Electron supporting information.

Rare-earth dichloro and bis(alkyl) complexes supported by bulky amido-imino ligand. Synthesis, structure, reactivity and catalytic activity in isoprene polymerization.

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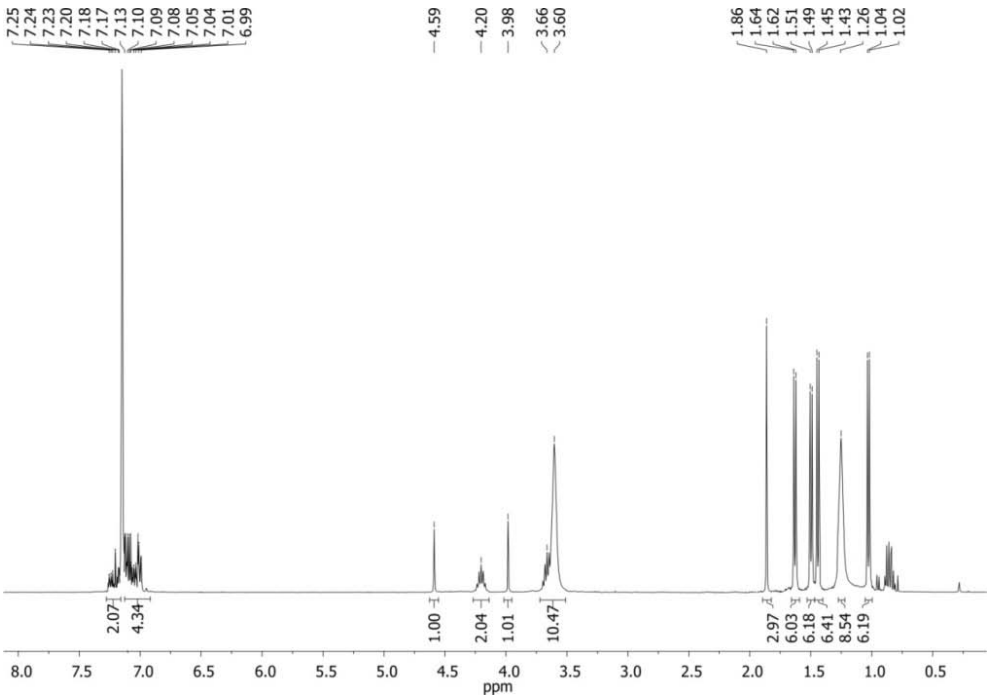

Fig. 1. ^{1}H NMR spectrum of **2Y**.

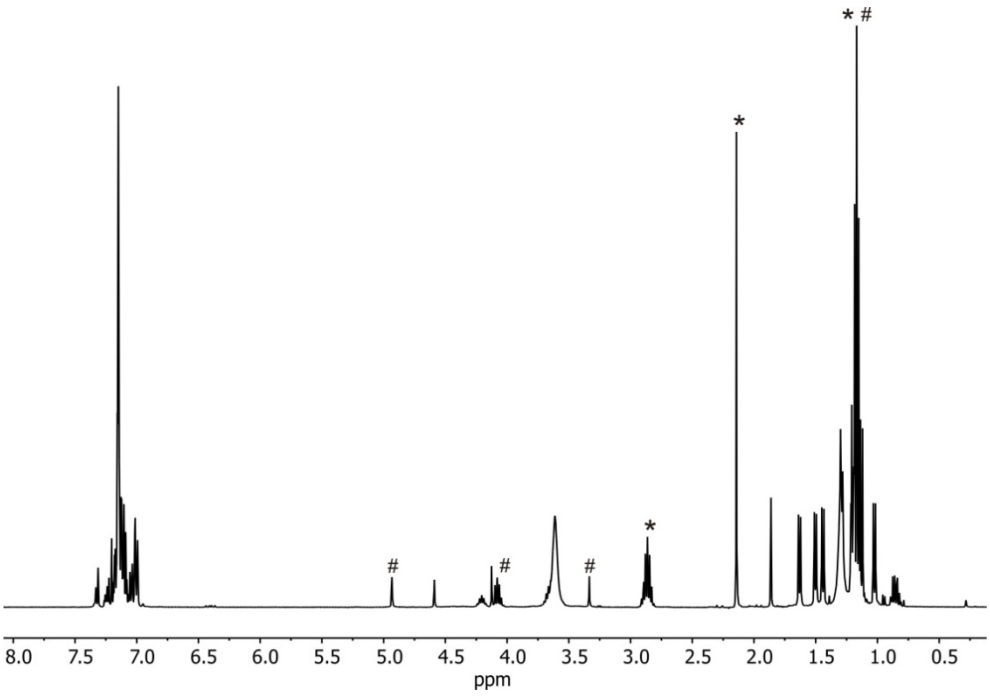

Fig. 2. ^{1}H NMR spectrum of **2Y** (next day). # – signals attributed to [(2,6-*i*Pr$_2$C$_6$H$_3$)NC(=CH$_2$)C(=CH$_2$)N(C$_6$H$_3$-2,6-*i*Pr$_2$)]YCl(THF)$_n$; ***** – signals attributed to [(2,6-*i*Pr$_2$C$_6$H$_3$)N=C(Me)C(Me)=N(C$_6$H$_3$-2,6-*i*Pr$_2$)].

