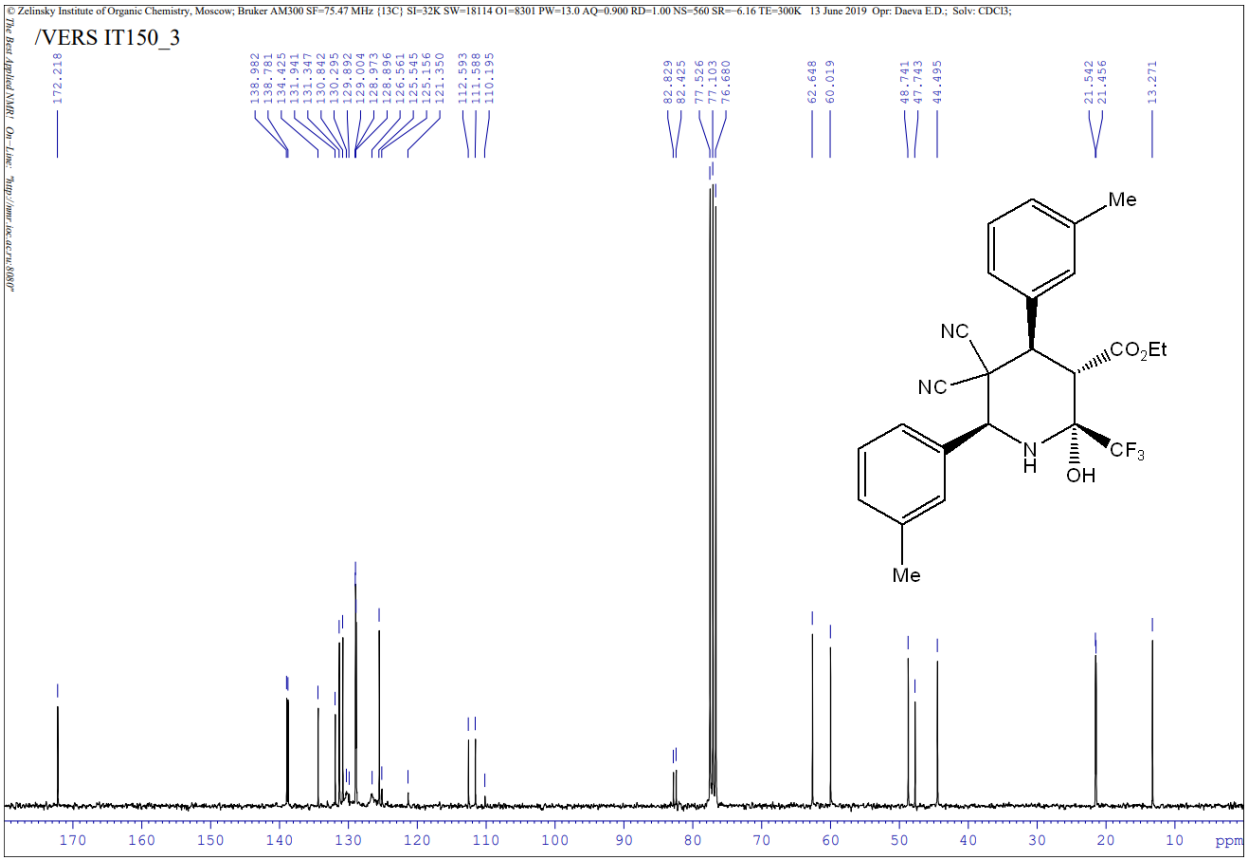

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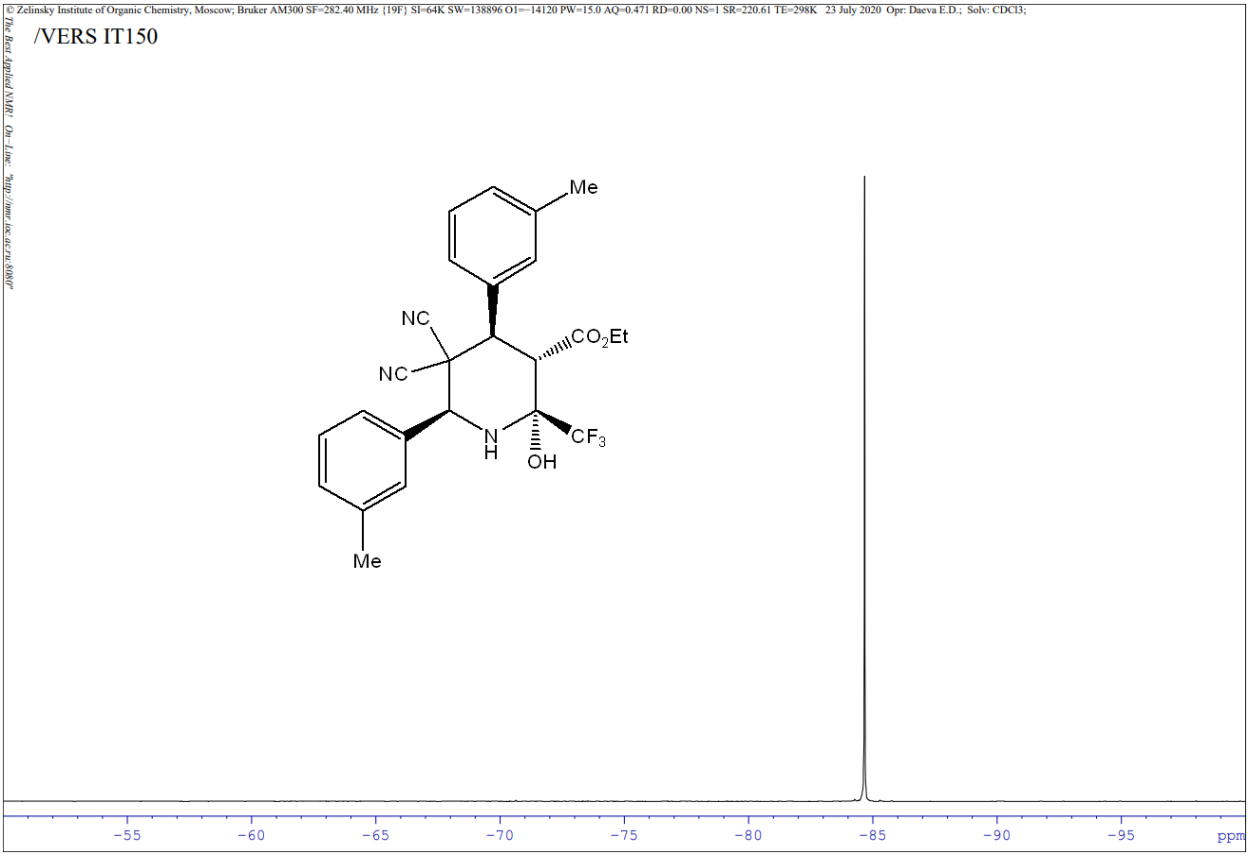
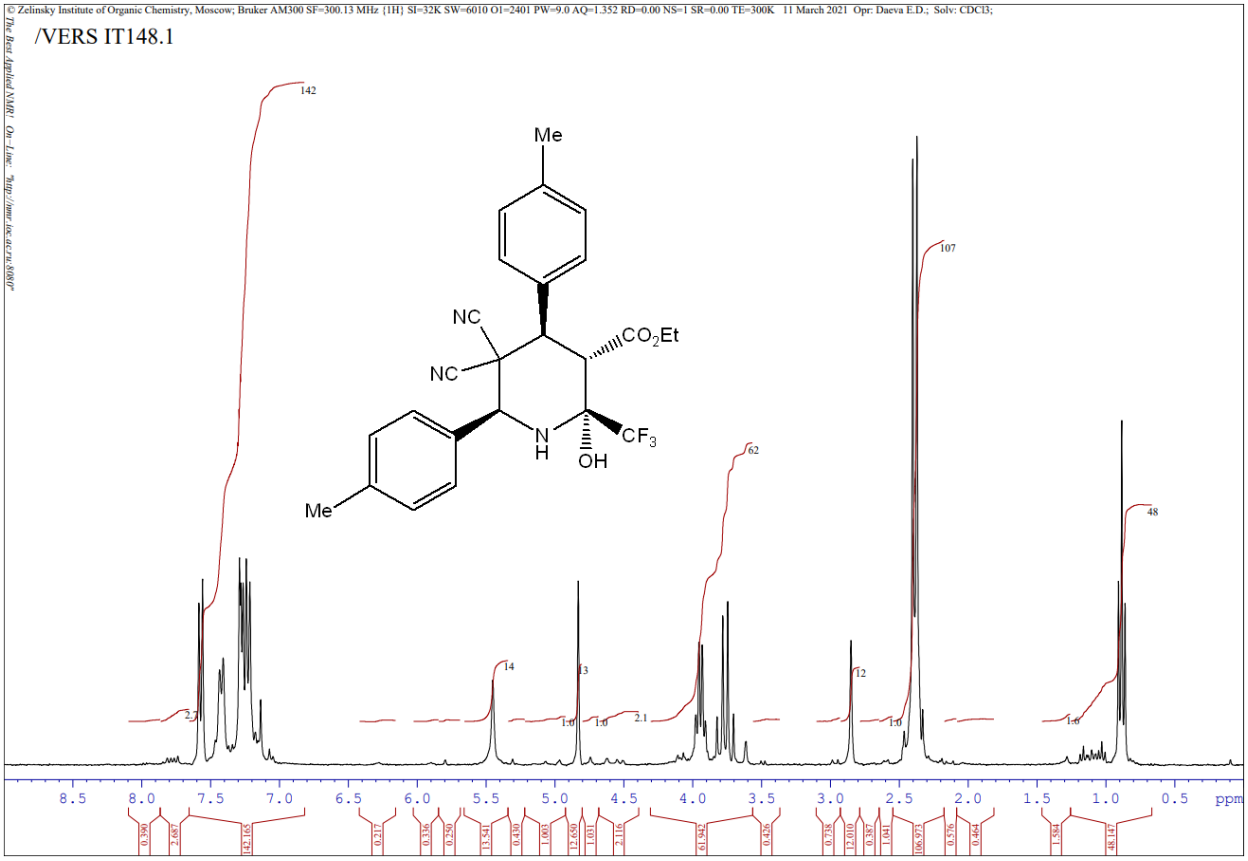
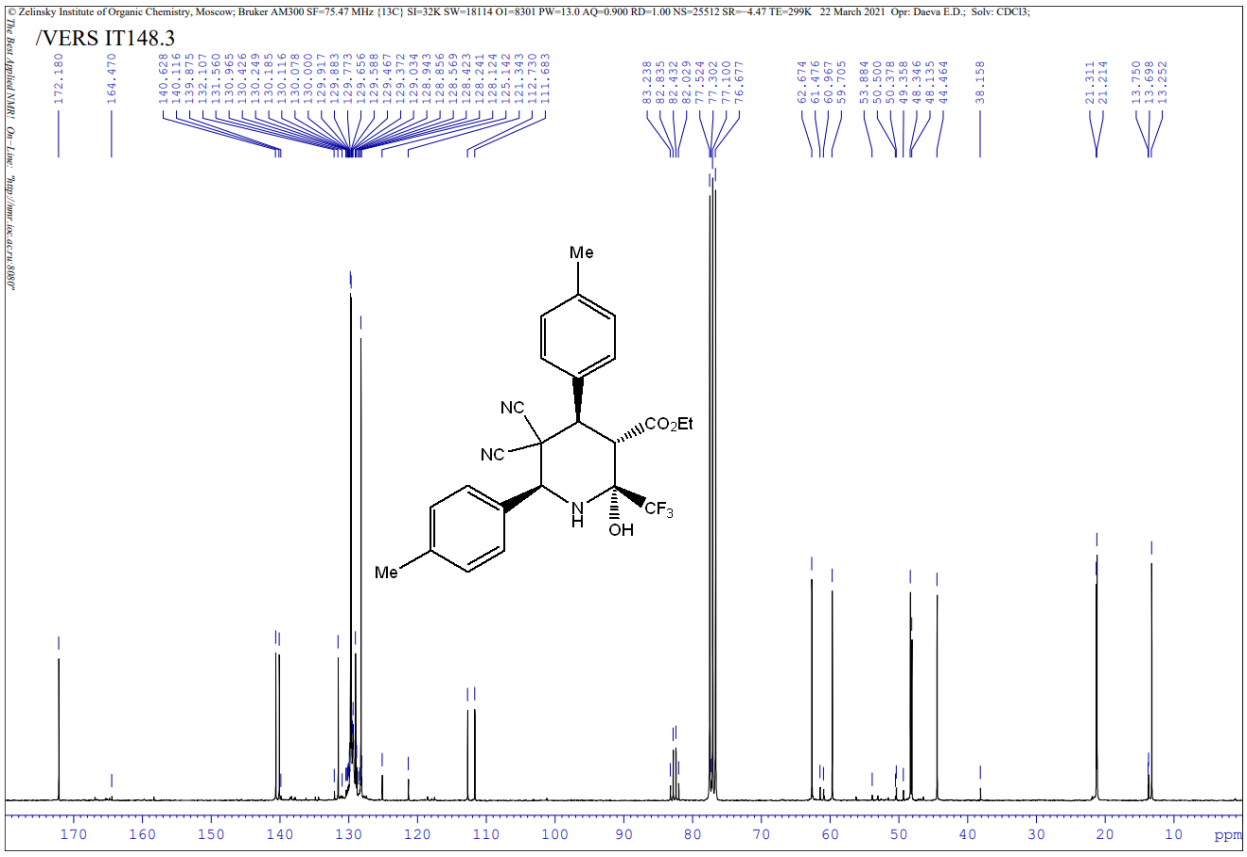


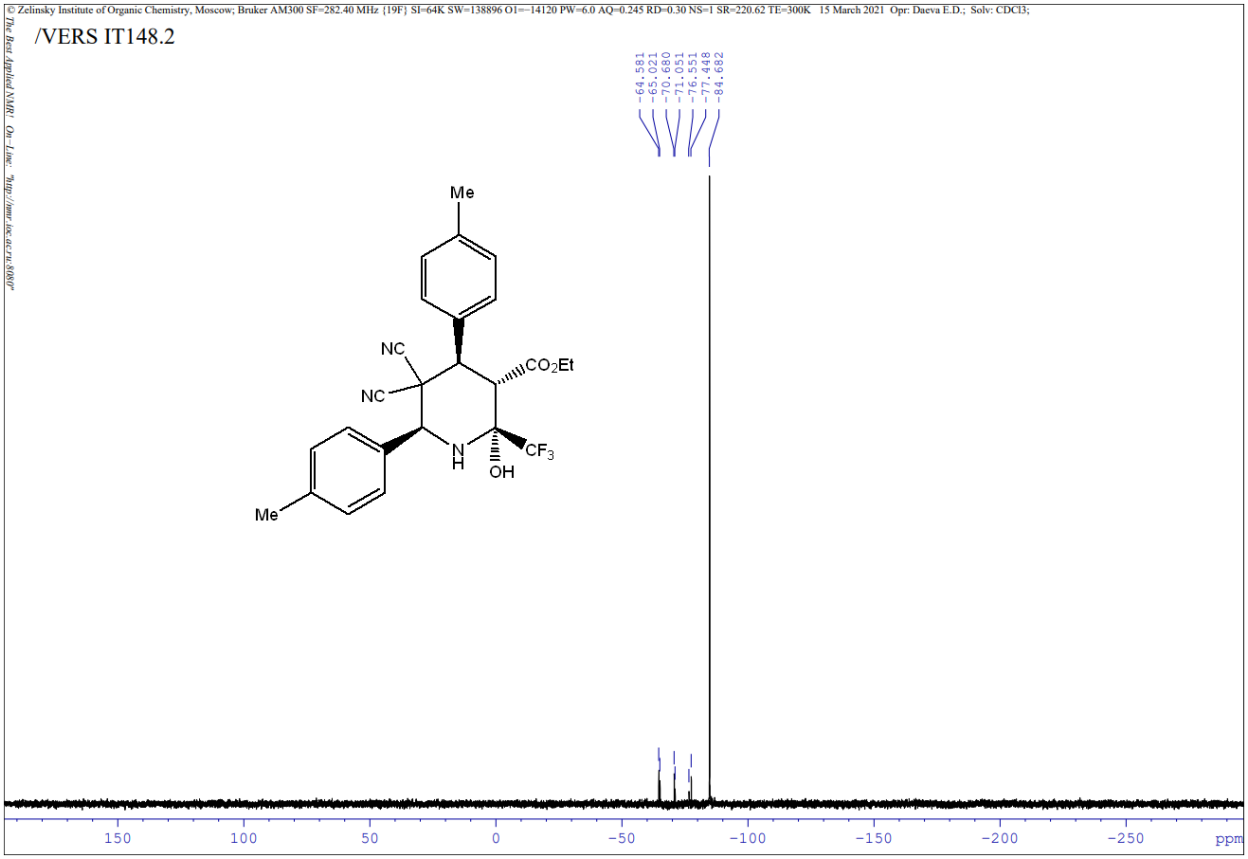
^{1}H NMR of ethyl (2*RS*,3*SR*,4*RS*,6*SR*)-5,5-dicyano-2-hydroxy-4,6-bis(4-methylphenyl)-2-(trifluoromethyl)piperidine-3-carboxylate **(3c)**



