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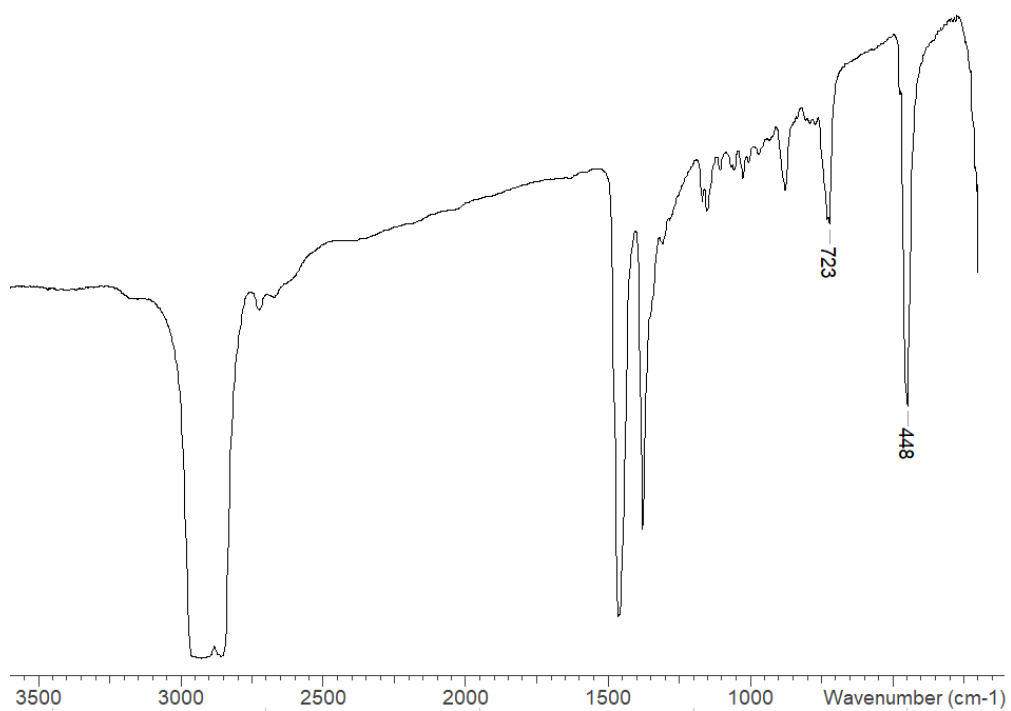


Figure 1: IR spectrum of $[n\text{Bu}_4\text{N}]_2[\text{WS}_4]$.

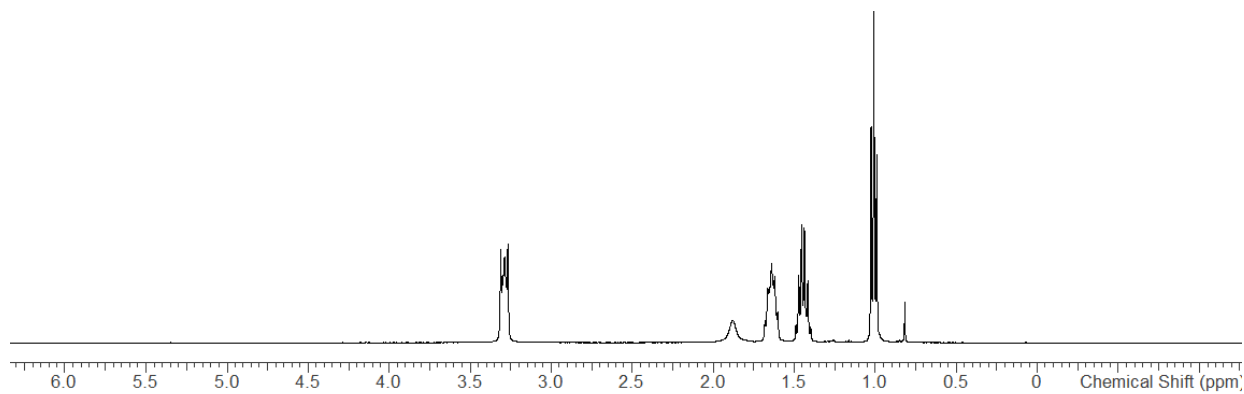


Figure 2: NMR spectrum for $[n\text{Bu}_4\text{N}]_2[\text{WS}_4]$.