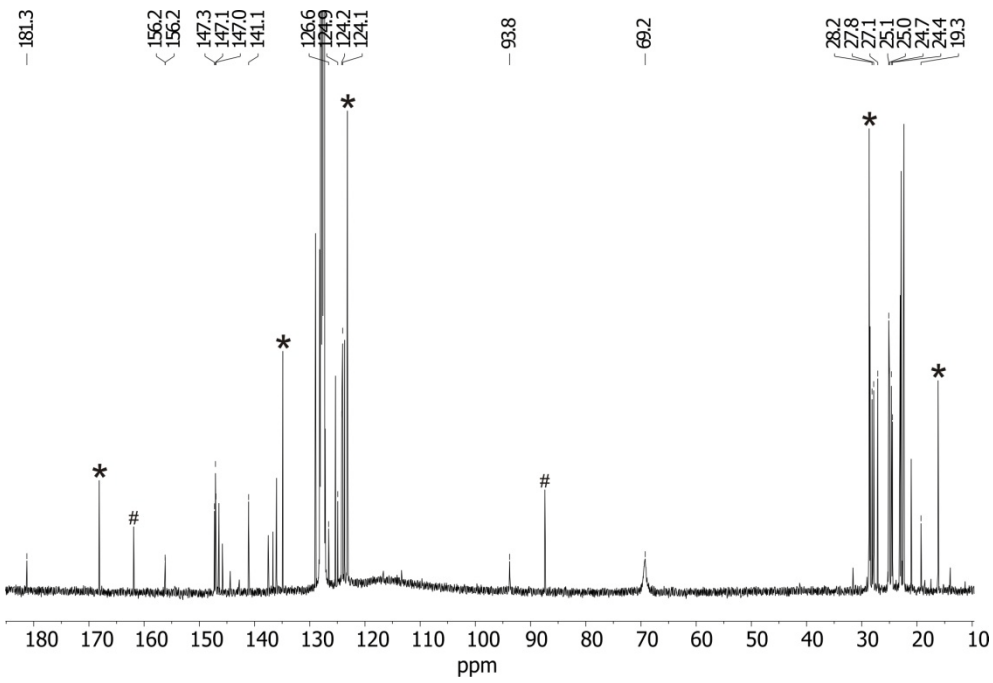

Fig. 3. $^{13}C\{^{1}H\}$ NMR spectrum of **2Y** (next day). **#** – signals attributed to [(2,6-*i*$Pr_2C_6H_3$)NC(=CH_2)C(=CH_2)N(C_6H_3-2,6-*i*Pr_2)]YCl$(THF)_n$; ***** – signals attributed to [(2,6-*i*$Pr_2C_6H_3$)N=C(Me)C(Me)=N(C_6H_3-2,6-*i*Pr_2)].

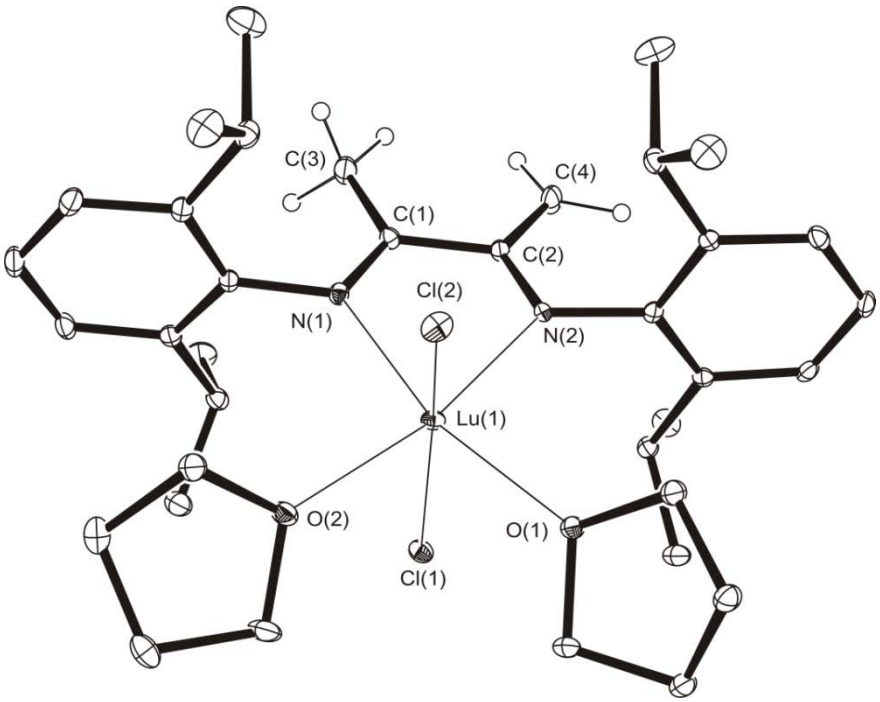

Fig. 4. Molecular structure of complex [(2,6-*i*Pr$_2$C$_6$H$_3$)N=C(Me)C(=CH$_2$)N(C$_6$H$_3$-2,6-*i*Pr$_2$)]LuCl$_2$(THF)$_2$ (**2Lu**). Thermal ellipsoids are drawn at the 30% probability level. Hydrogen atoms of 2,6-diisopropylphenyl substitutes and THF molecules are omitted for clarity. Selected distances [Å] and angles [°]: Lu(1)-N(1) 2.3353(16), Lu(1)-N(2) 2.3048(17), Lu(1)-Cl(1) 2.5383(5), Lu(1)-Cl(2) 2.5316(6), Lu(1)-O(1) 2.3312(13), Lu(1)-O(2) 2.3280(14), N(1)-C(1) 1.327(3), N(2)-C(2) 1.342(3), C(1)-C(3) 1.438(3), C(1)-C(2) 1.485(3), C(2)-C(4) 1.417(3); N(2)-Lu(1)-N(1) 70.62(6), Cl(1)-Lu(1)-Cl(2) 162.306(17), O(1)-Lu(1)-O(2) 100.09(5), N(1)-C(1)-C(3) 124.46(19), N(1)-C(1)-C(2) 116.45(17), C(3)-C(1)-C(2) 119.07(19), N(2)-C(2)-C(4) 124.81(18), N(2)-C(2)-C(1) 116.77(18), C(4)-C(2)-C(1) 118.42(18).