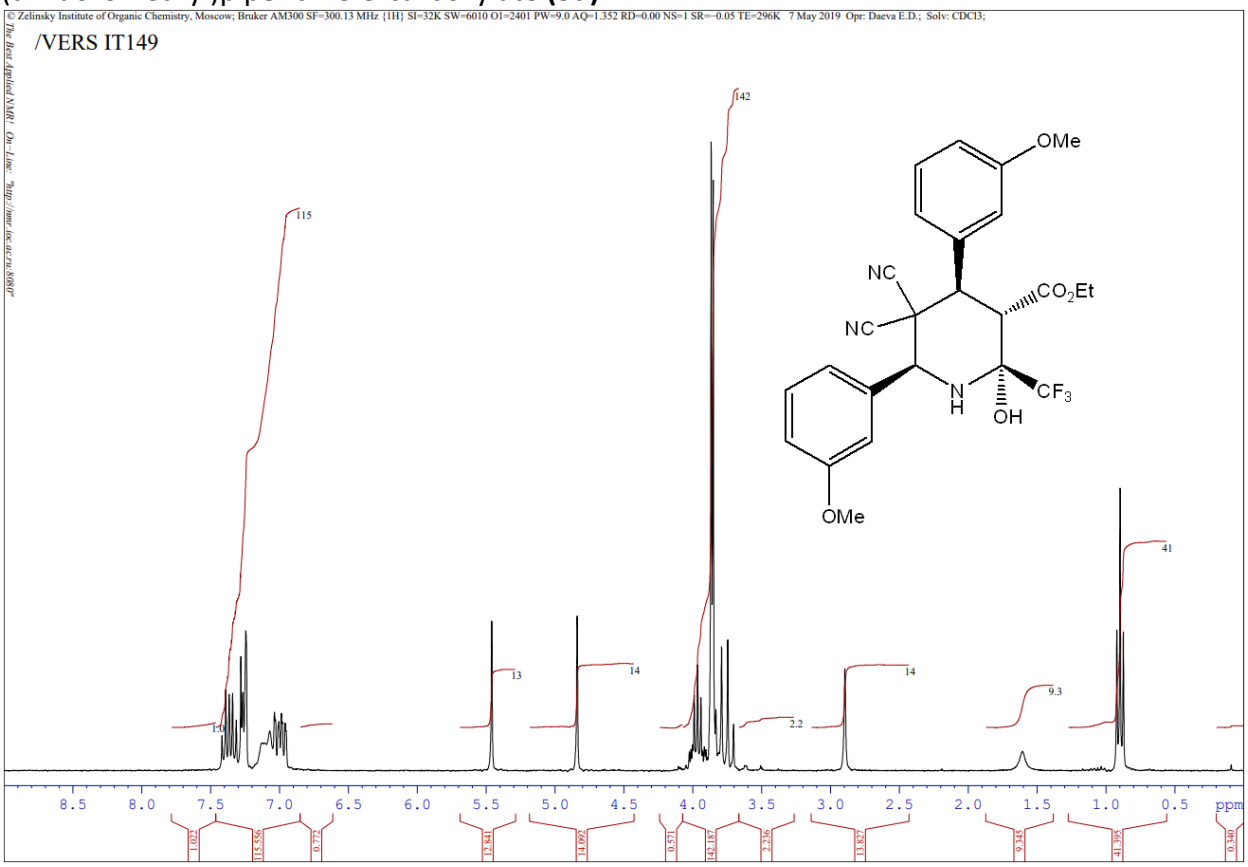
^{13}C NMR of **3c**



^{19}F NMR of **3c**



^{1}H NMR of ethyl (2*RS*,3*SR*,4*RS*,6*SR*)-5,5-dicyano-2-hydroxy-4,6-bis(3-methoxyphenyl)-2-(trifluoromethyl)piperidine-3-carboxylate **(3d)**



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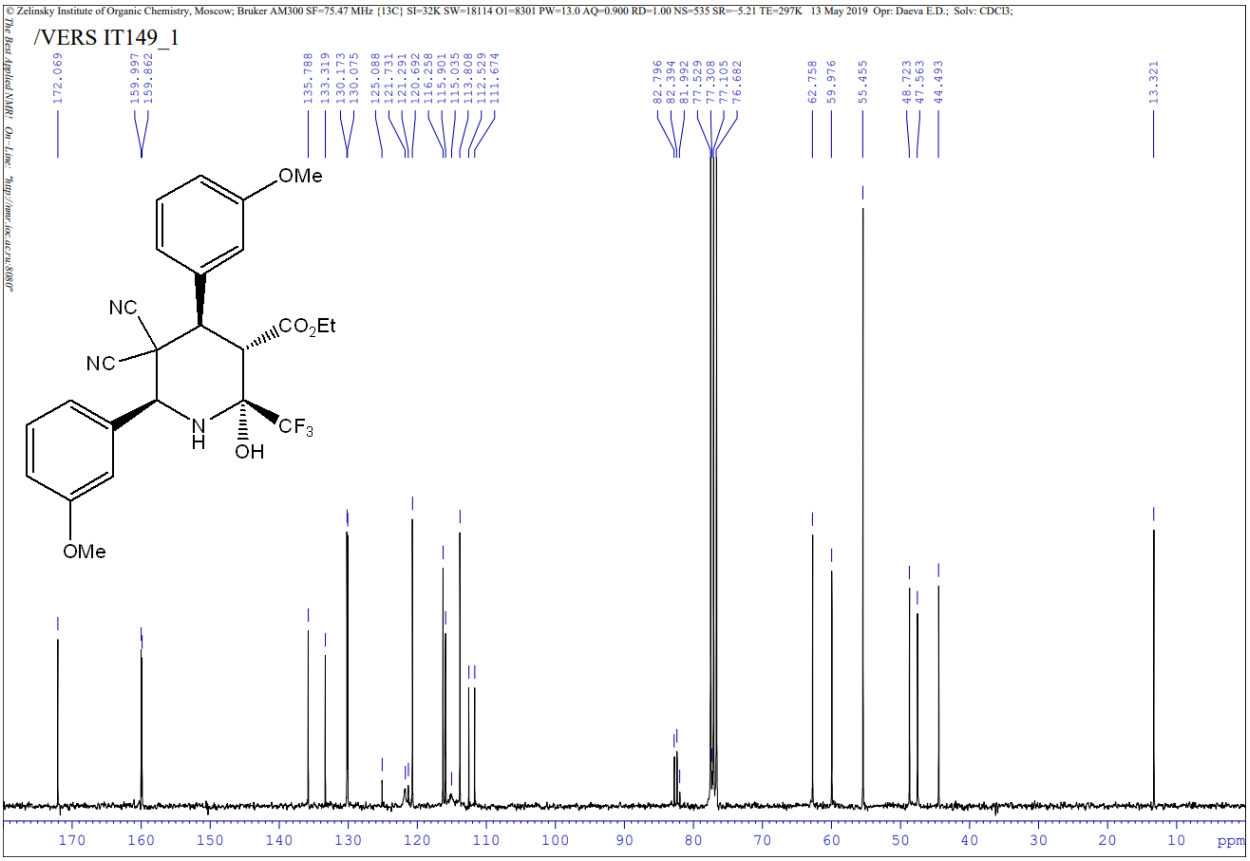
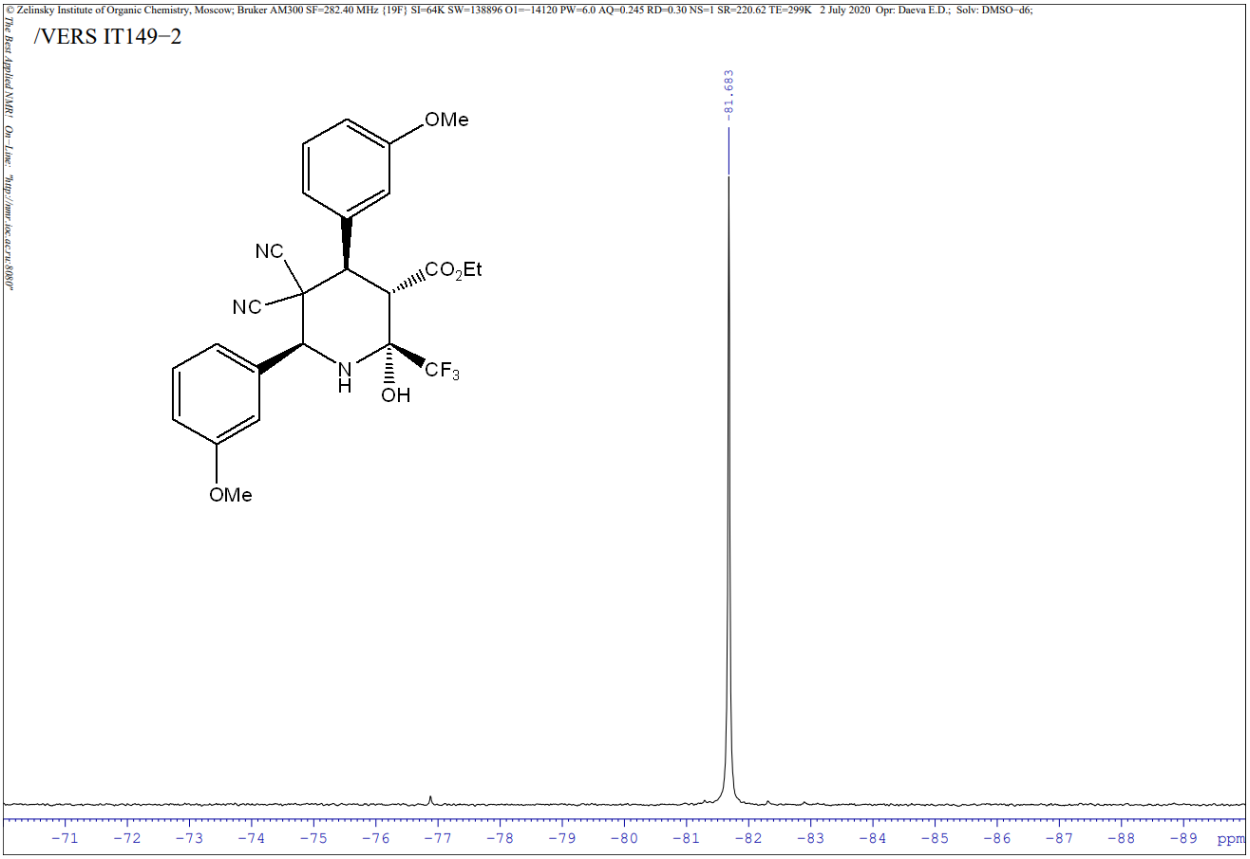
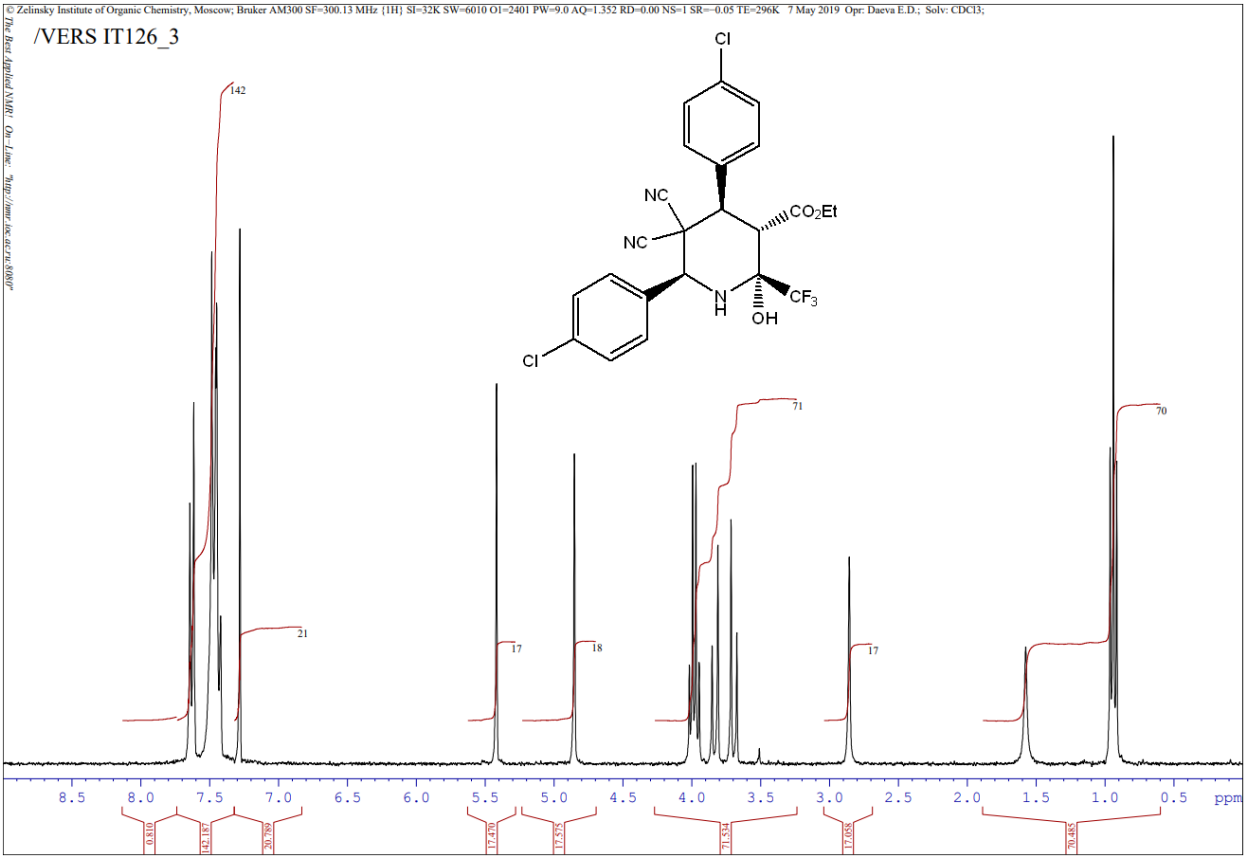