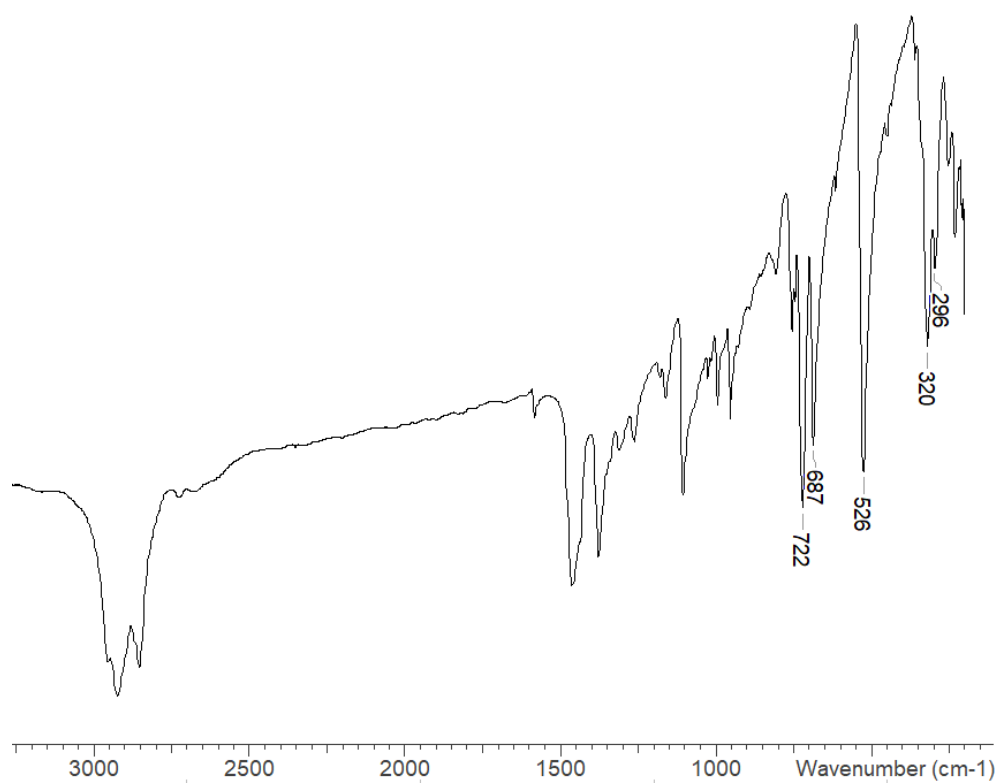


Figure 3: IR spectrum of $[PPh_4][WScI_5]$.

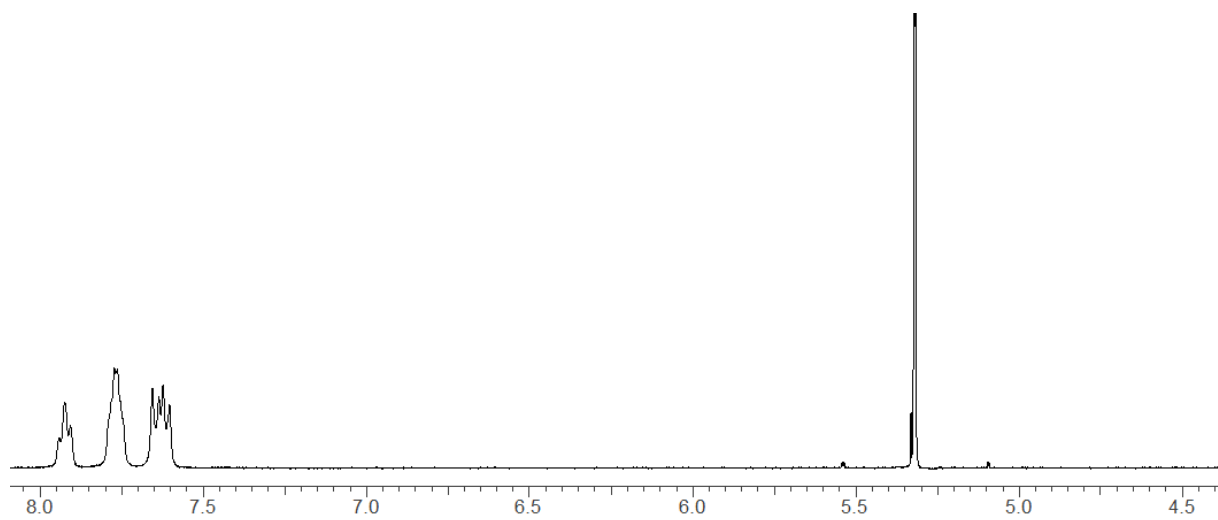


Figure 4: NMR spectrum of $[PPh_4][WScI_5]$.