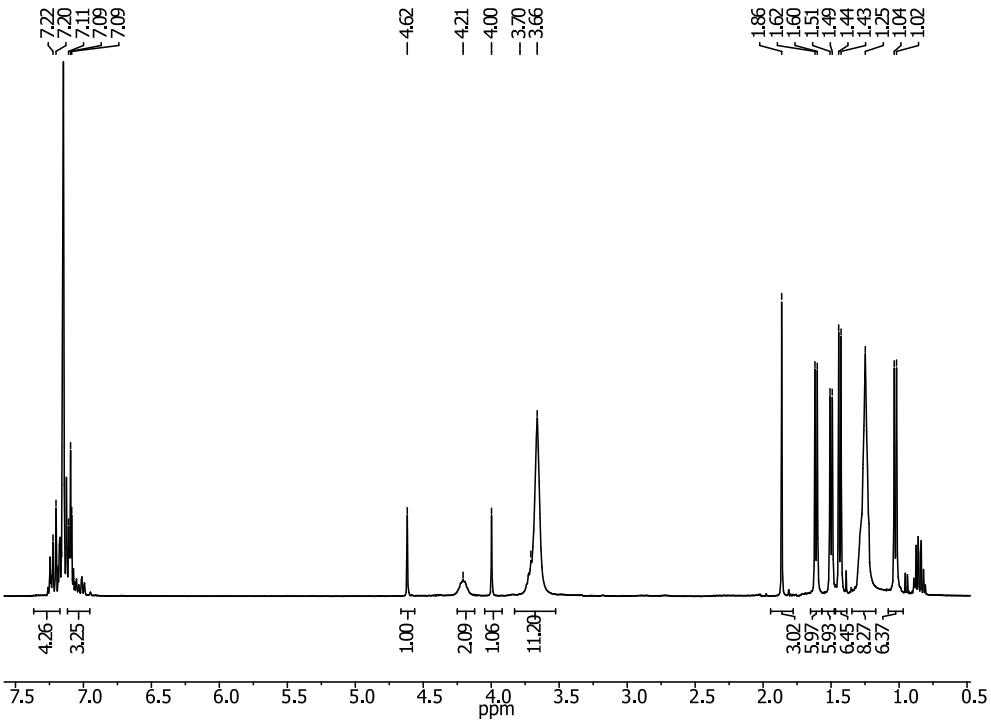

Fig. 5. ^{1}H NMR spectrum of **2Lu**.

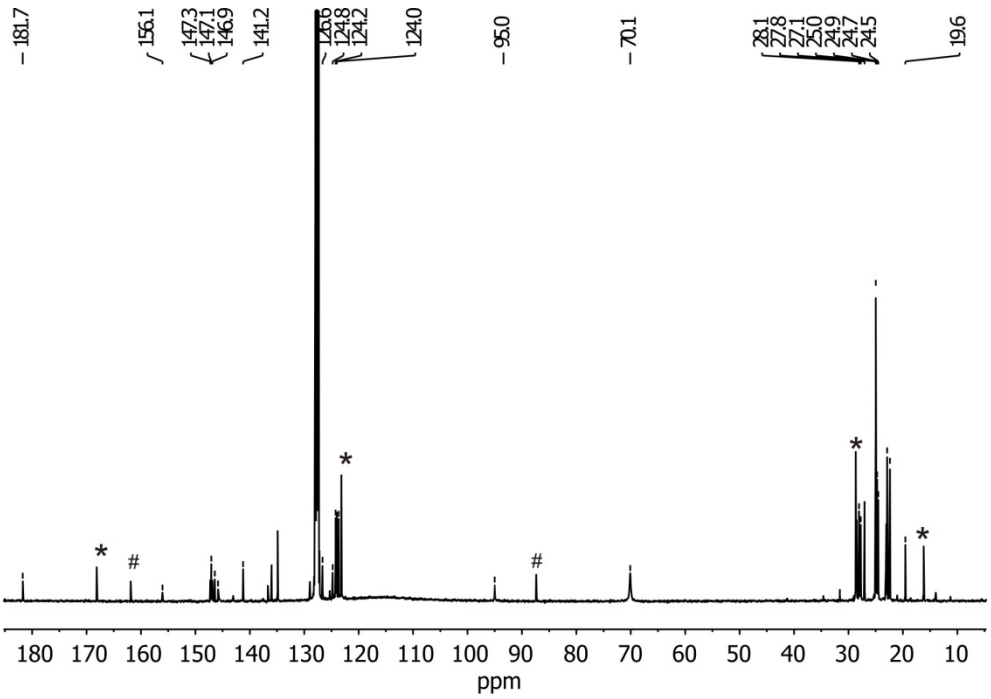

Fig. 6. ^{13}C{^{1}H} NMR spectrum of **2Lu**. # – signals attributed to [(2,6-*i*Pr$_2$C$_6$H$_3$)NC(=CH$_2$)C(=CH$_2$)N(C$_6$H$_3$-2,6-*i*Pr$_2$)]LuCl(THF)$_n$; ***** – signals attributed to [(2,6-*i*Pr$_2$C$_6$H$_3$)N=C(Me)C(Me)=N(C$_6$H$_3$-2,6-*i*Pr$_2$)].