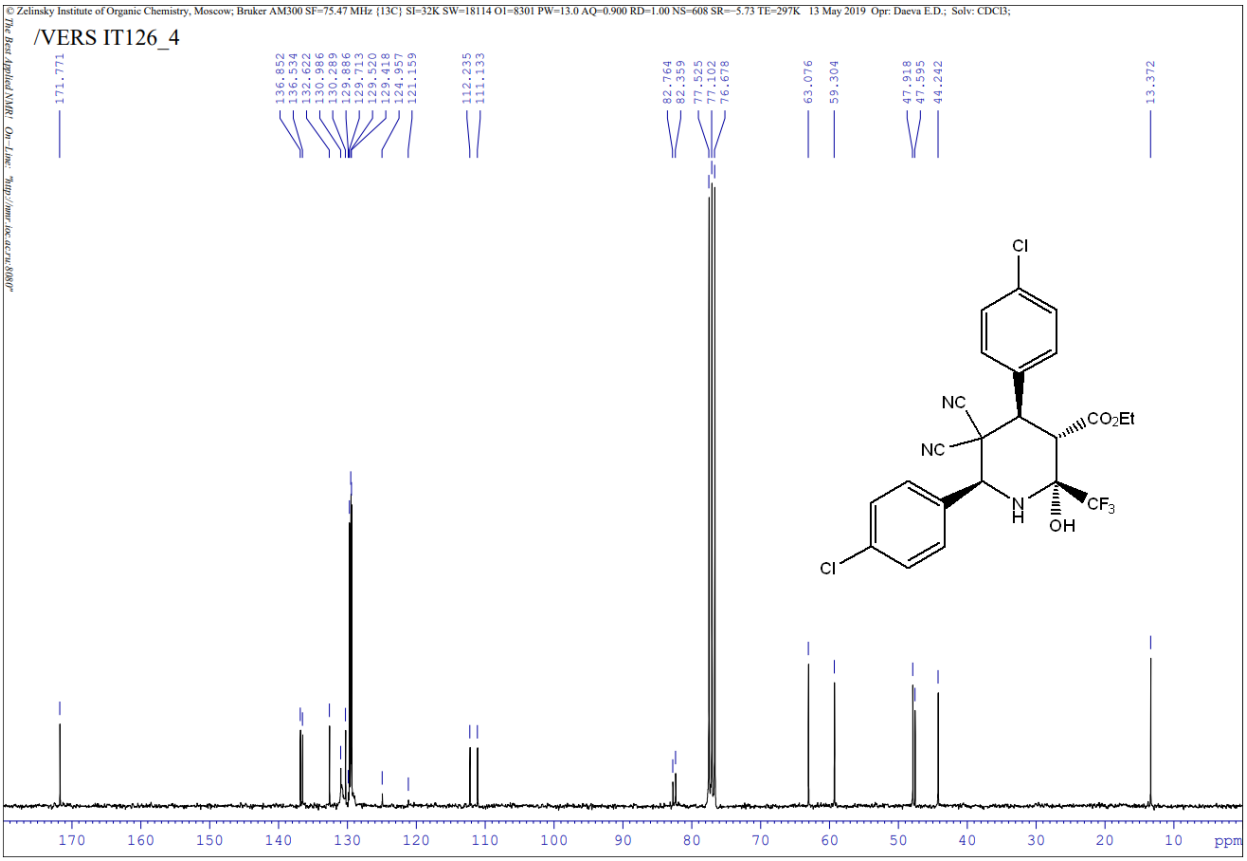
^{19}F NMR of **3d**



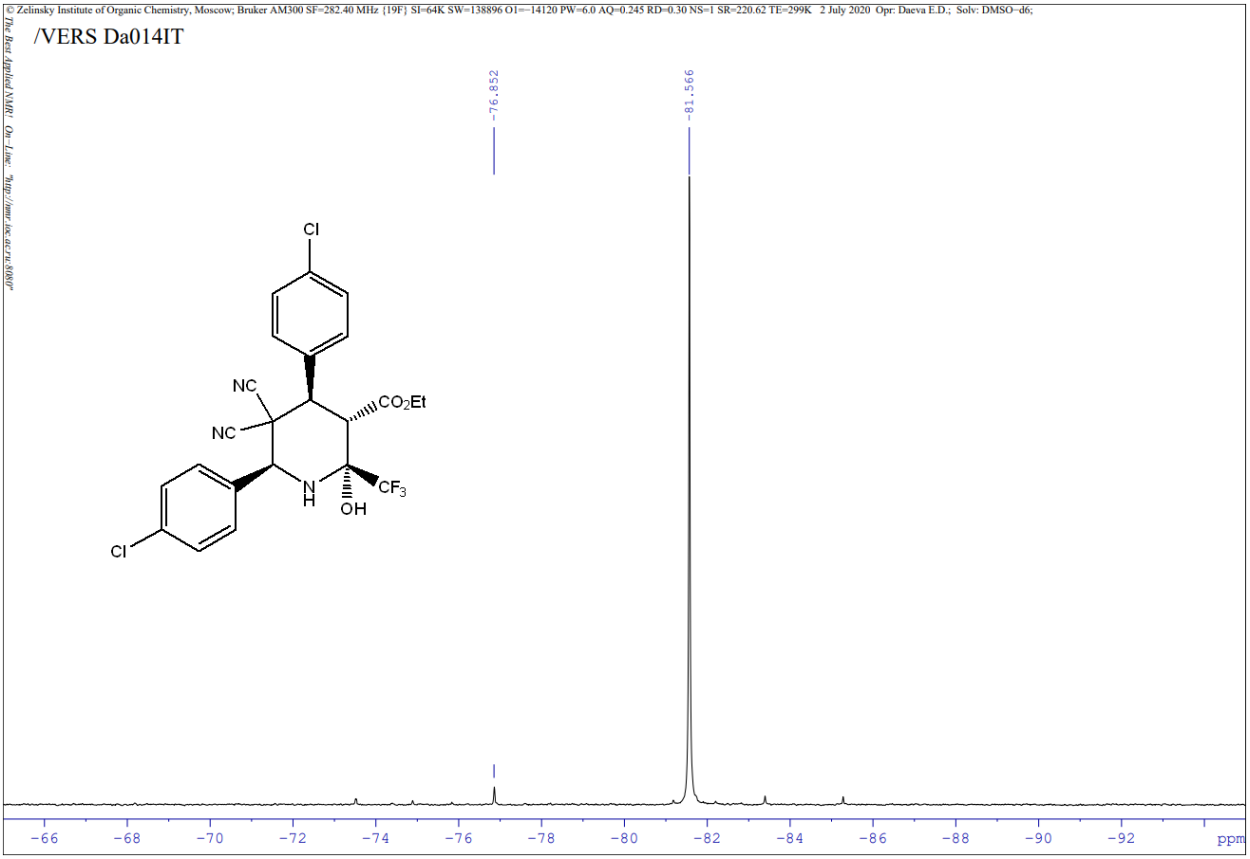
^{1}H NMR of ethyl (2*RS*,3*SR*,4*RS*,6*SR*)-5,5-dicyano-2-hydroxy-4,6-bis(4-chlorophenyl)-2-(trifluoromethyl)piperidine-3-carboxylate **(3e)**



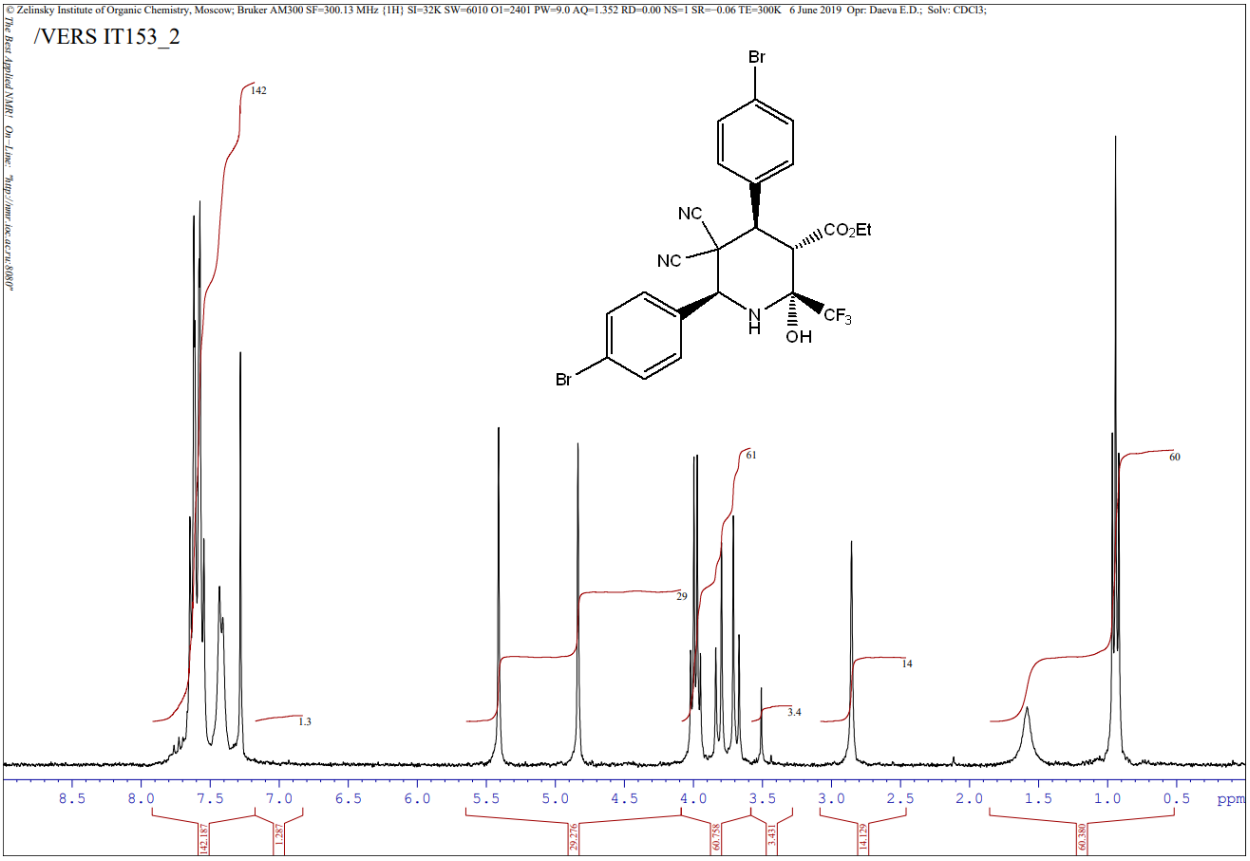
^{13}C NMR of **3e**



^{19}F NMR of **3e**



^{1}H NMR of ethyl (2*RS*,3*SR*,4*RS*,6*SR*)-5,5-dicyano-2-hydroxy-4,6-bis(4-bromophenyl)-2-(trifluoromethyl)piperidine-3-carboxylate **(3f)**



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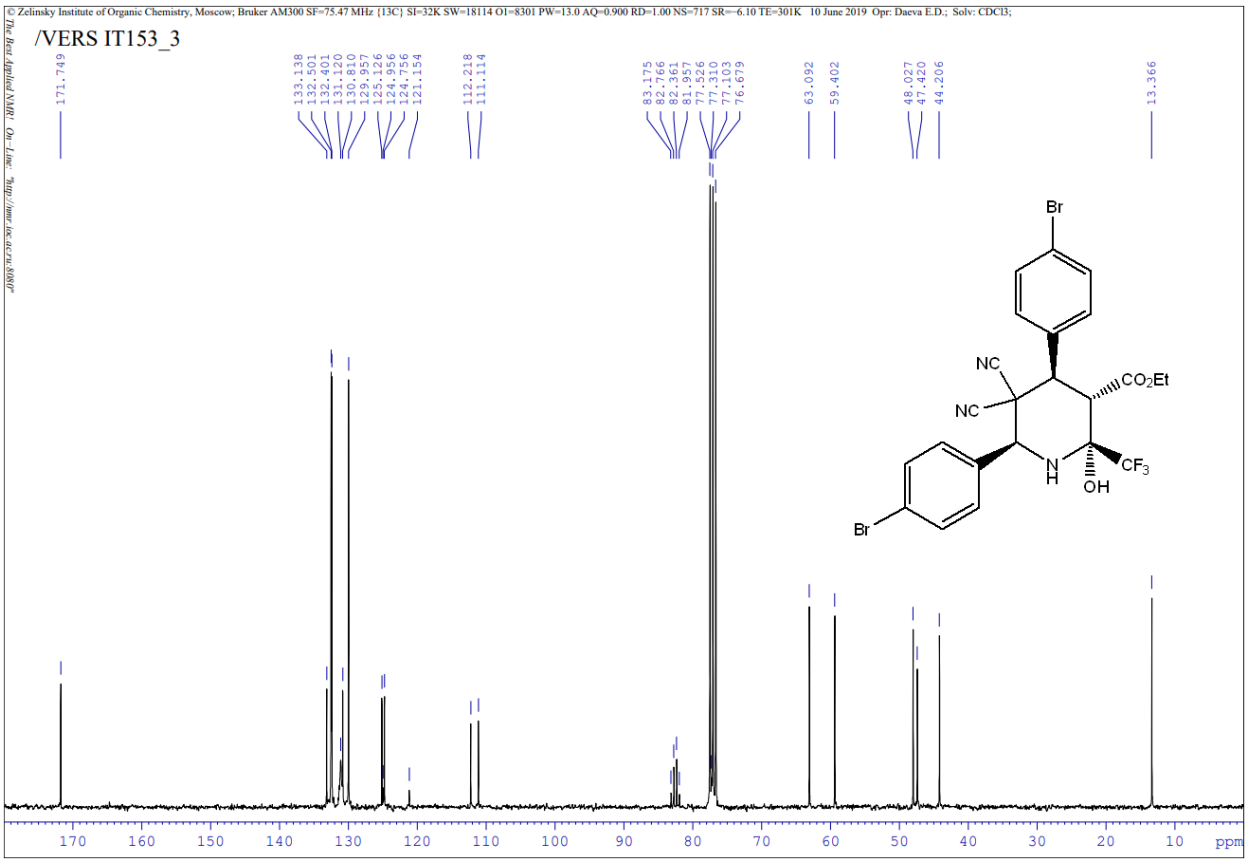
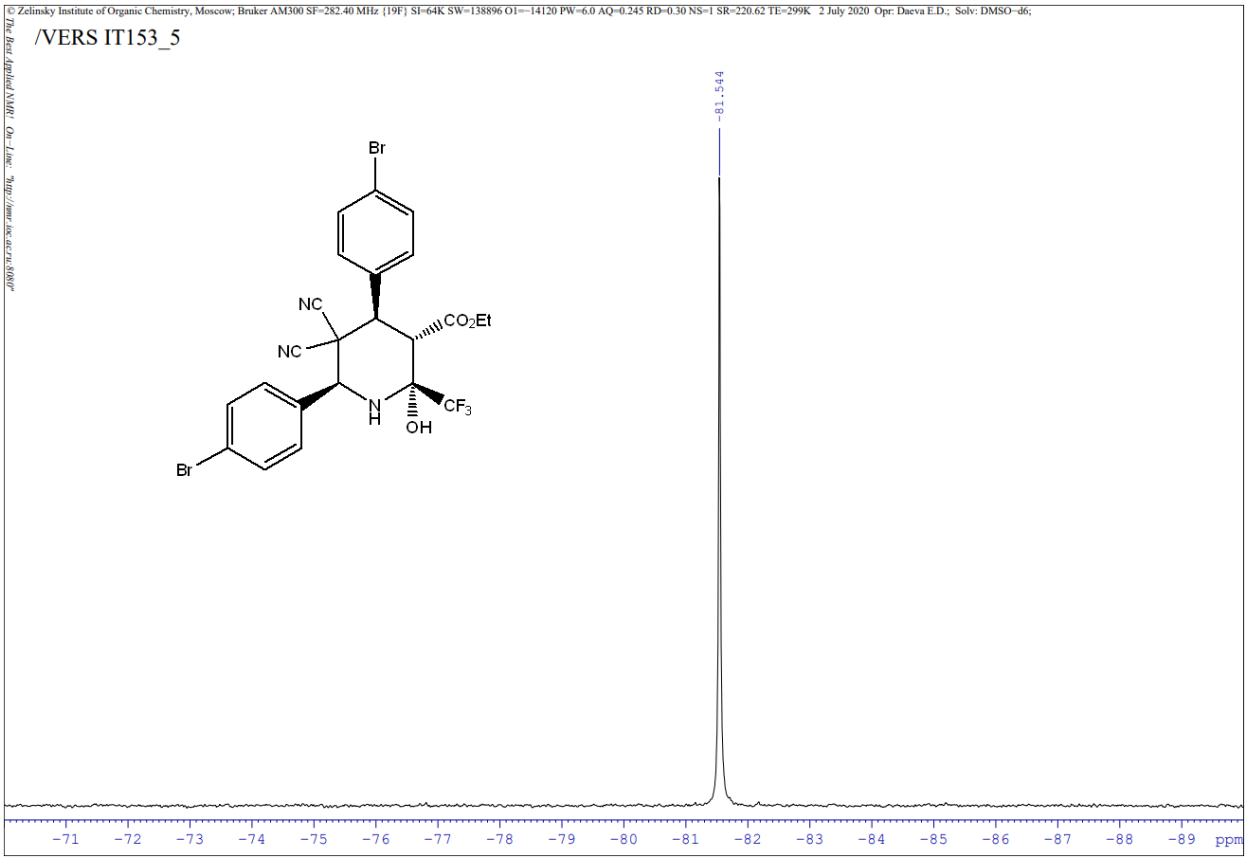
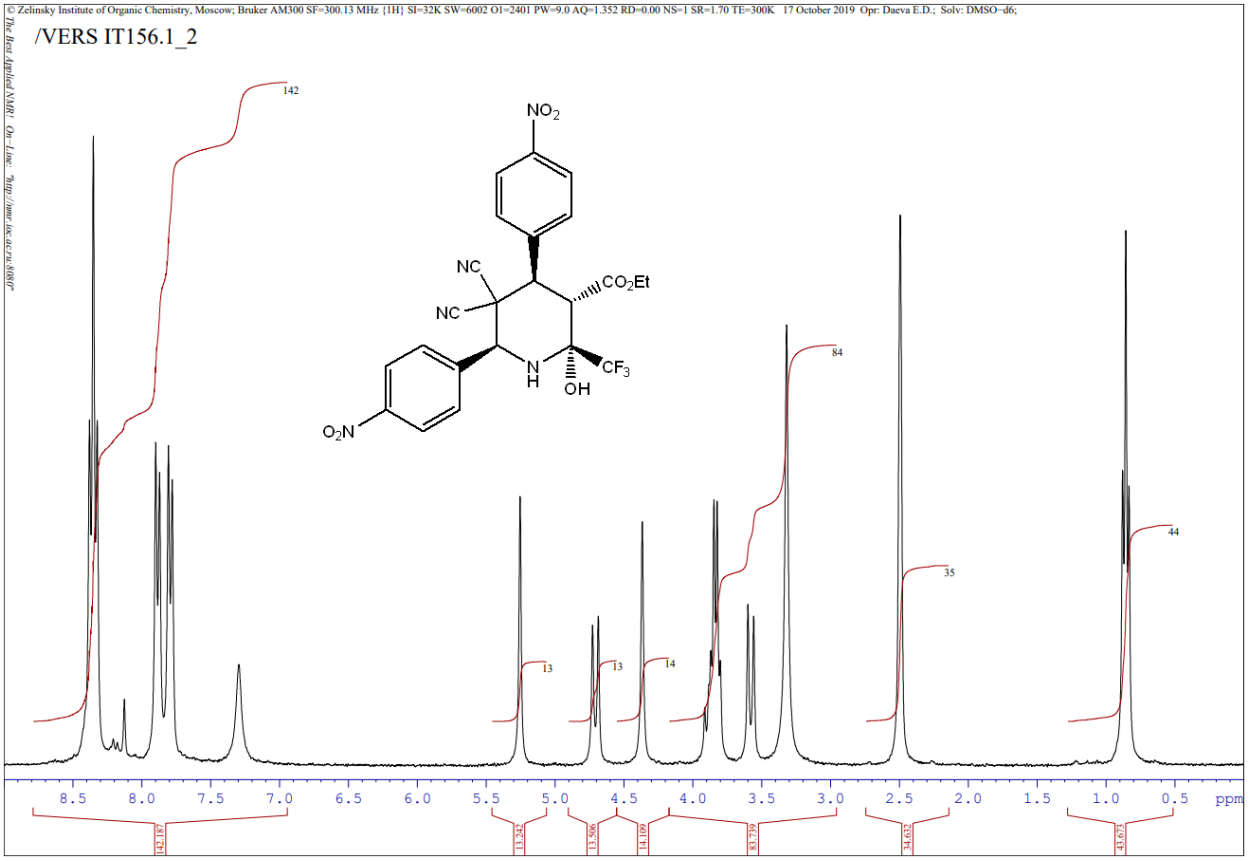