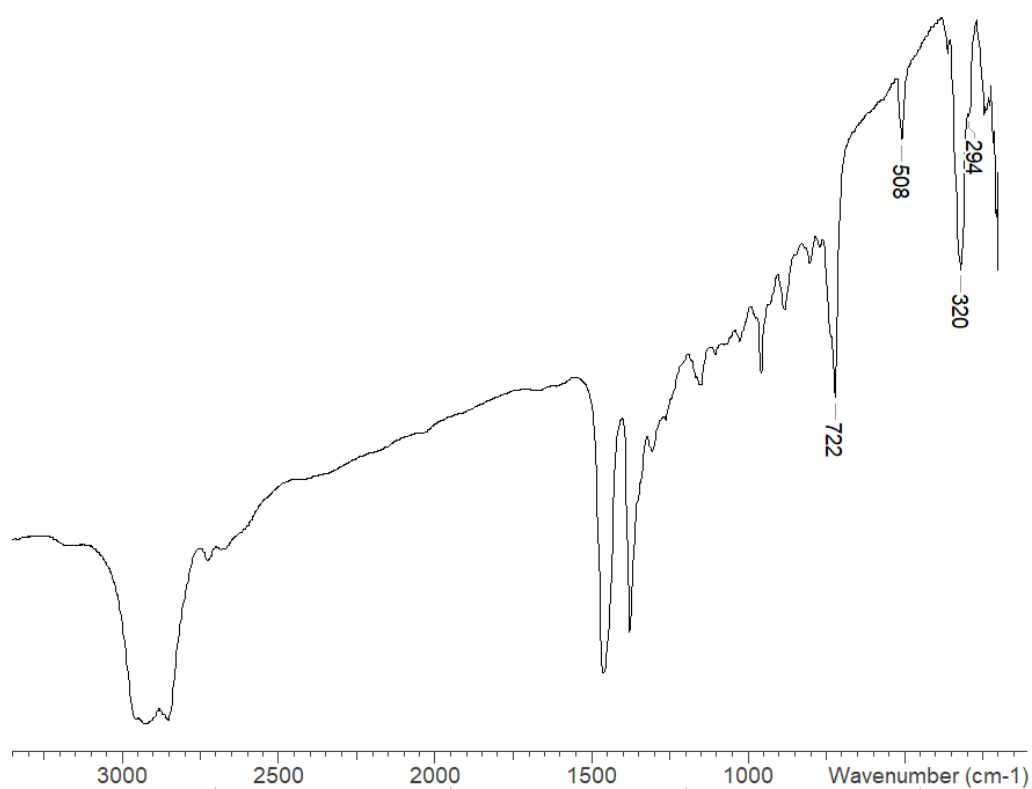


Figure 5 IR spectrum of $[n\text{Bu}_4\text{N}][\text{WCl}_5]$.

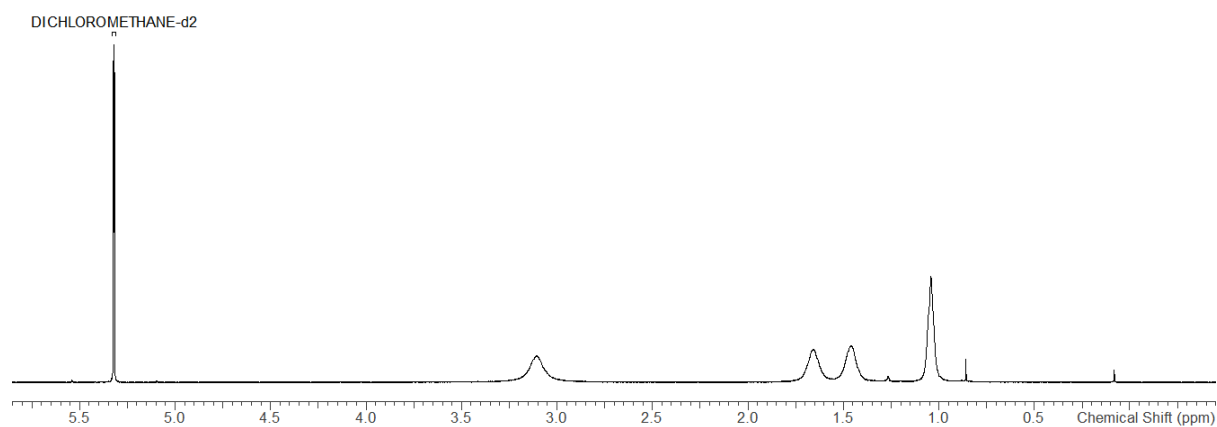


Figure 6: NMR spectrum of $[n\text{Bu}_4\text{N}][\text{WCl}_5]$.