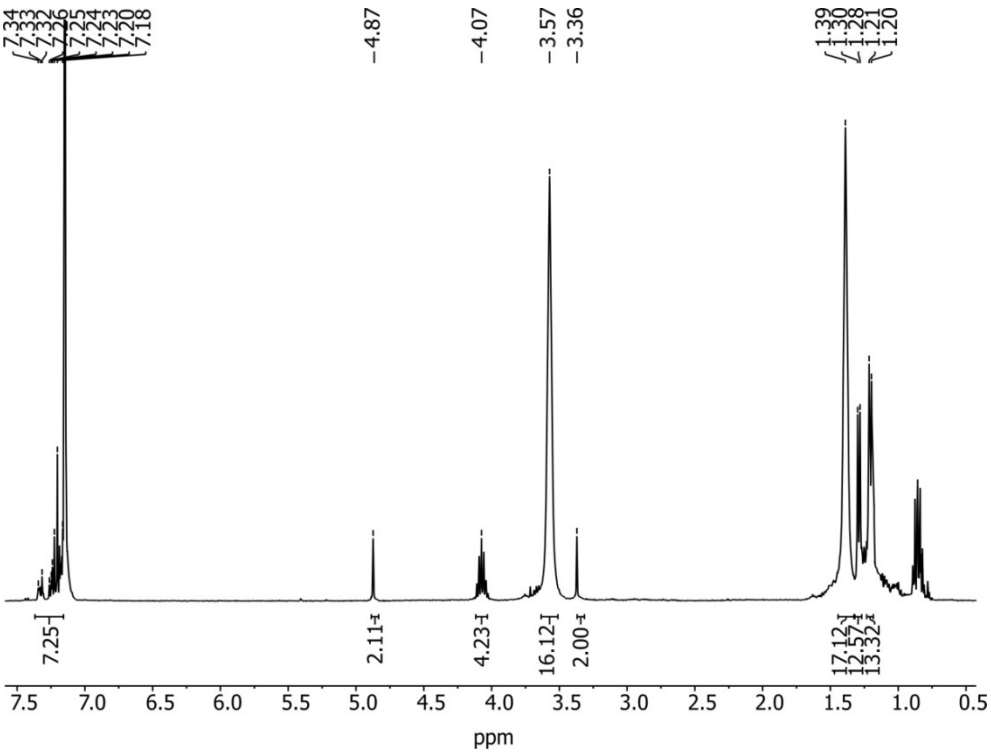

Fig. 7. ^{1}H NMR spectrum of **3**.

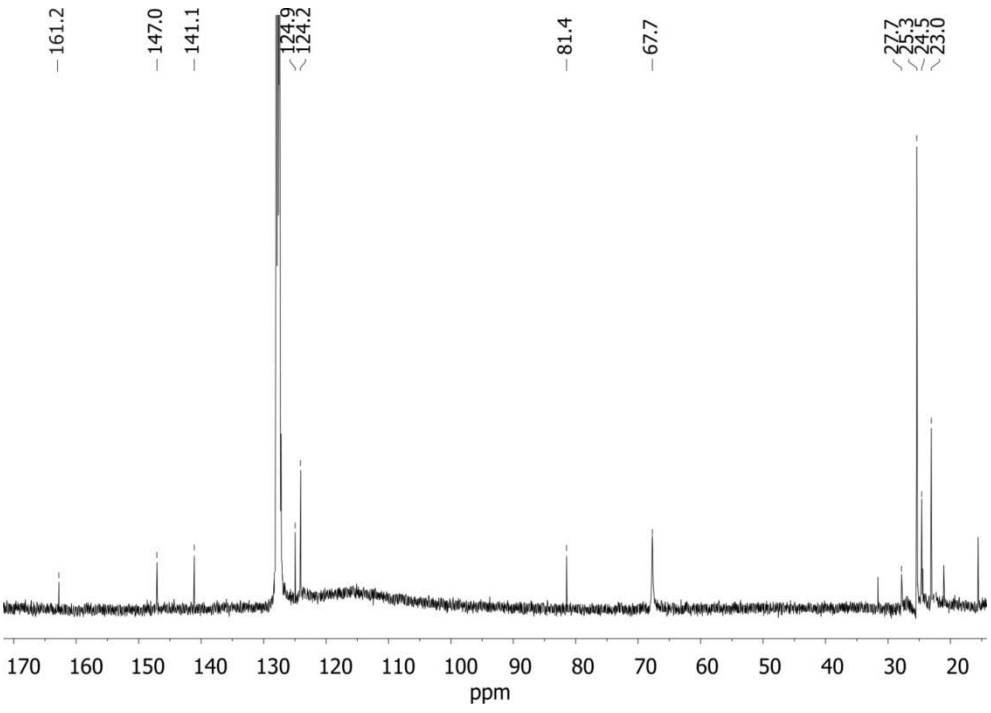

Fig. 8. ^{13}C{^{1}H} NMR spectrum of **3**.