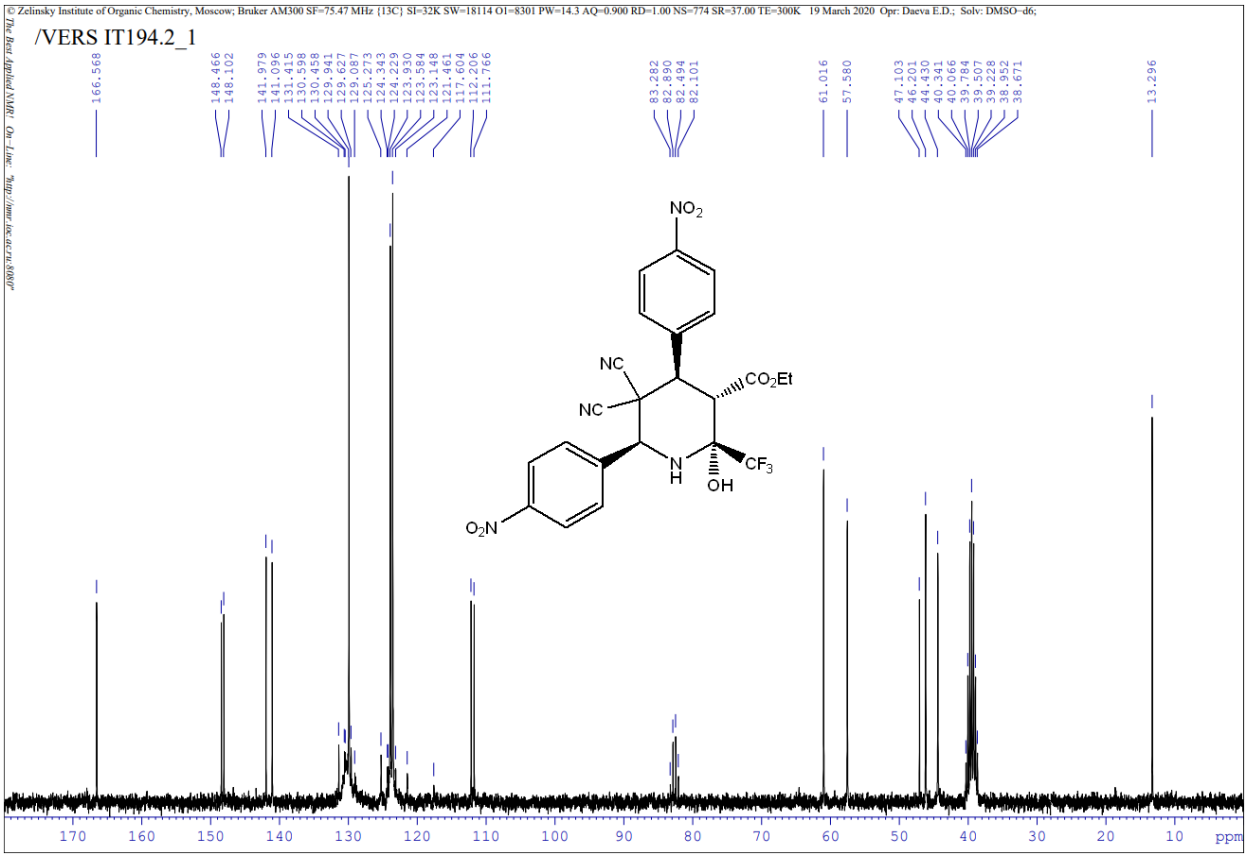
^{19}F NMR of **3f**



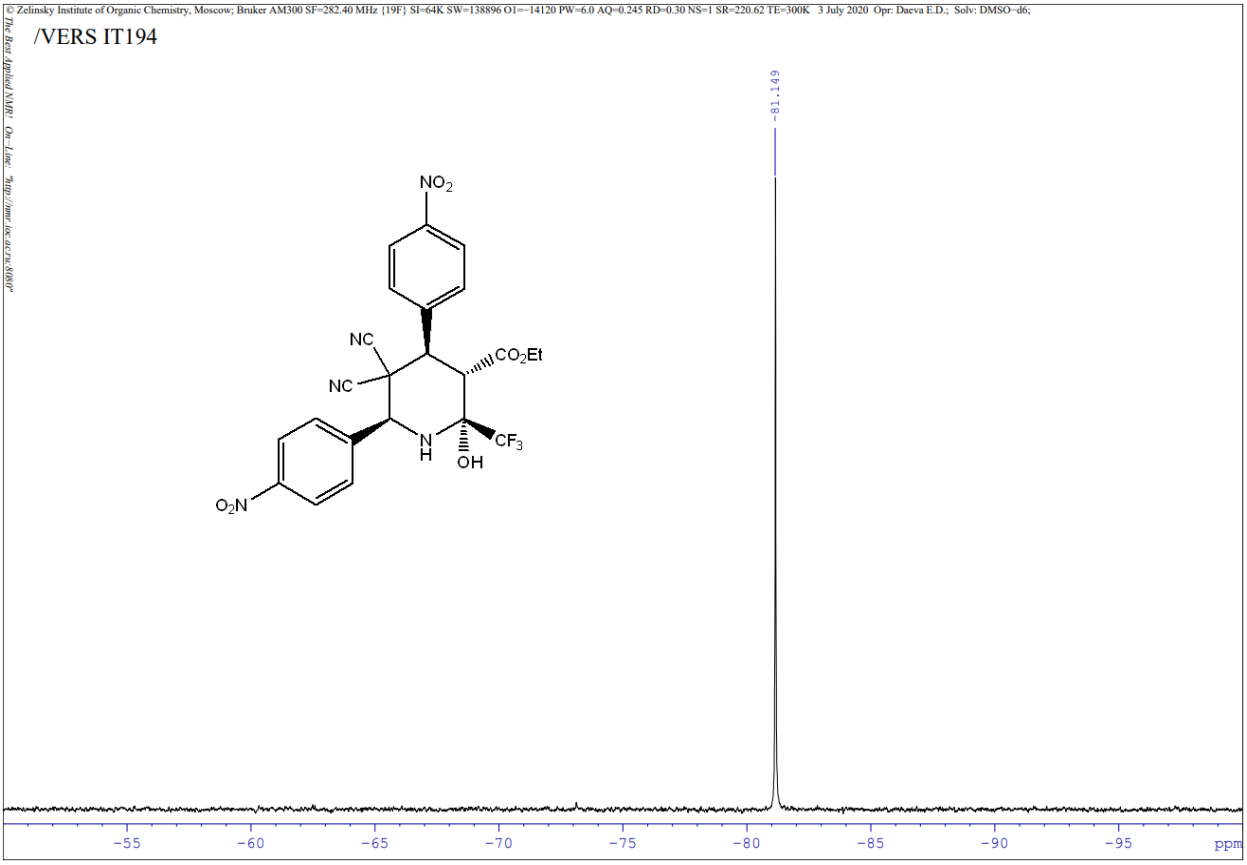
^{1}H NMR of ethyl (2*RS*,3*SR*,4*RS*,6*SR*)-5,5-dicyano-2-hydroxy-4,6-bis(4-nitrophenyl)-2-(trifluoromethyl)piperidine-3-carboxylate **(3g)**



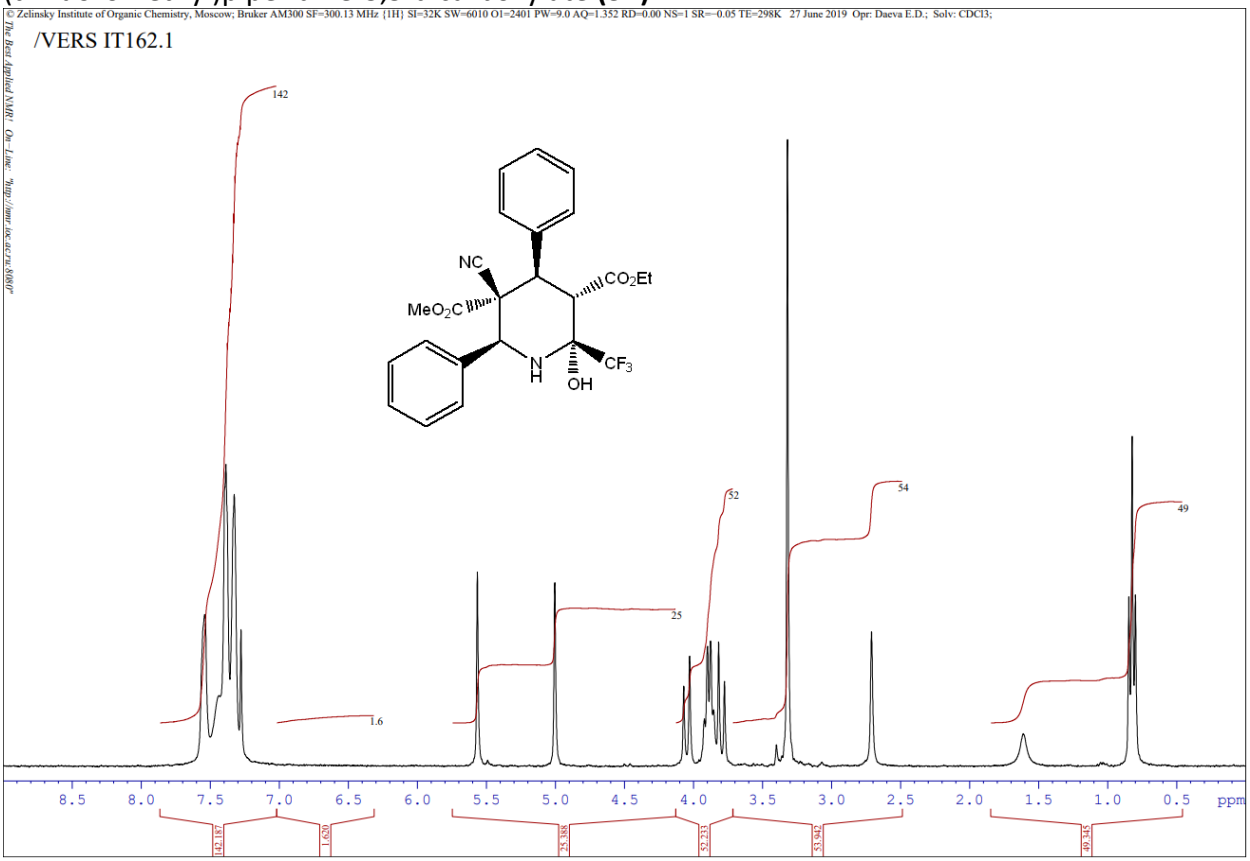
^{13}C NMR of **3g**



^{19}F NMR of **3g**



^{1}H NMR of 3-ethyl 5-methyl (2*RS*,3*SR*,4*RS*,5*RS*,6*SR*)-5-cyano-2-hydroxy-4,6-diphenyl-2-(trifluoromethyl)piperidine-3,5-dicarboxylate **(3h)**



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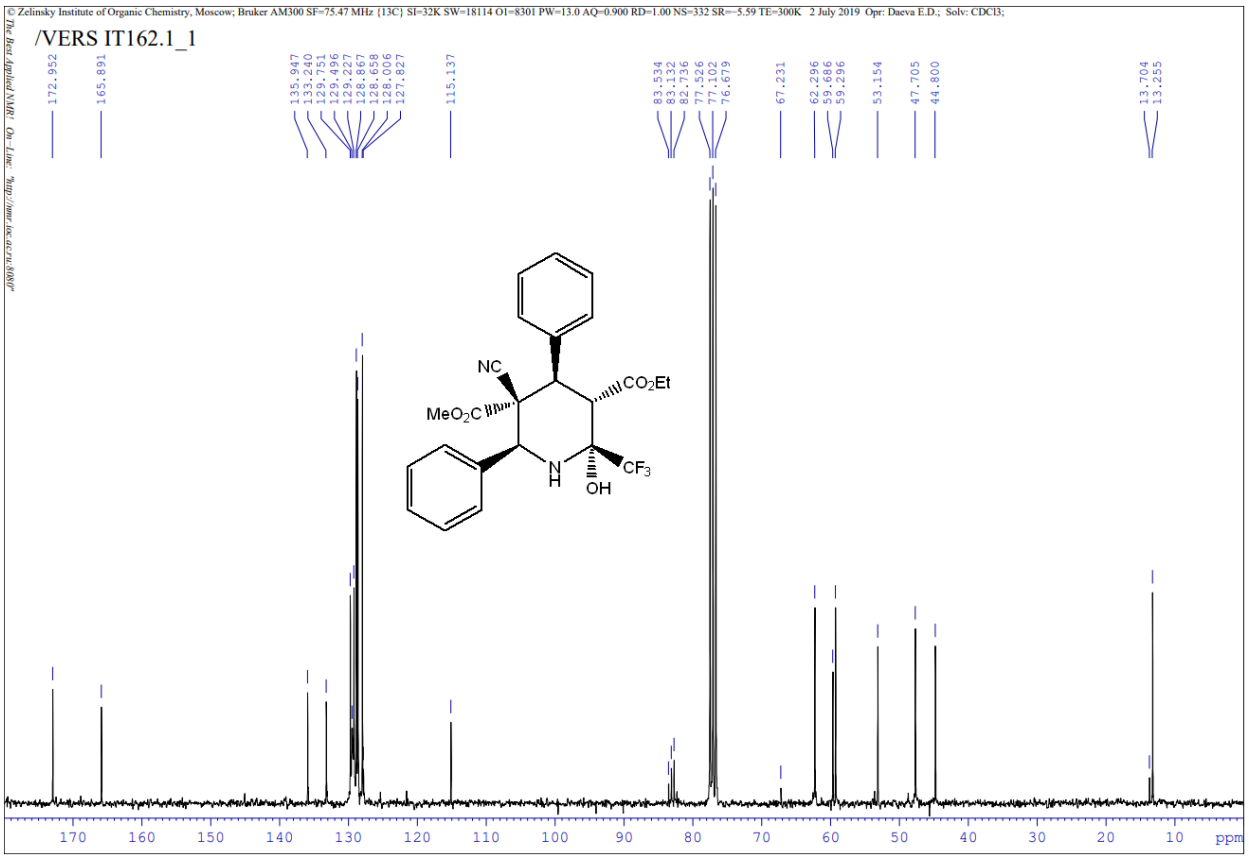