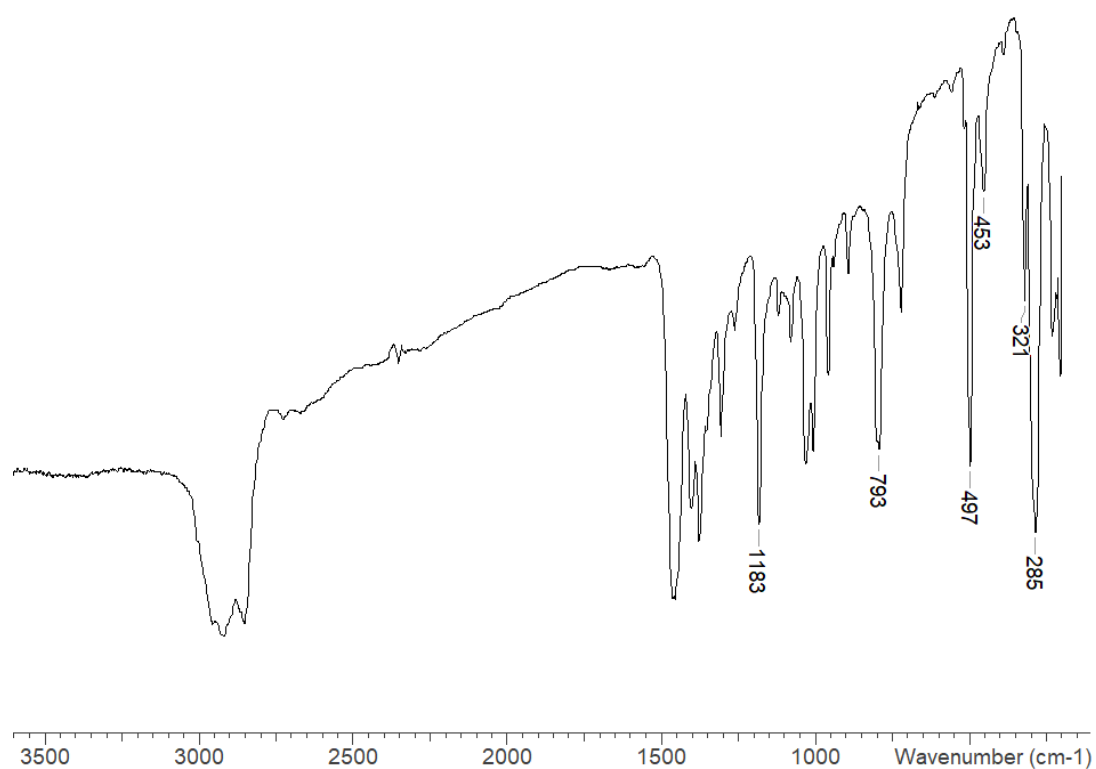


Figure 7: IR spectrum of $[\text{Et}_4\text{N}]_2[\text{WS}_2\text{Cl}_4]$.

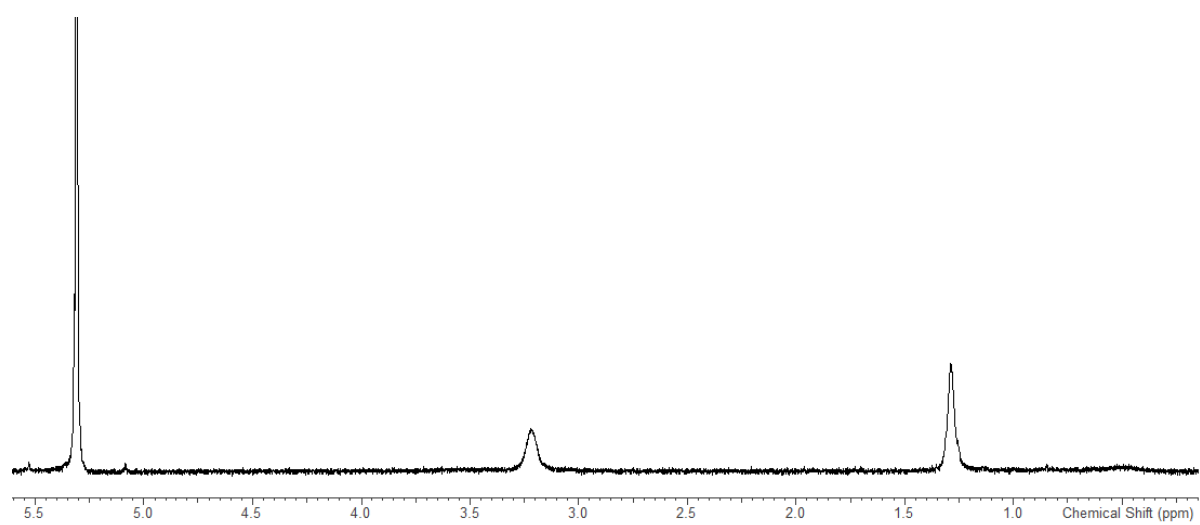


Figure 8: NMR spectrum of $[\text{Et}_4\text{N}]_2[\text{WS}_2\text{Cl}_4]$.