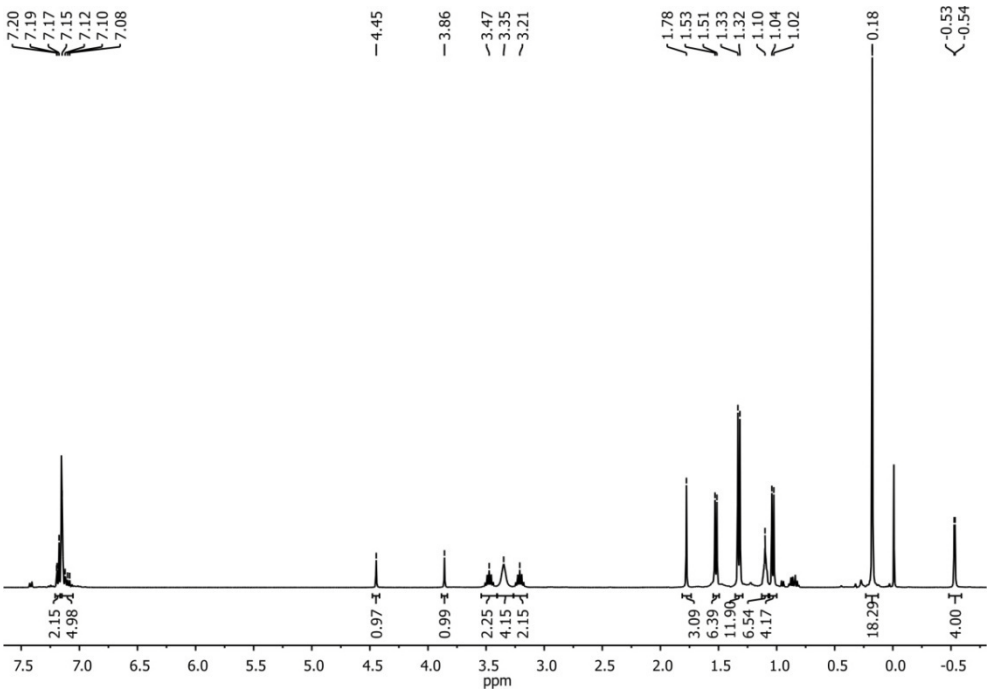

Fig. 9. ^{1}H NMR spectrum of **4Y**.

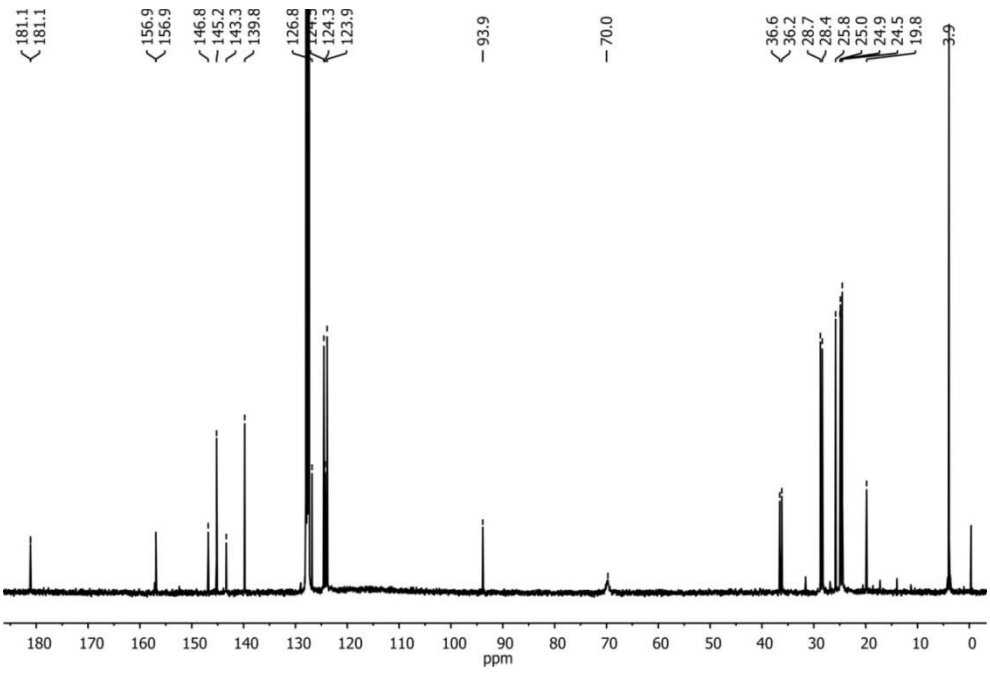

Fig. 10. ^{13}C{^{1}H} NMR spectrum of **4Y**.