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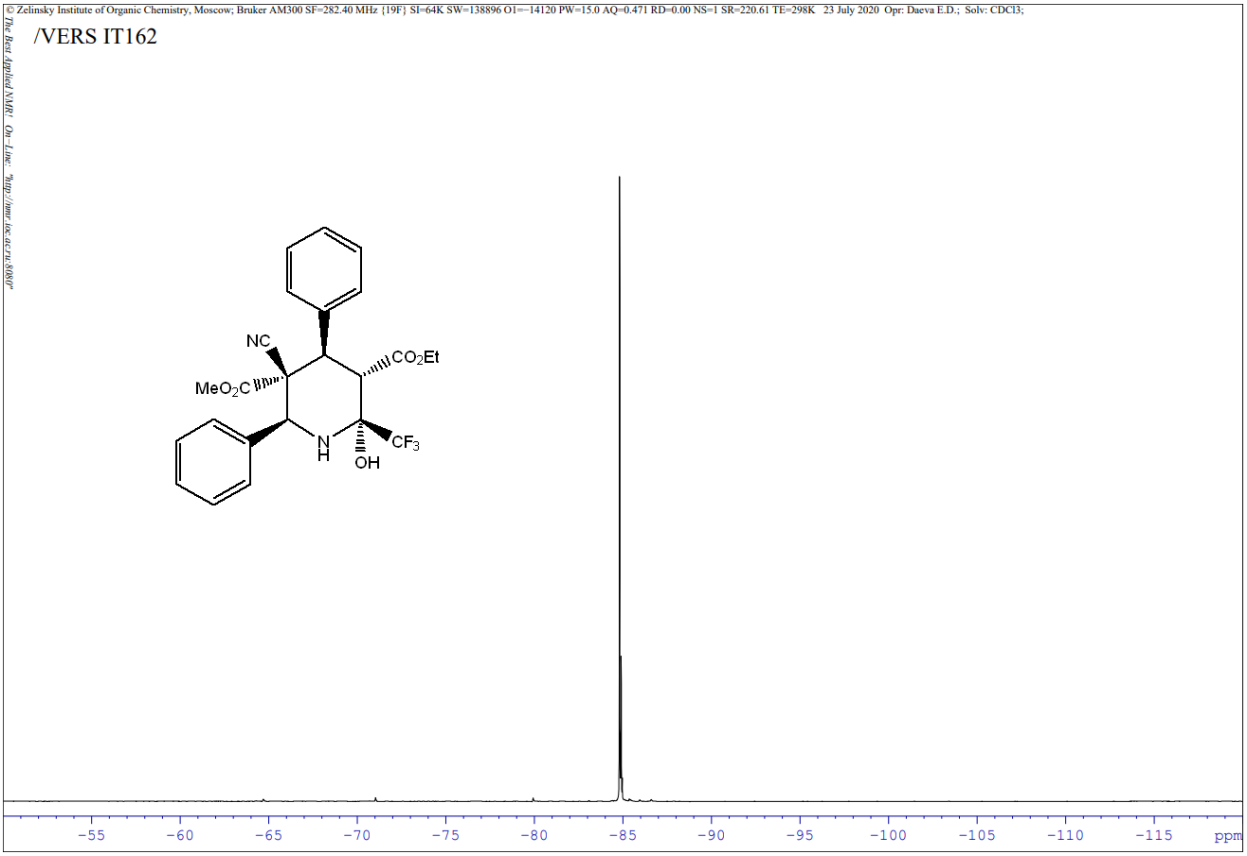
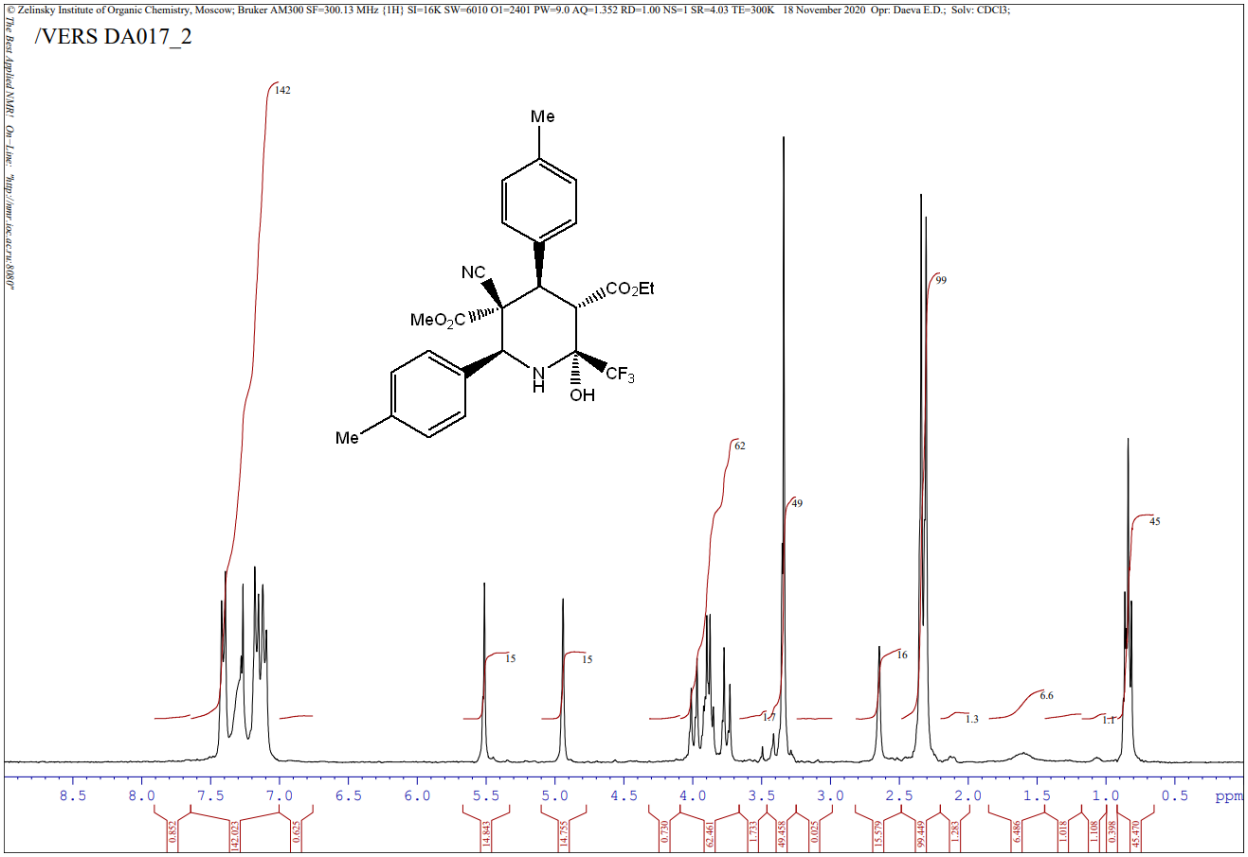
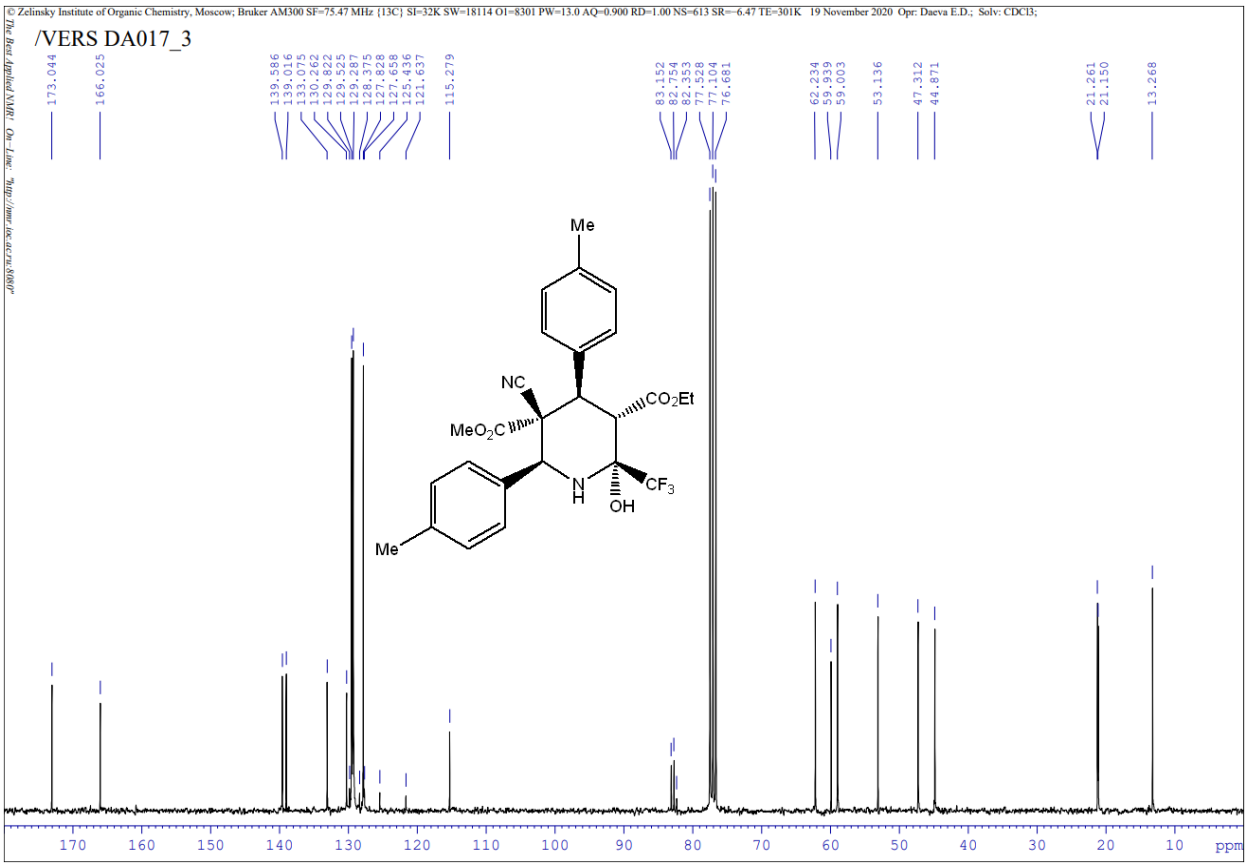


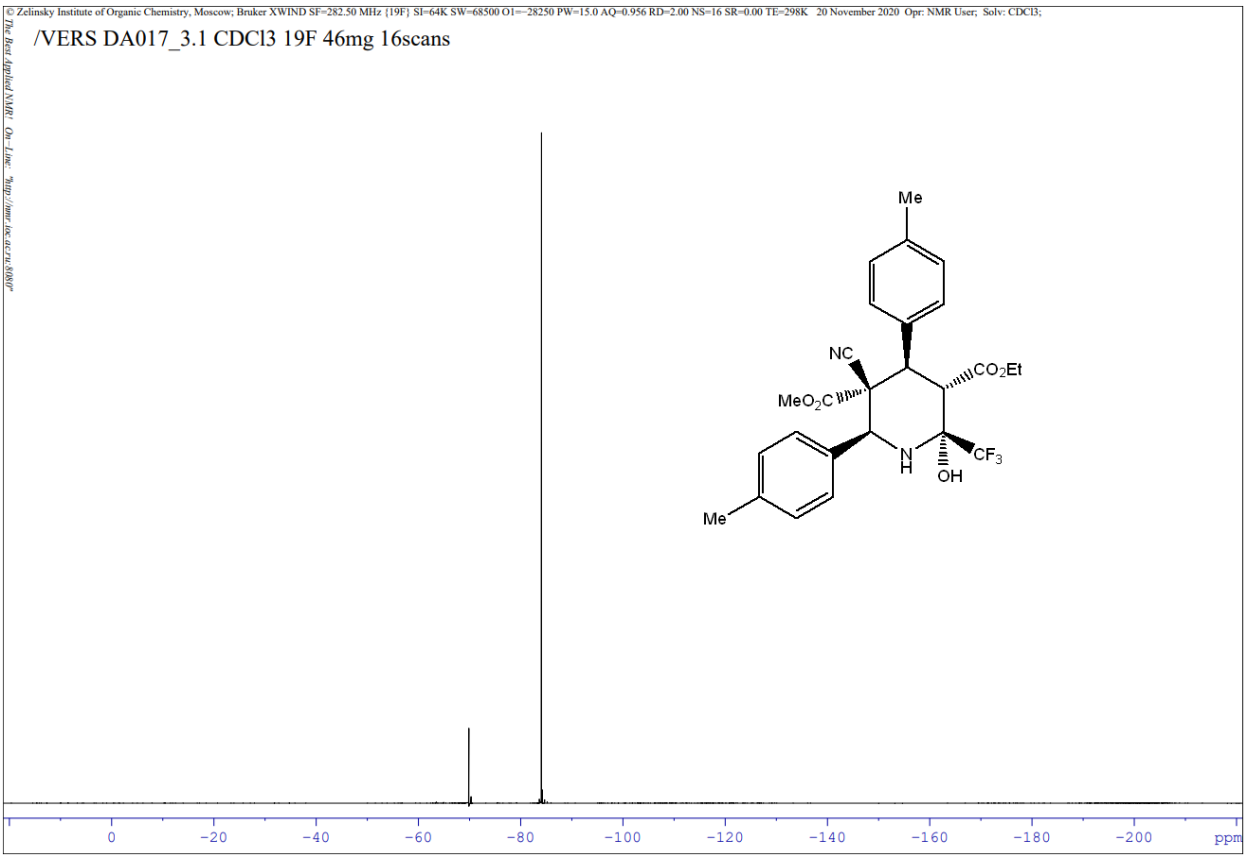
^{1}H NMR of 3-ethyl 5-methyl (2*RS*,3*SR*,4*RS*,5*RS*,6*SR*)-5-cyano-2-hydroxy-4,6-bis(4-methylphenyl)-2-(trifluoromethyl)piperidine-3,5-dicarboxylate **(3i)**



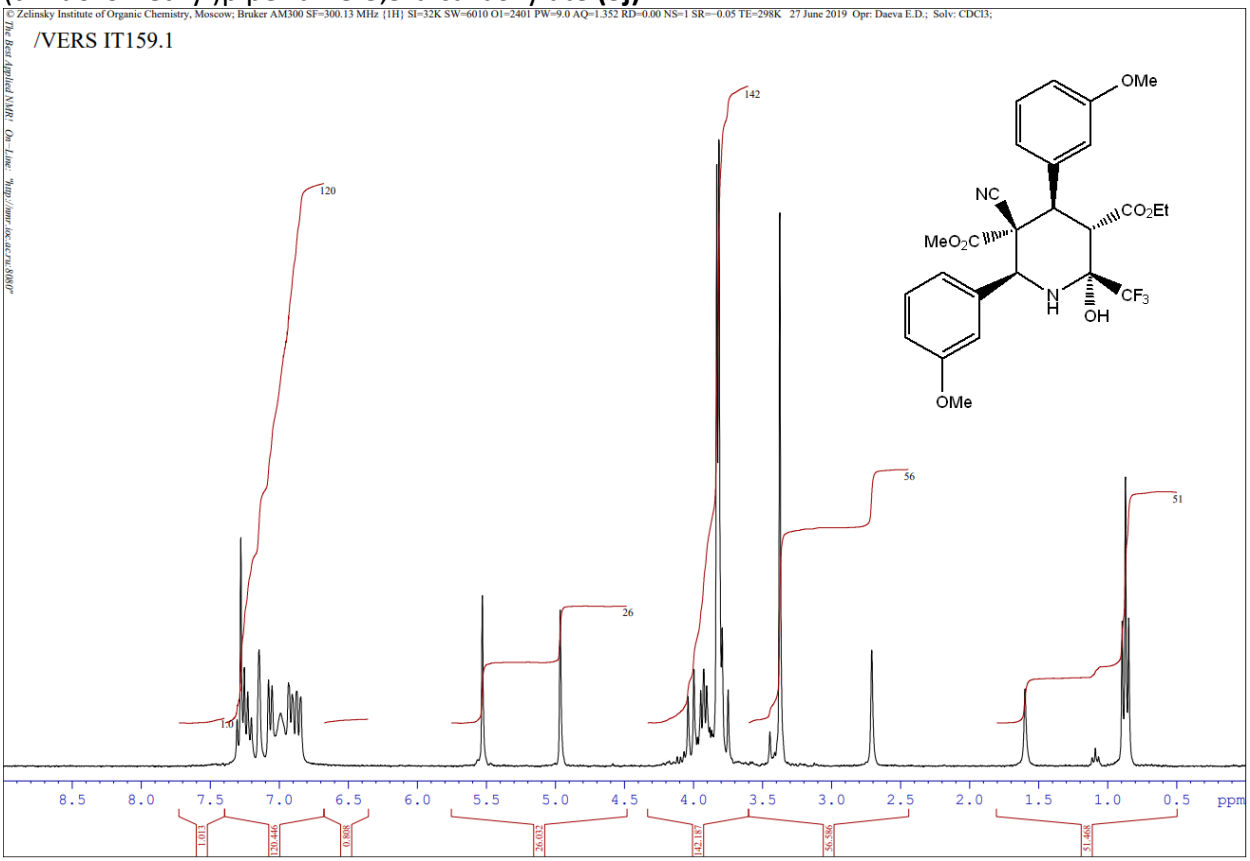
^{13}C NMR of **3i**



^{19}F NMR of **3i**



^{1}H NMR of 3-ethyl 5-methyl (2*RS*,3*SR*,4*RS*,5*RS*,6*SR*)-5-cyano-2-hydroxy-4,6-bis(3-methoxyhenyl)-2-(trifluoromethyl)piperidine-3,5-dicarboxylate **(3j)**