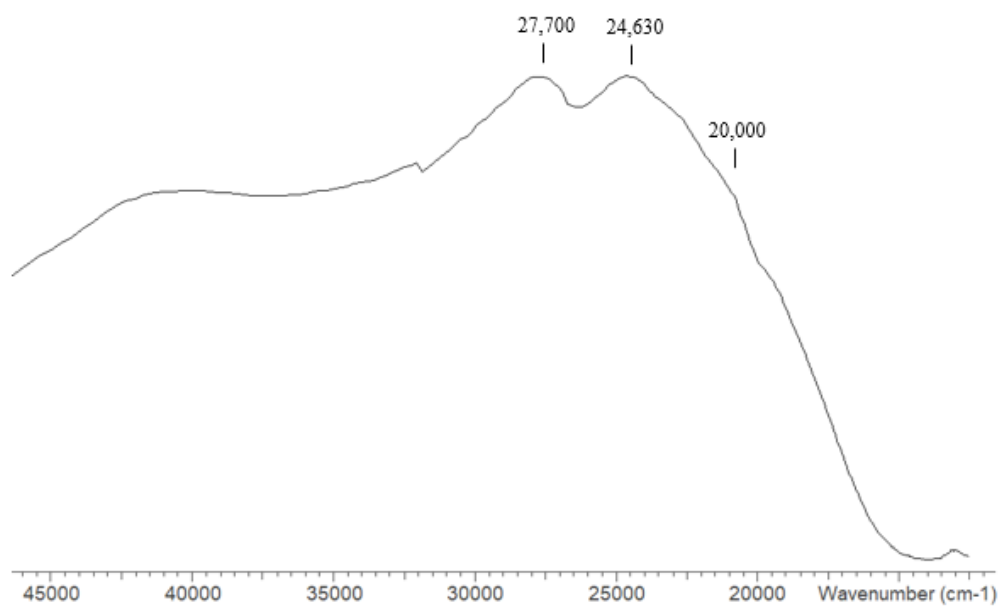


Figure 9: UV-Vis spectrum of $[\text{Et}_4\text{N}]_2[\text{WS}_2\text{Cl}_4]$.

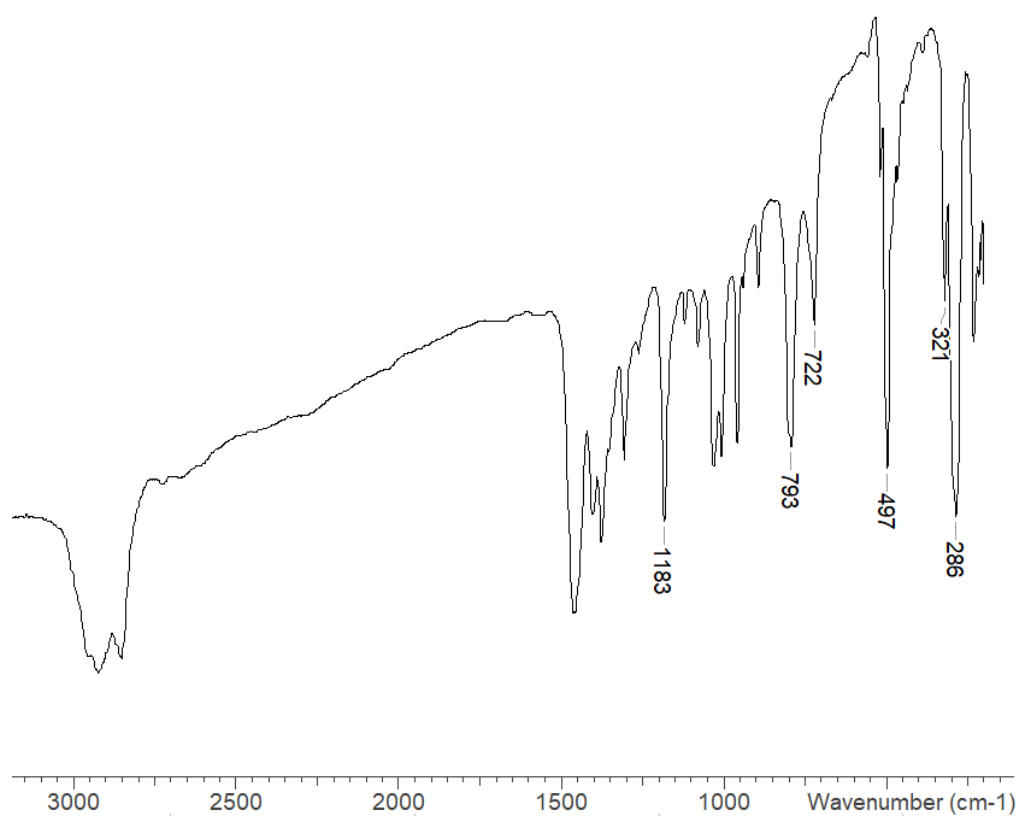


Figure 10: IR spectrum of $[\text{PPh}_4]_2[\text{MoSe}_4]$.