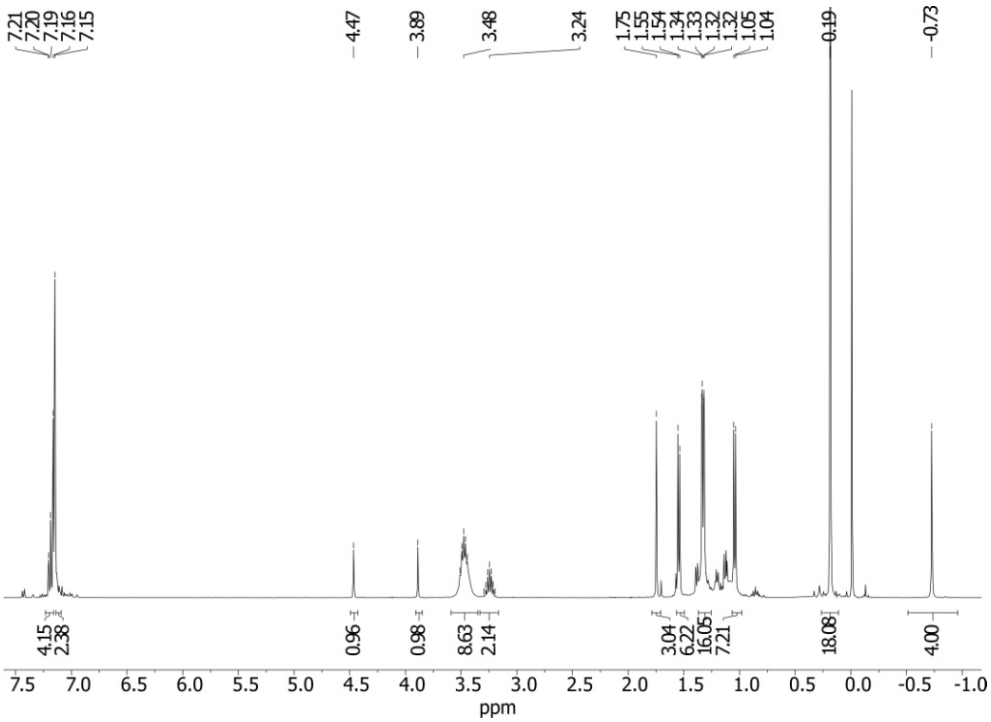

Fig. 11. ^{1}H NMR spectrum of **4Lu**.

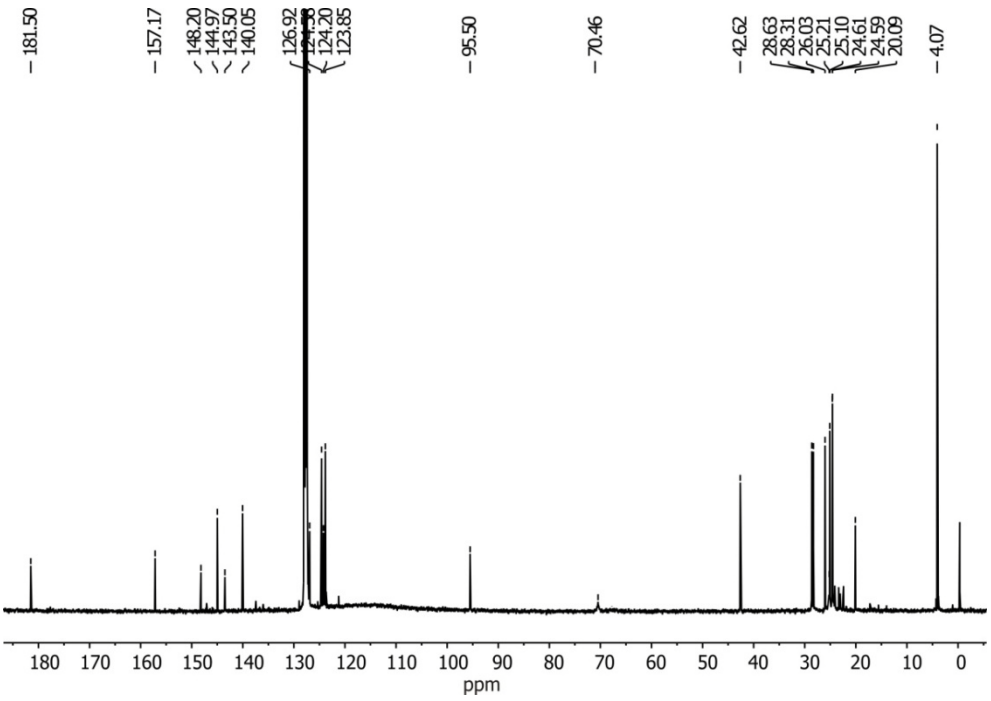

Fig. 12. ^{13}C{^{1}H} NMR spectrum of **4Lu**.