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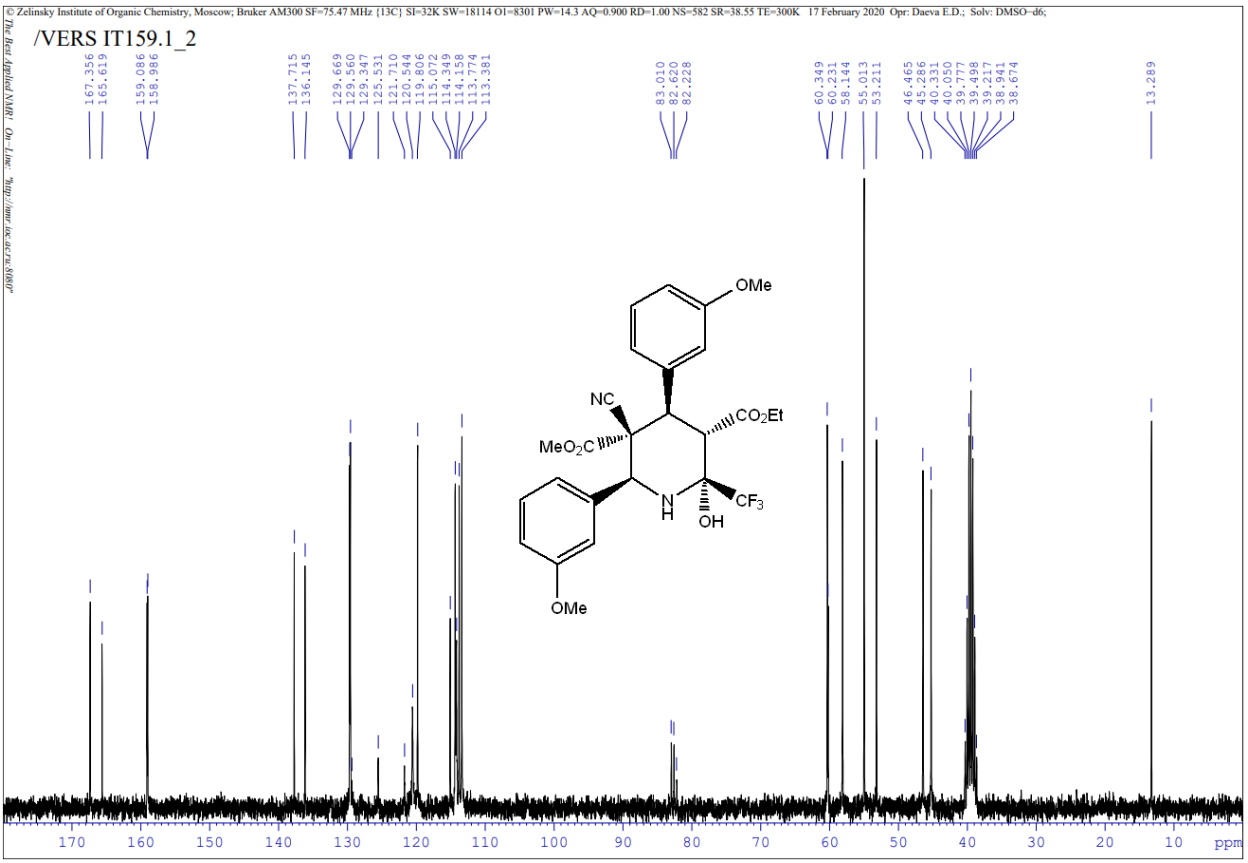
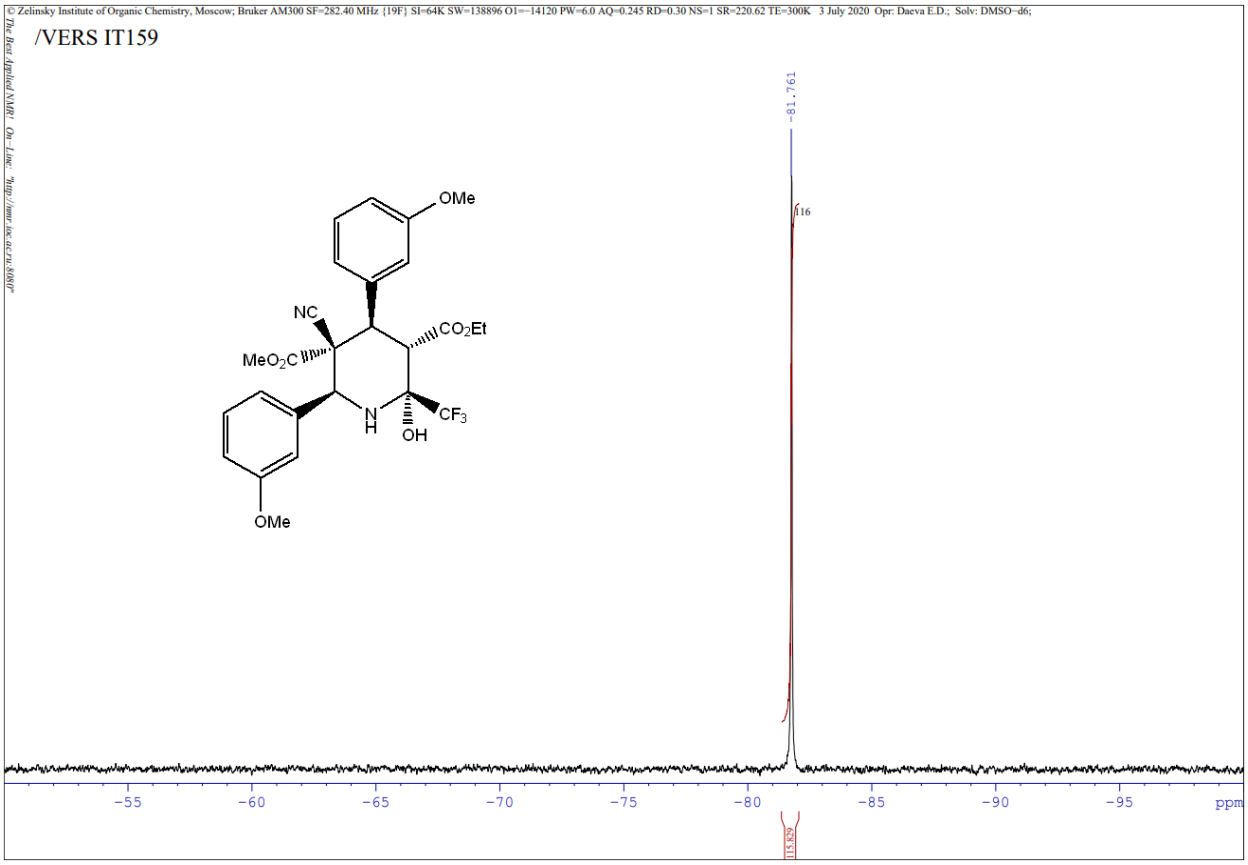
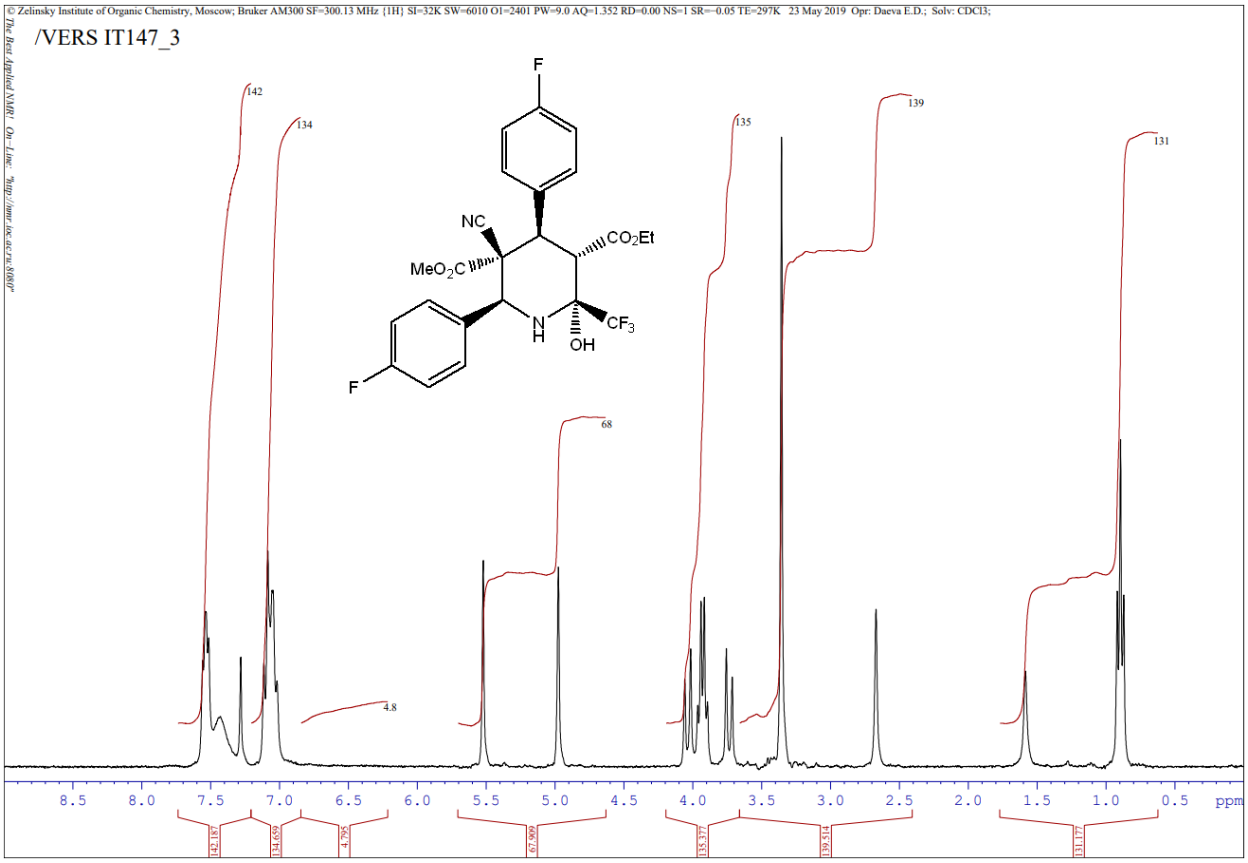


^{19}F NMR of **3j**



^{1}H NMR of 3-ethyl 5-methyl (2*RS*,3*SR*,4*RS*,5*RS*,6*SR*)-5-cyano-2-hydroxy-4,6-bis(4-fluorohenyl)-2-(trifluoromethyl)piperidine-3,5-dicarboxylate **(3k)**



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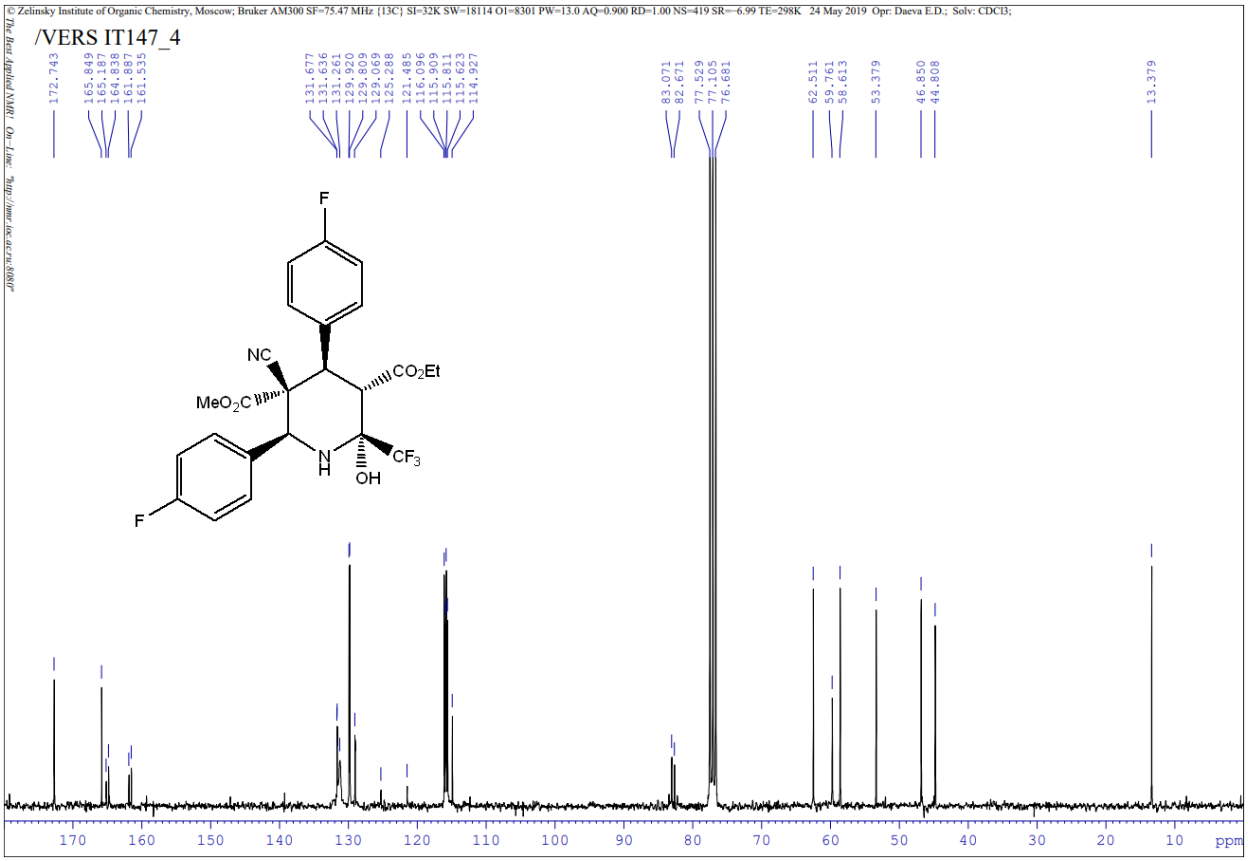

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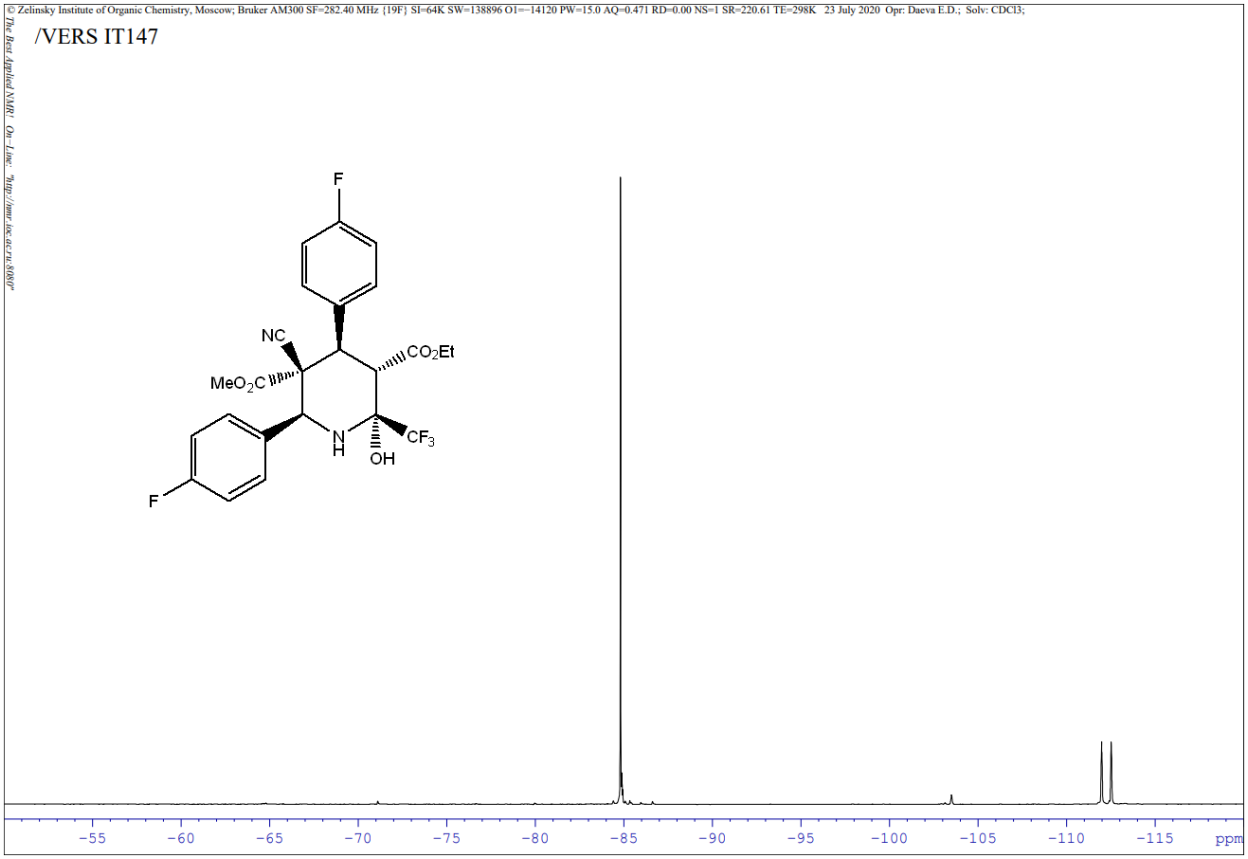
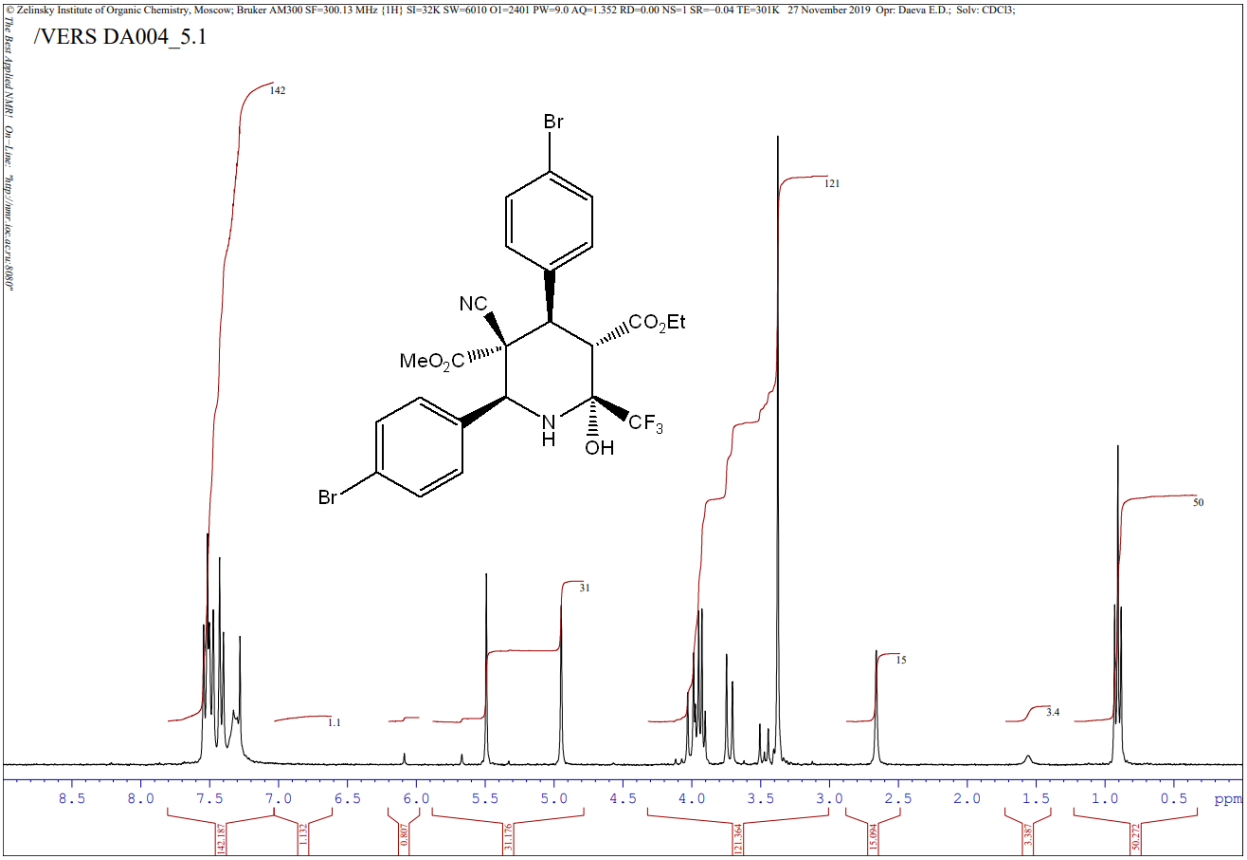


^{1}H NMR of 3-ethyl 5-methyl (2*RS*,3*SR*,4*RS*,5*RS*,6*SR*)-4,6-bis(4-bromophenyl)-5-cyano-2-hydroxy-2-(trifluoromethyl)piperidine-3,5-dicarboxylate **(3l)**