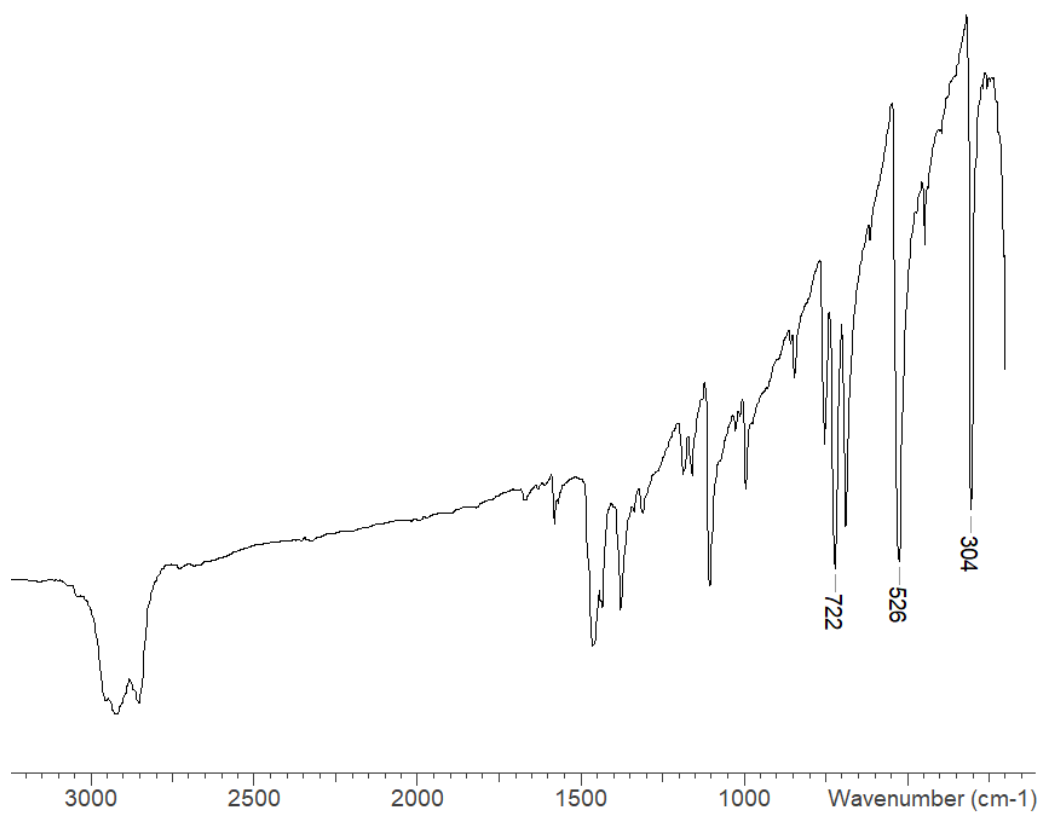


Figure 11: IR spectrum of $[PPh_4]_2[WSe_4]$.

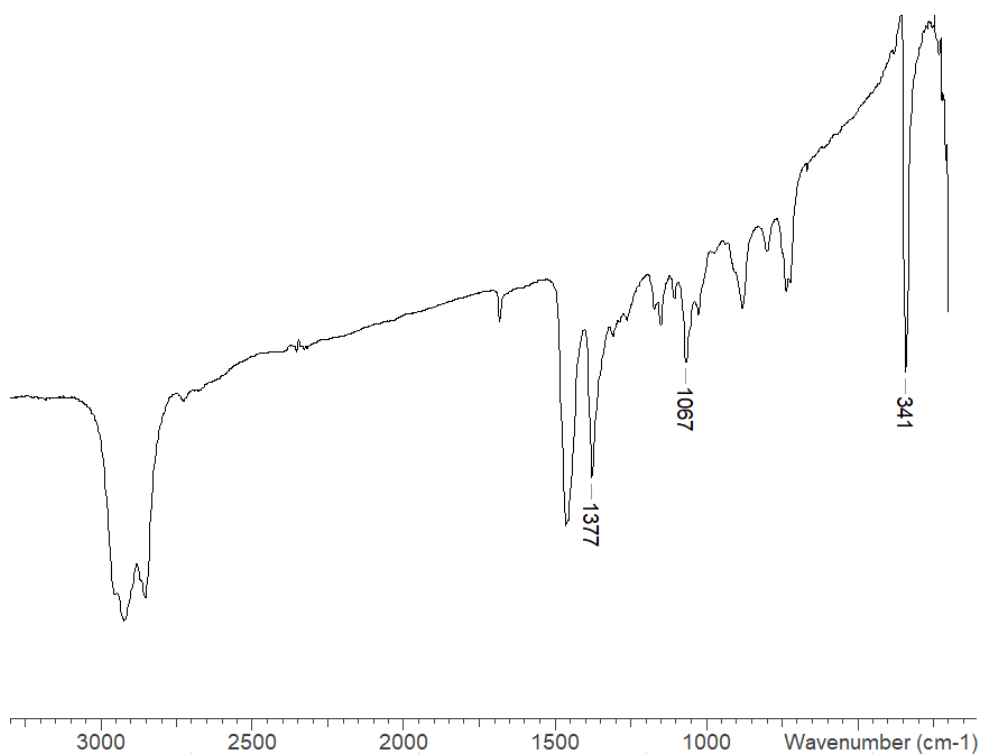


Figure 12: IR spectrum of $[nBu_4N]_2[MoSe_4]$.