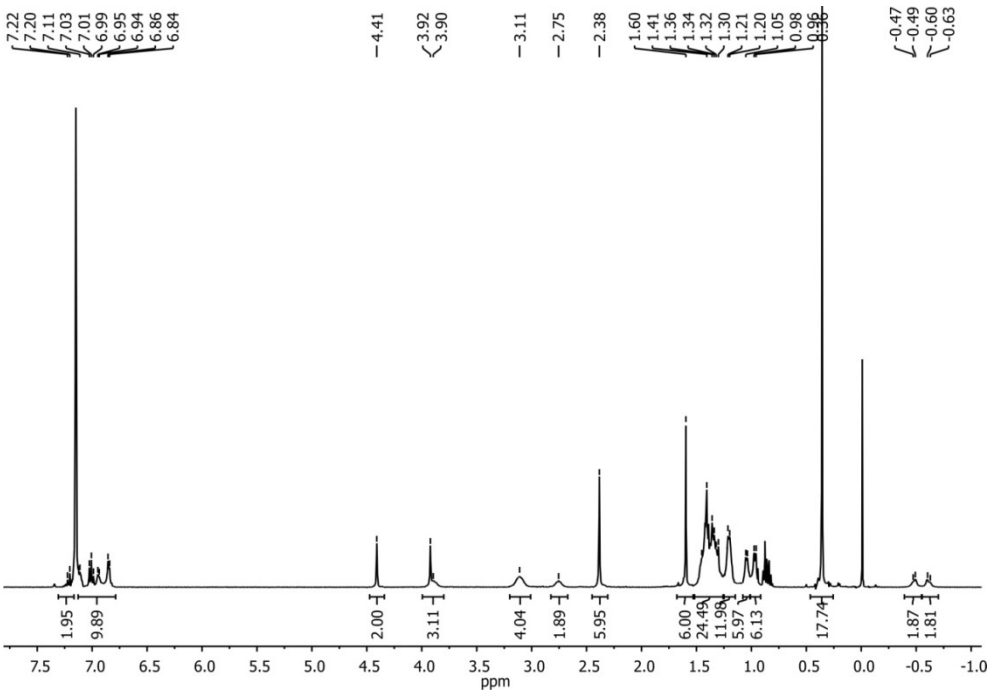

Fig. 13. ^{1}H NMR spectrum of **5**.

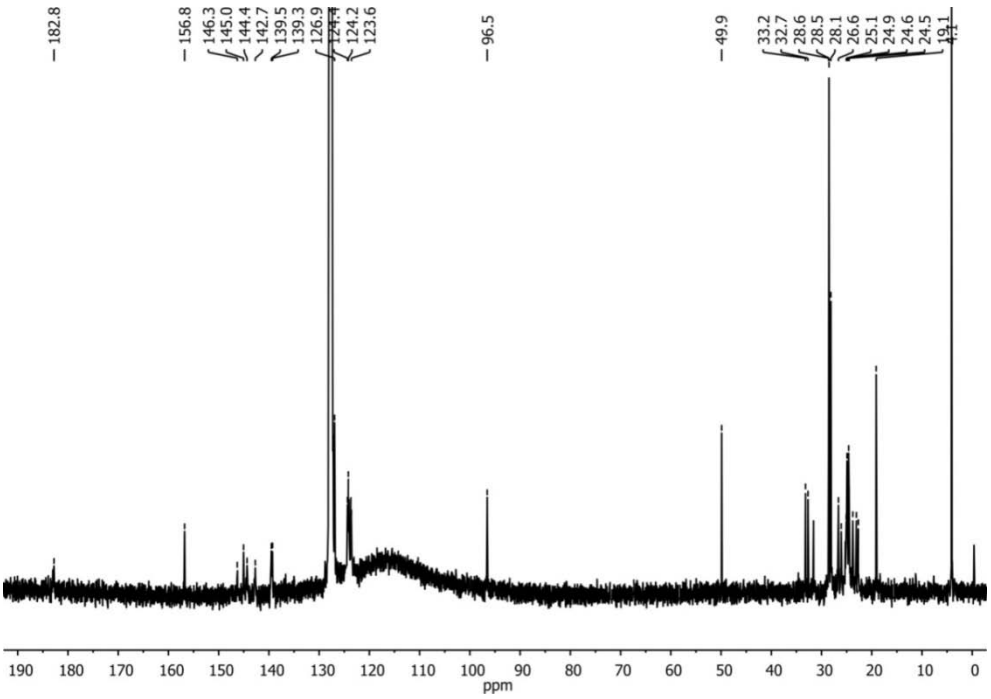

Fig. 14. ^{13}C{^{1}H} NMR spectrum of **5**.

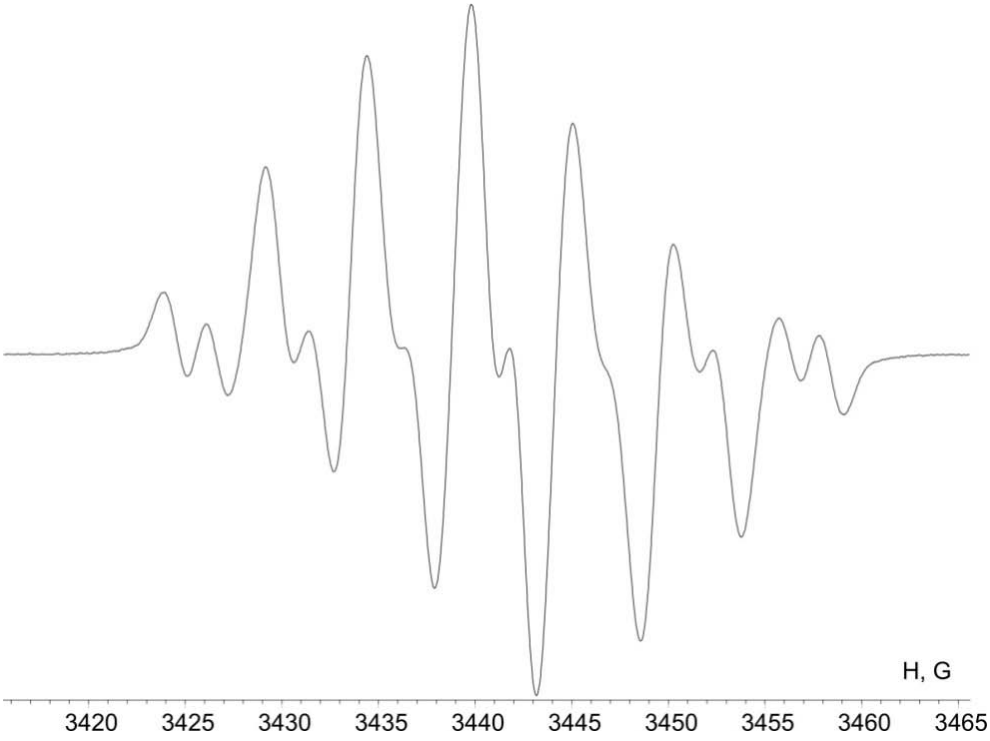

Fig. 15. EPR spectrum of **6**.