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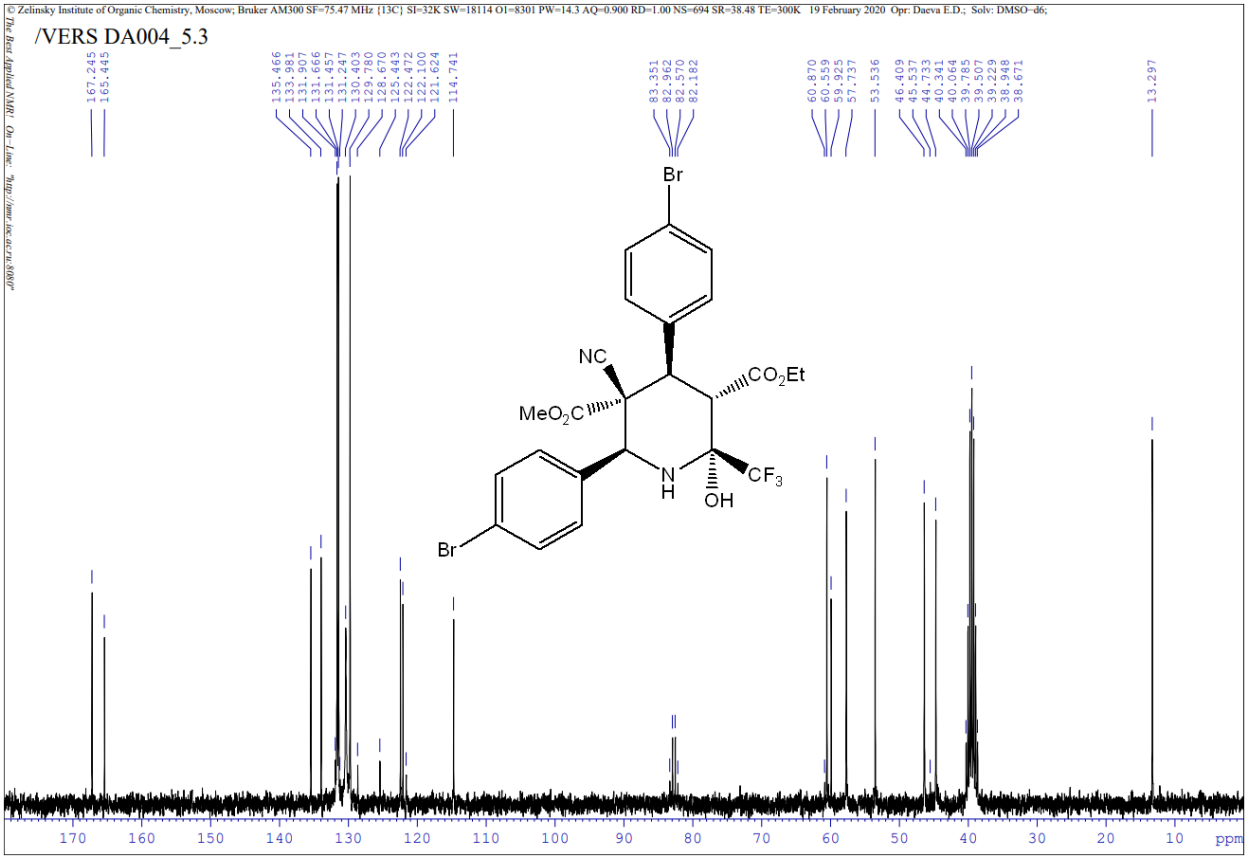
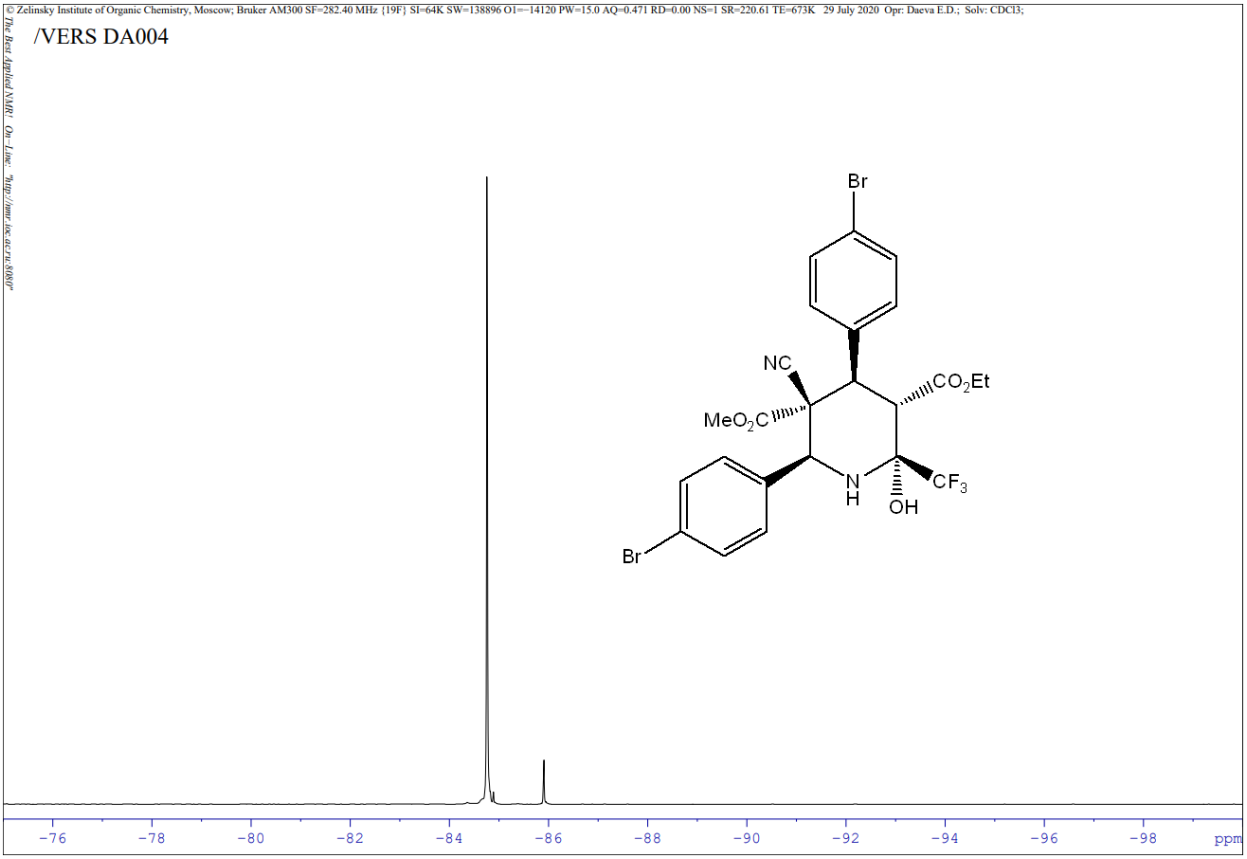
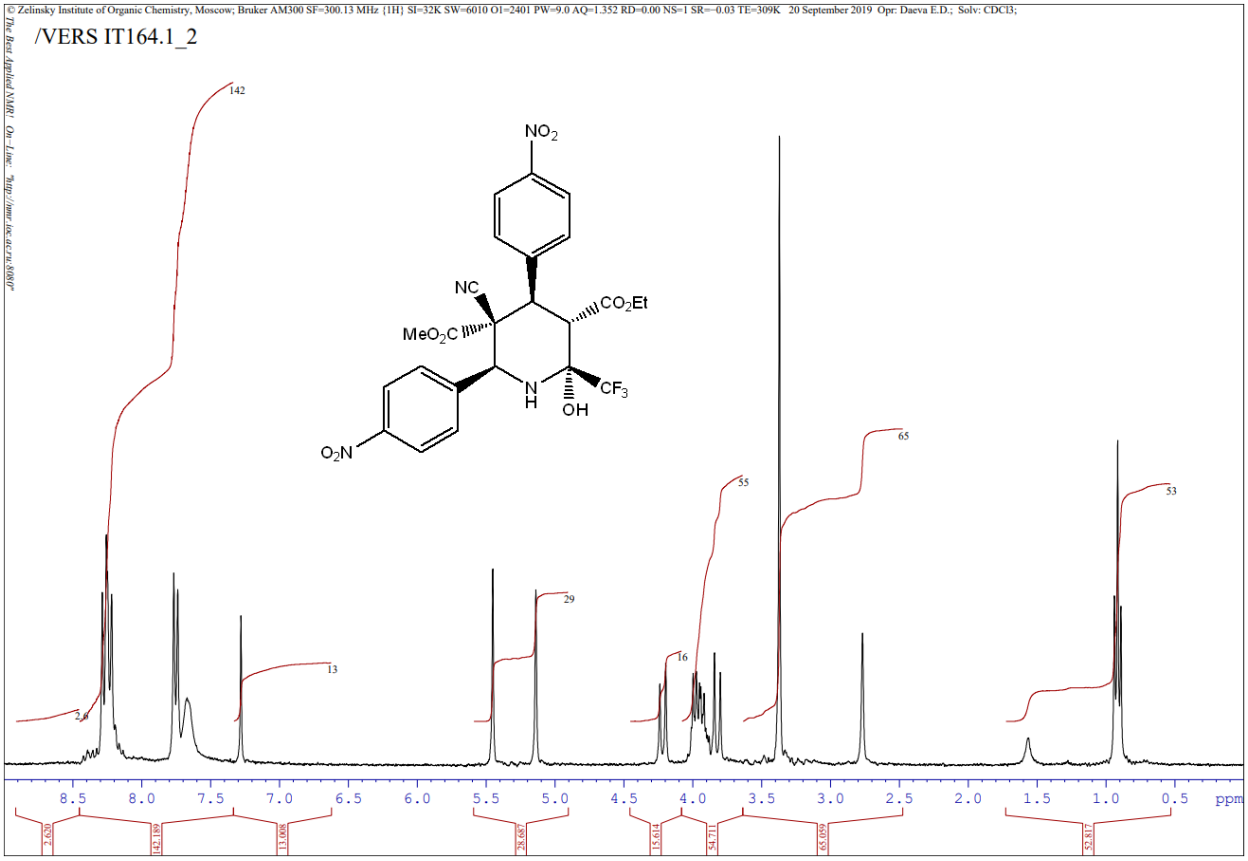


^{19}F NMR of **3l**



^{1}H NMR of 3-ethyl 5-methyl (2*RS*,3*SR*,4*RS*,5*RS*,6*SR*)-5-cyano-2-hydroxy-4,6-bis(4-nitrohenyl)-2-(trifluoromethyl)piperidine-3,5-dicarboxylate **(3m)**



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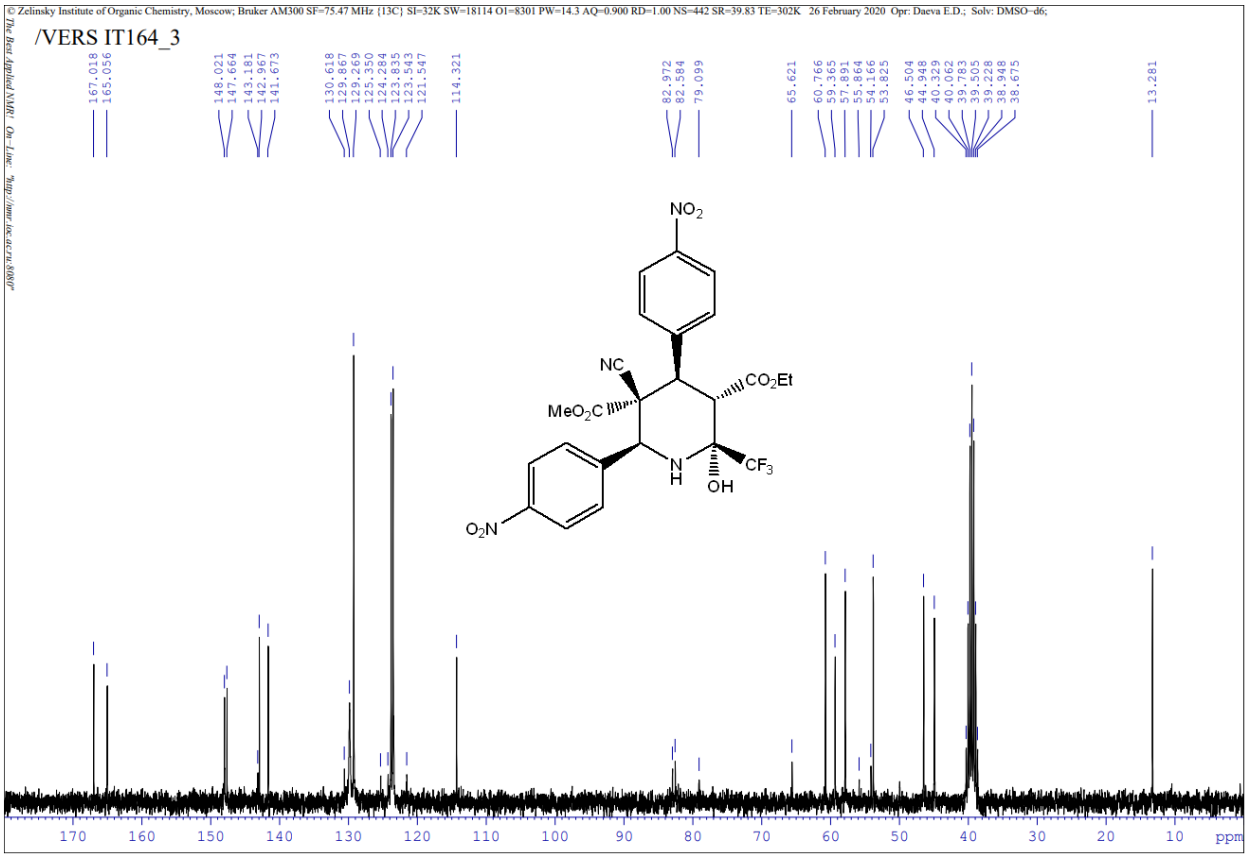

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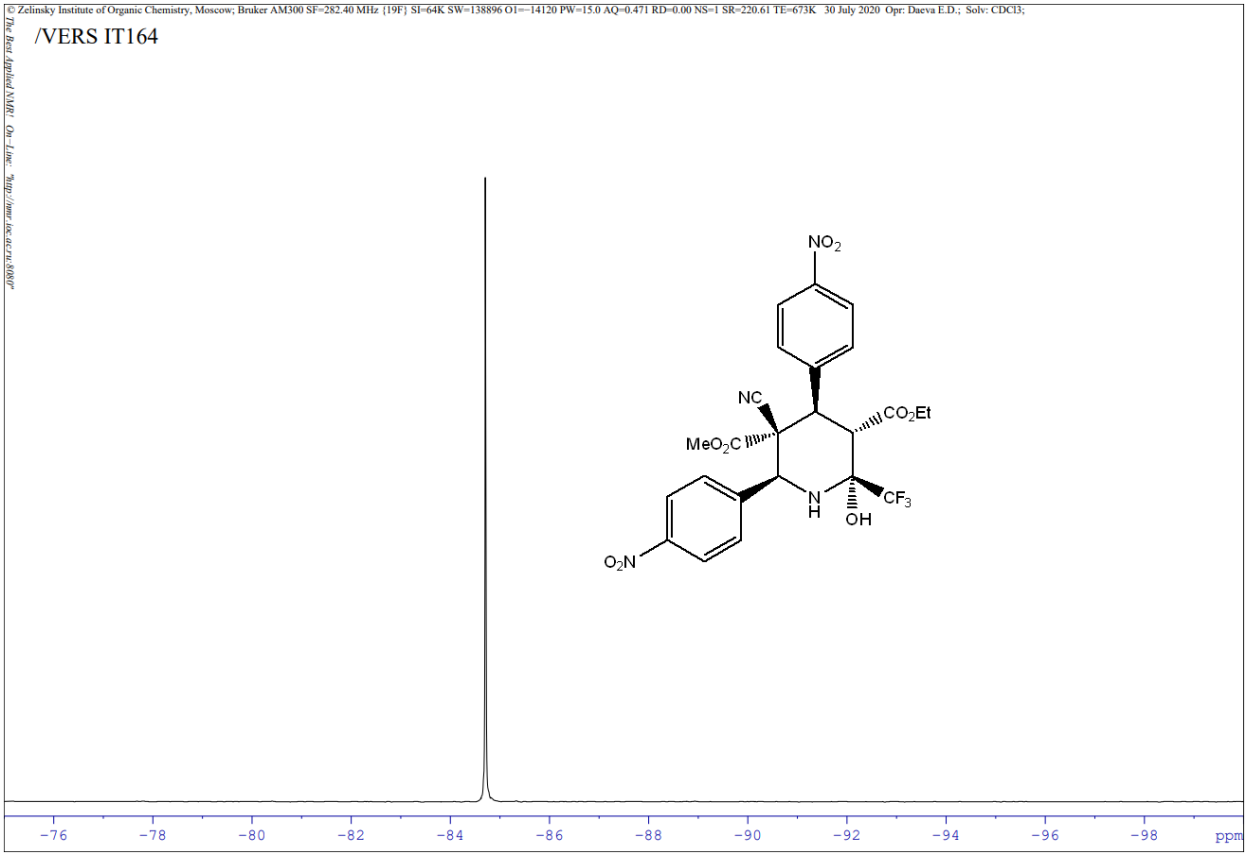
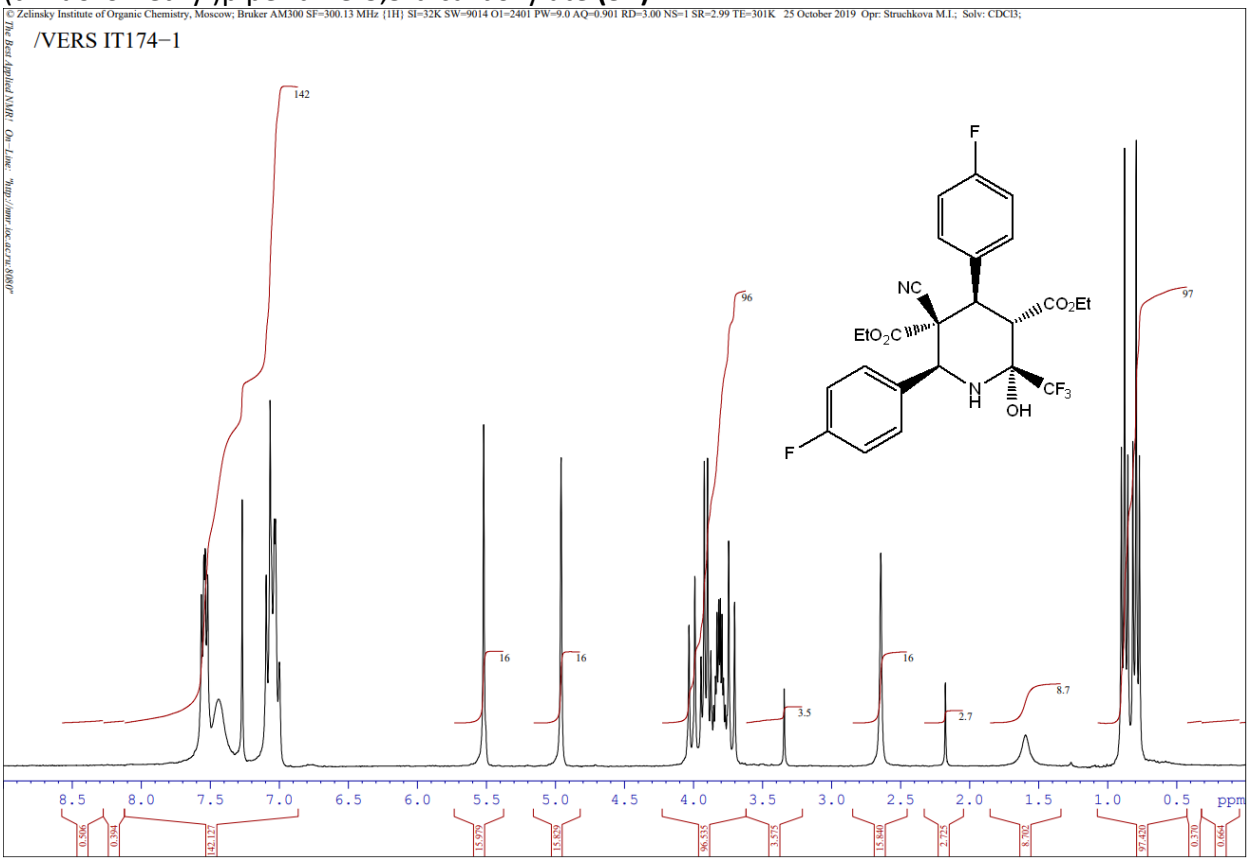