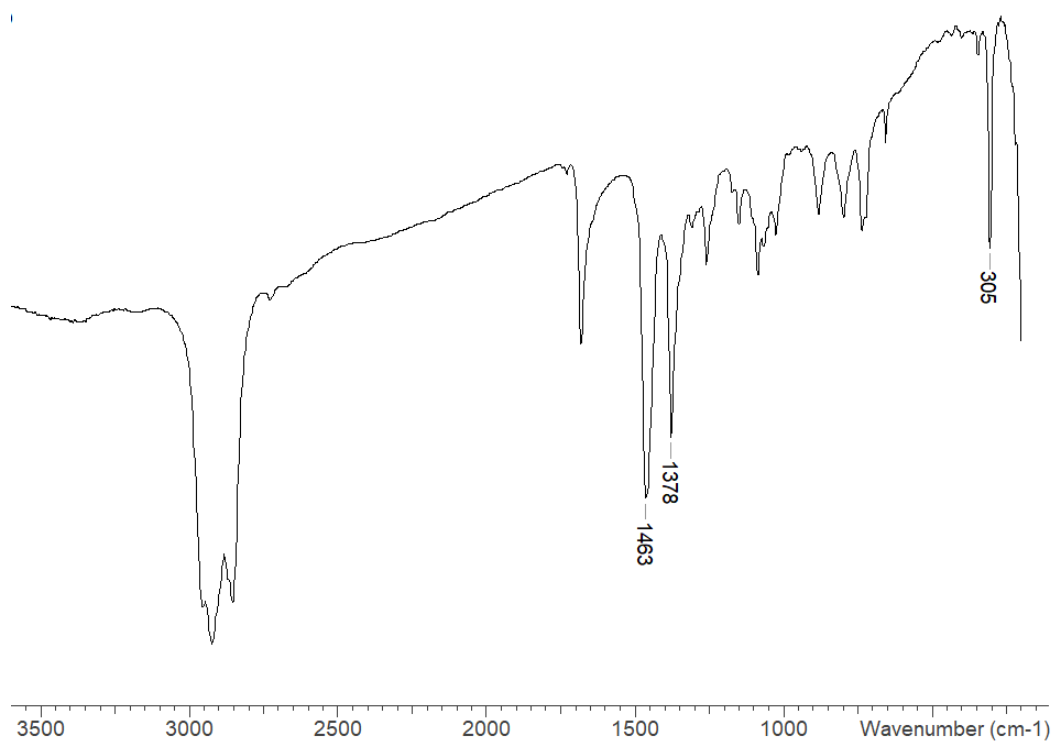


Figure 13: IR spectrum of $[\text{nBu}_4\text{N}]_2[\text{WSe}_4]$.

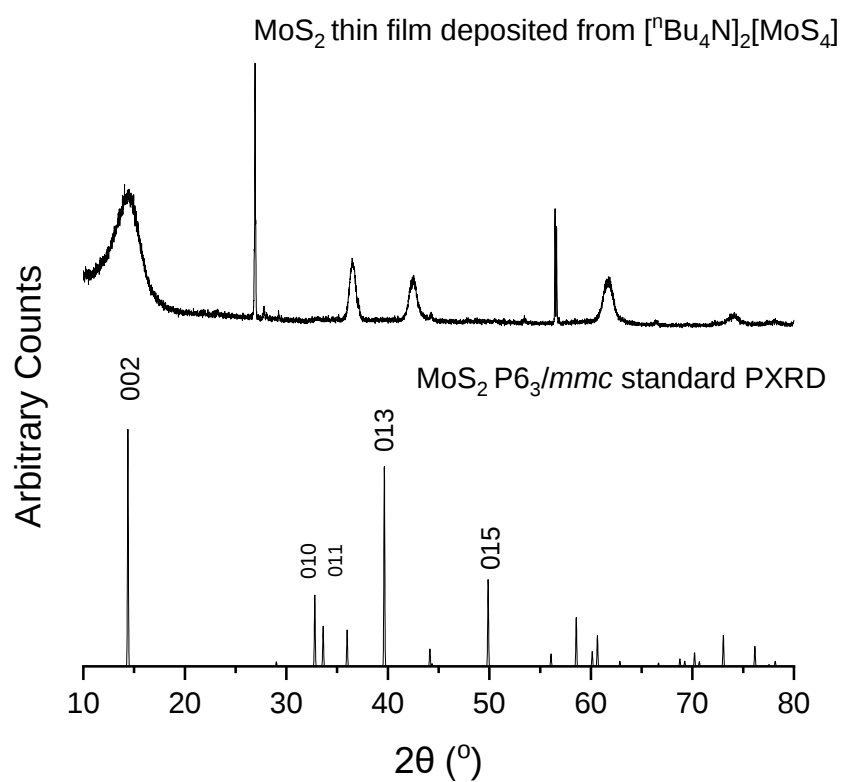


Figure 14: GIXRD of MoS_2 annealed at 500°C. Deposited from $[\text{nBu}_2\text{N}]_2[\text{MoS}_4]$ in CH_2Cl_1 .