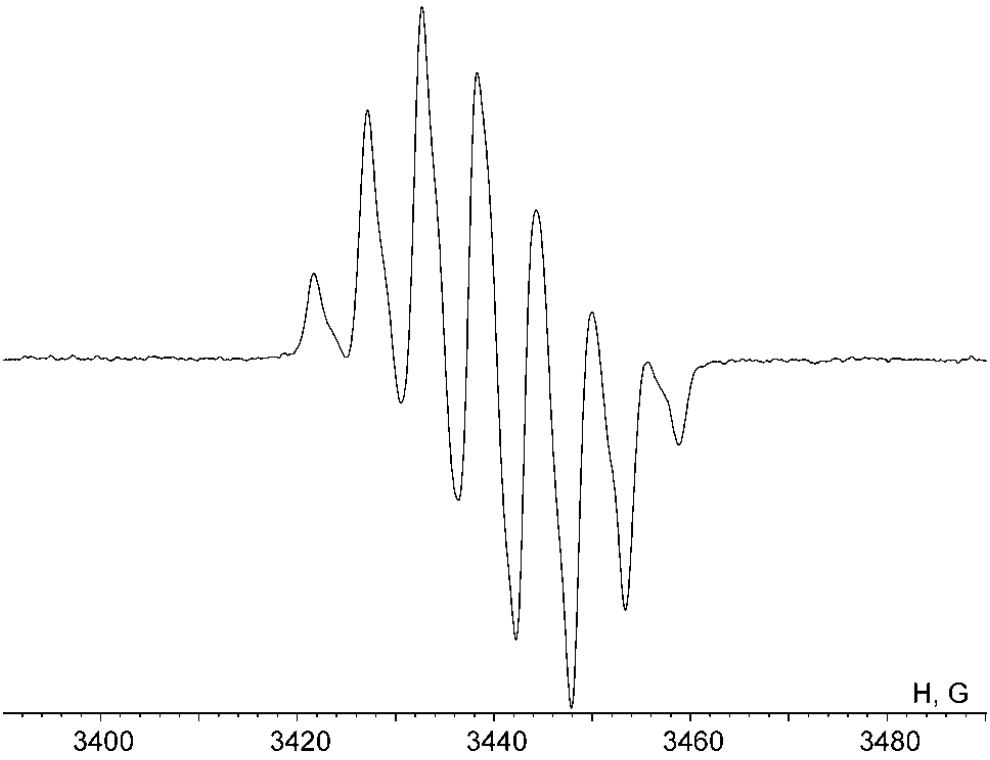

Fig. 16. EPR spectrum of **8**.

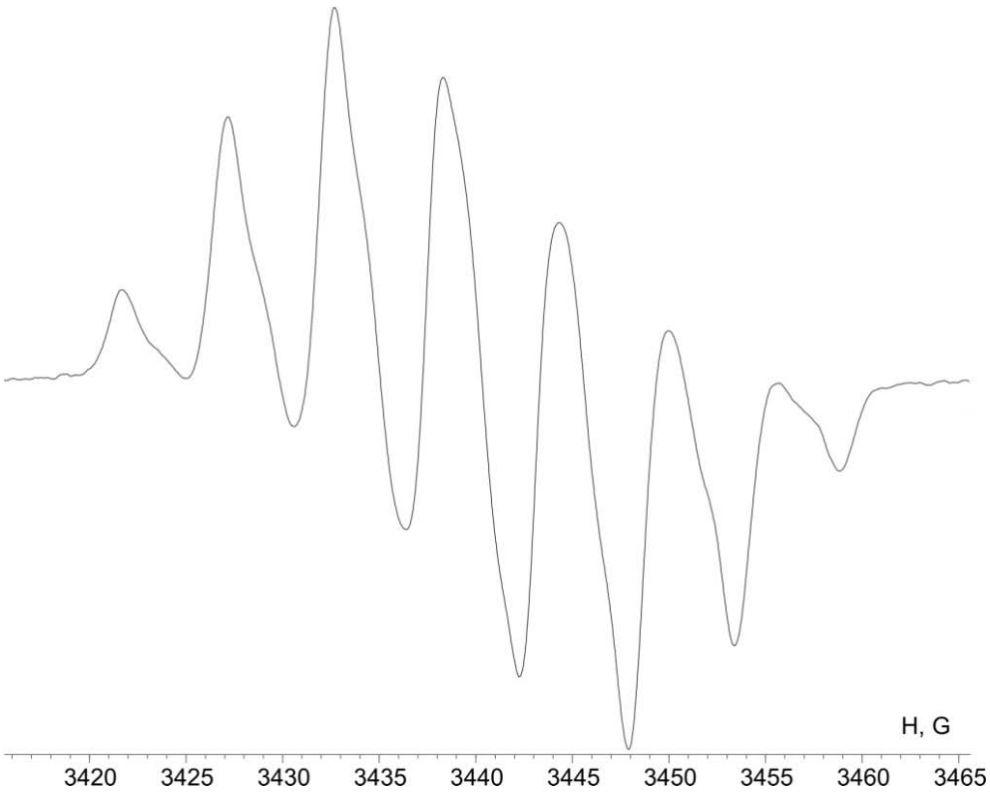

Fig. 17. EPR spectrum of **10**.