^{1}H NMR of 3,5-diethyl (2*RS*,3*SR*,4*RS*,5*RS*,6*SR*)-4,6-bis(4-fluorophenyl)-5-cyano-2-hydroxy-2-(trifluoromethyl)piperidine-3,5-dicarboxylate **(3n)**



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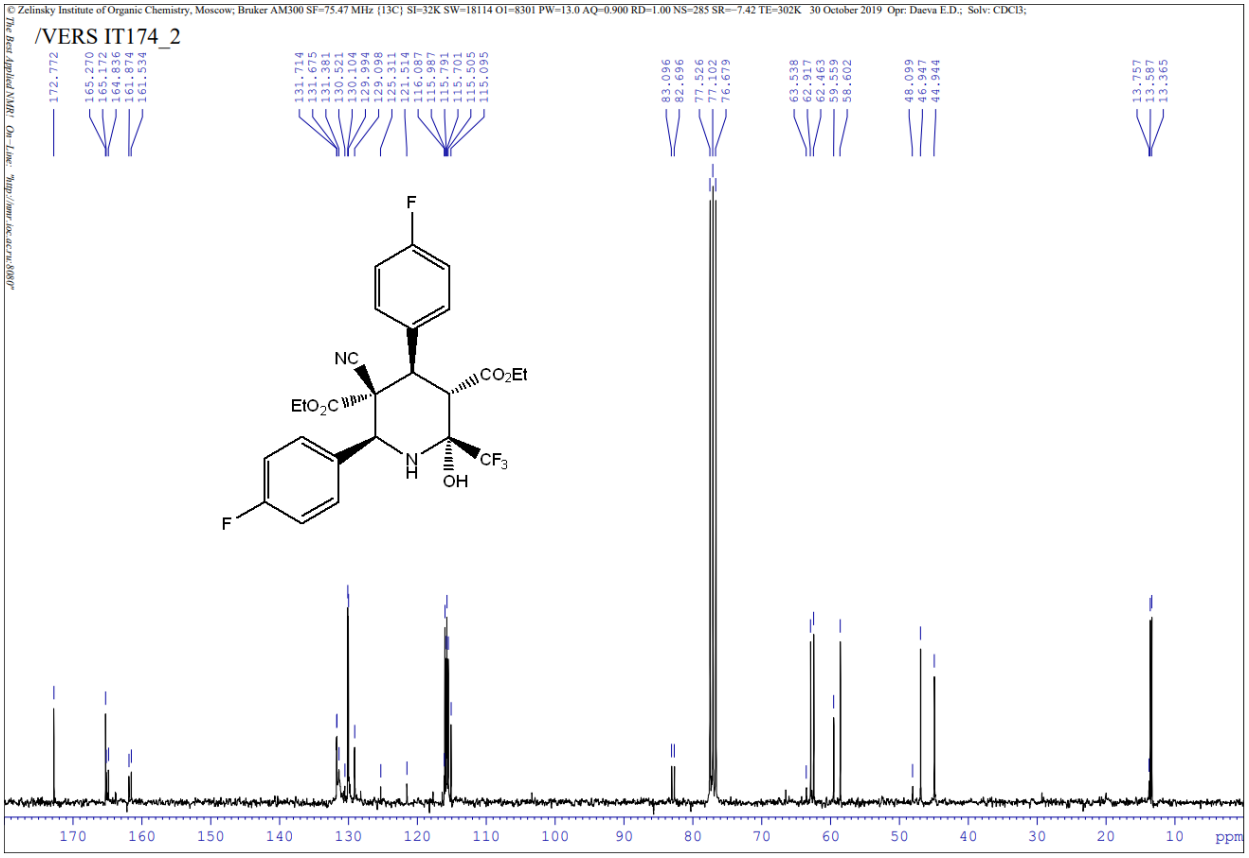
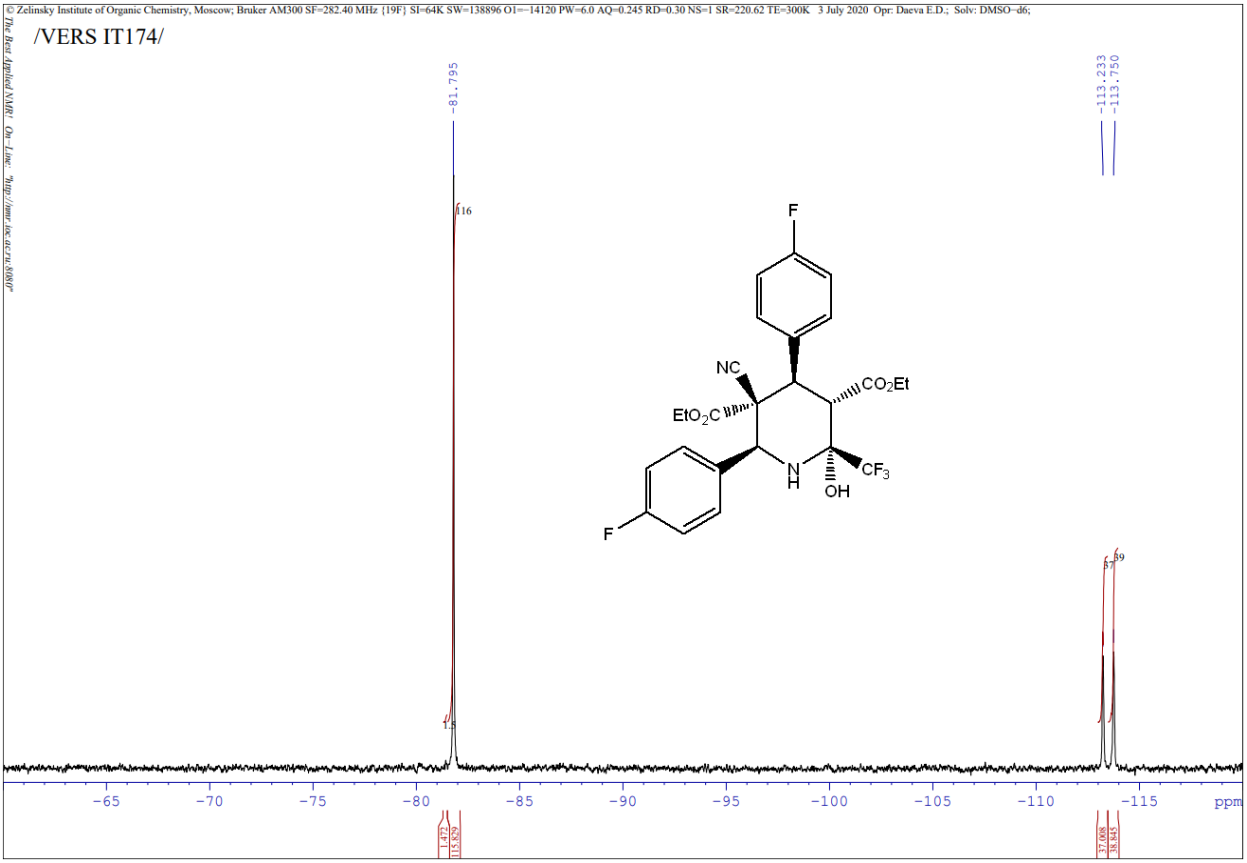
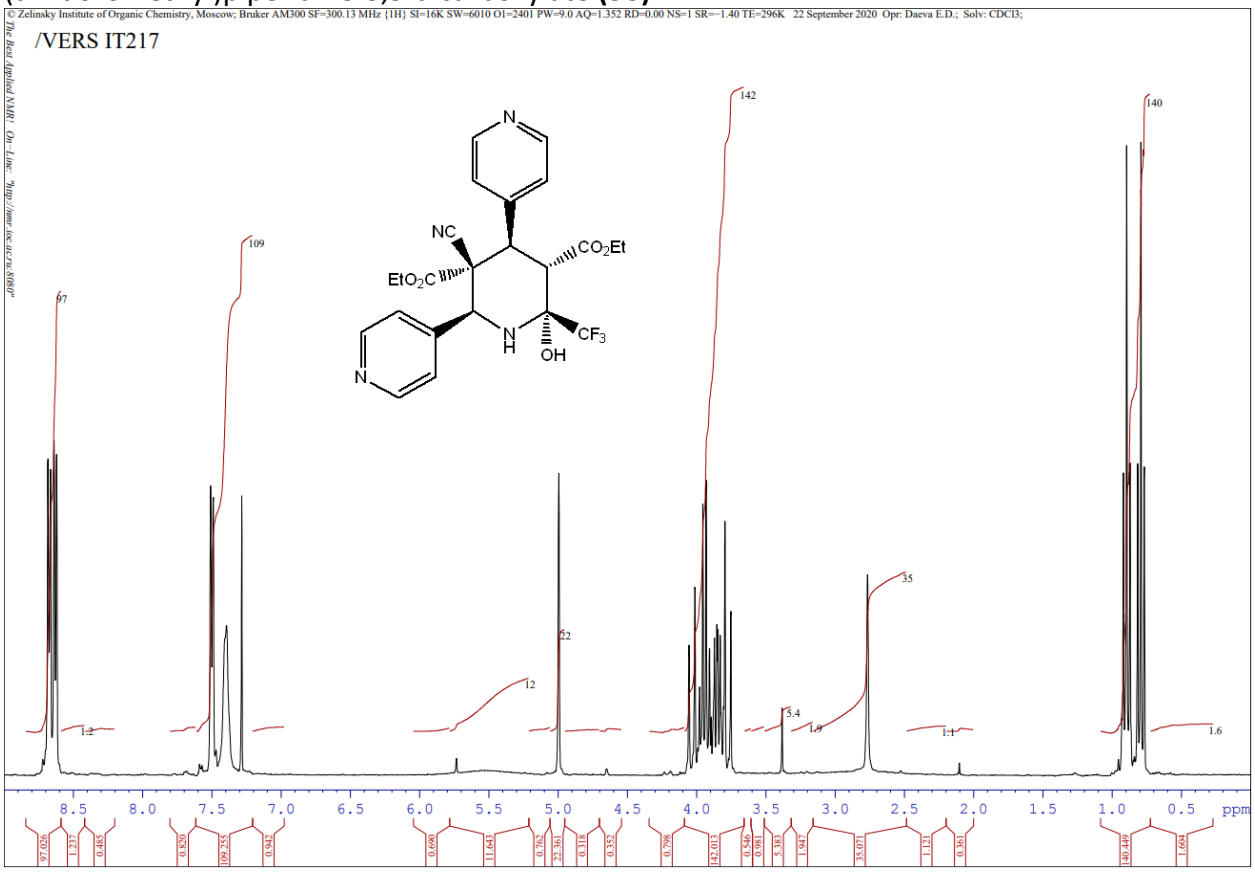


^{19}F NMR of **3n**



^{1}H NMR of 3,5-diethyl (2*RS*,3*SR*,4*RS*,5*RS*,6*SR*)-4,6-bis(pyridin-4-yl)-5-cyano-2-hydroxy-2-(trifluoromethyl)piperidine-3,5-dicarboxylate **(3o)**



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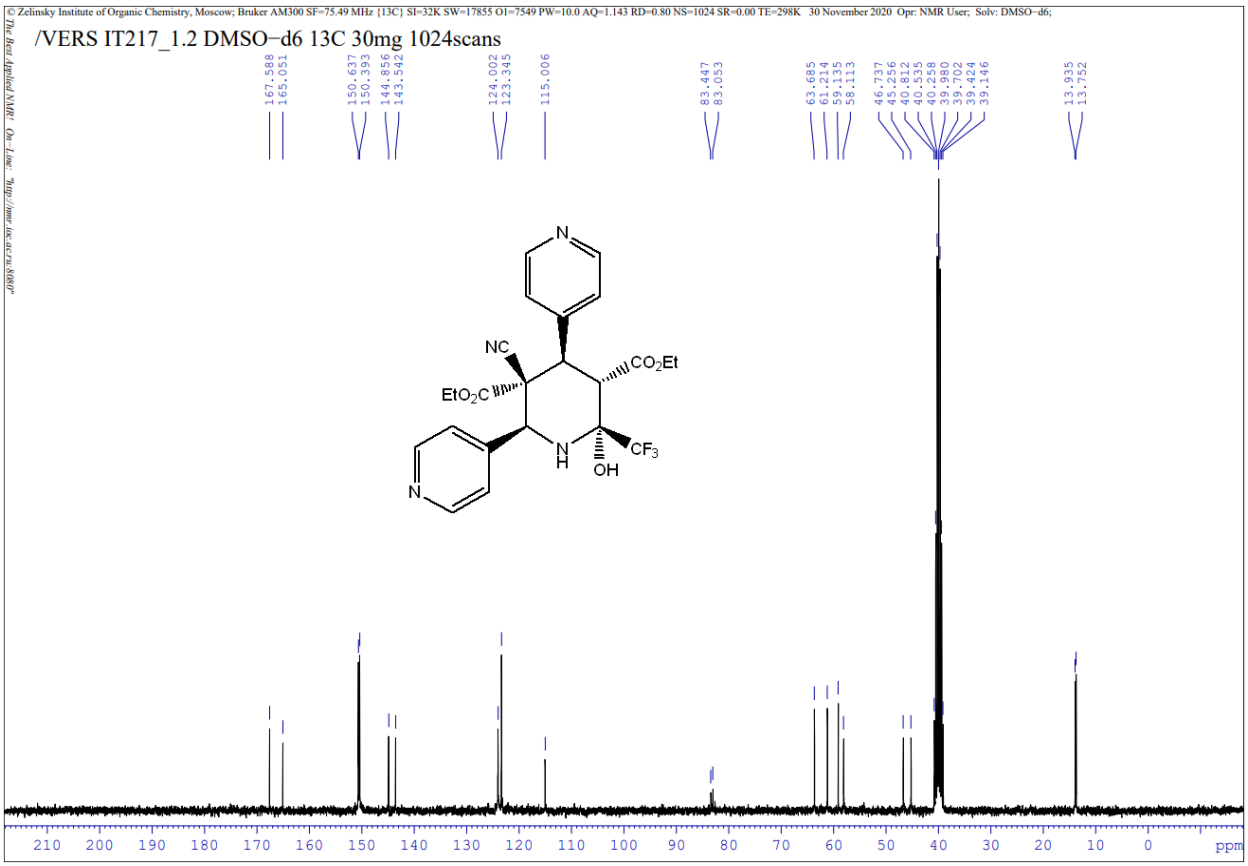

^{19}F NMR of **3o**