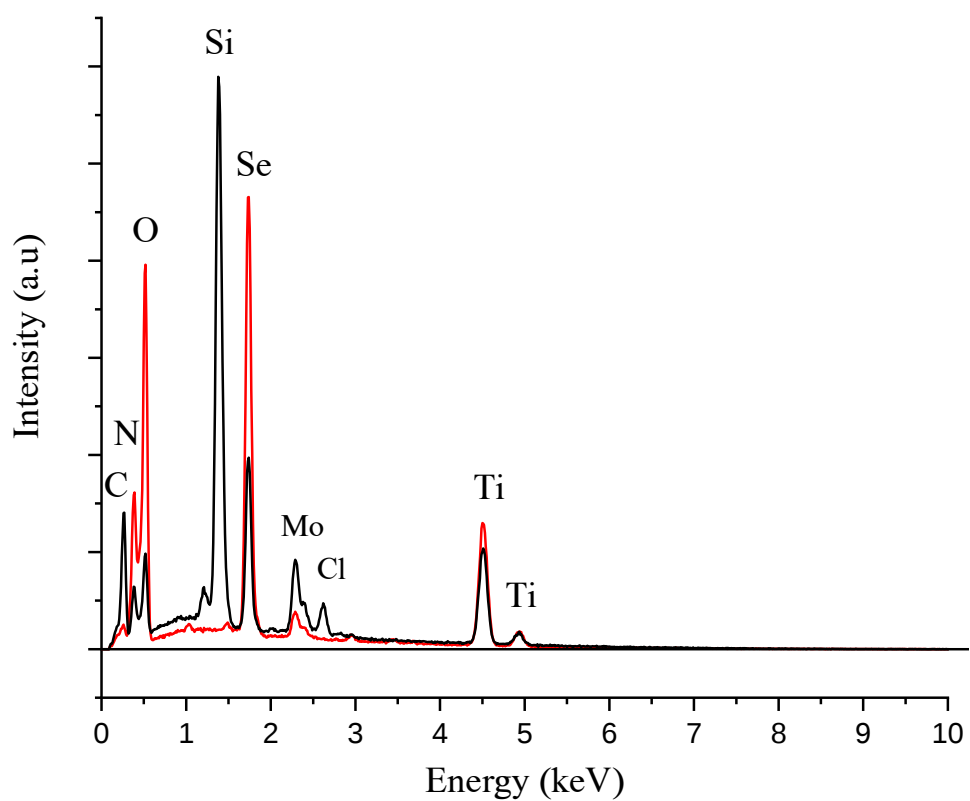


Figure 15: EDX spectrum of MoSe_2 attempt from $[\text{nBu}_2\text{N}]_2[\text{MoSe}_4]$ in CH_2Cl_1 . As-deposited (black) and annealed (red).

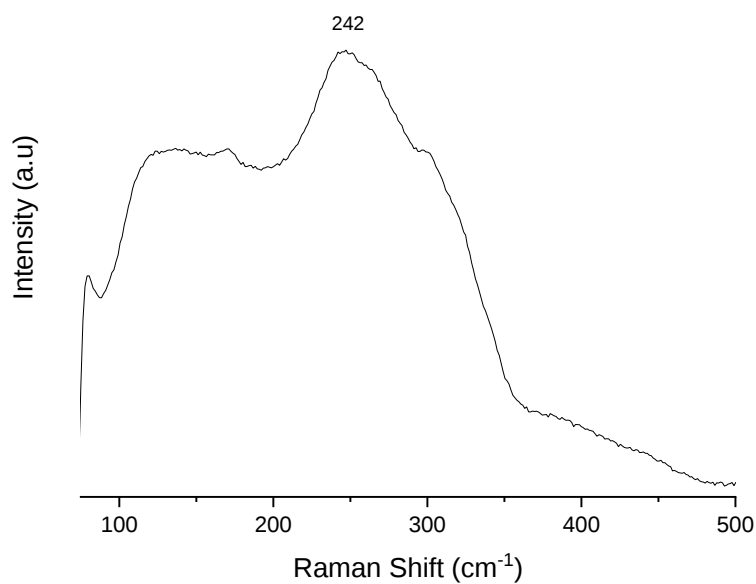


Figure 16: Raman spectrum of as-deposited MoSe_2 attempt from $[\text{nBu}_2\text{N}]_2[\text{MoSe}_4]$ in CH_2Cl_1 .