

RUTHENIUM-CATALYZED HYDROXYETHYLATION OF CYCLIC AMINES WITH ETHYLENE GLYCOL

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S1. NMR spectra of products

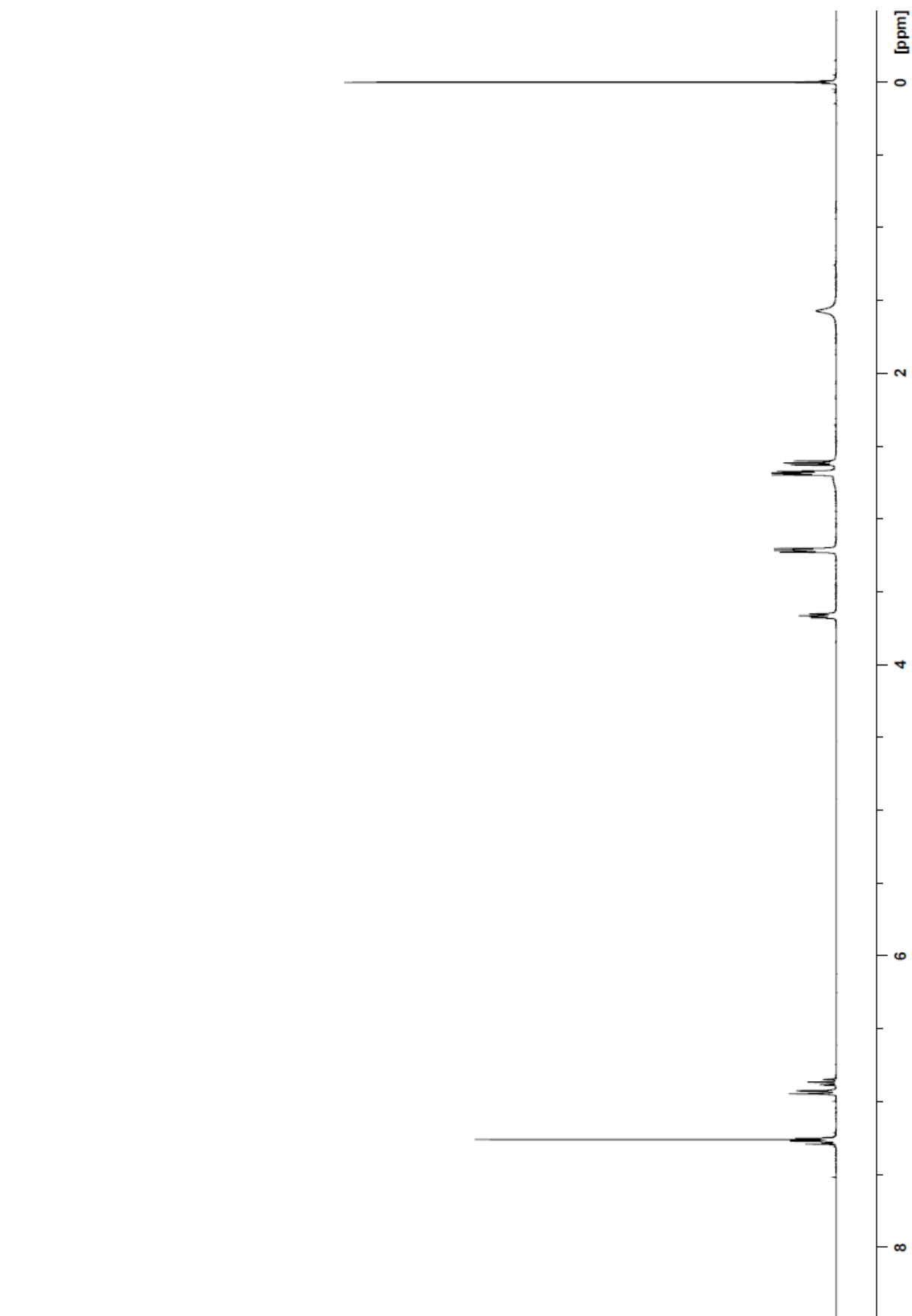


Fig. 1 ¹H NMR spectrum of 2-(4-phenylpiperazin-1-yl)ethan-1-ol (**3a**).

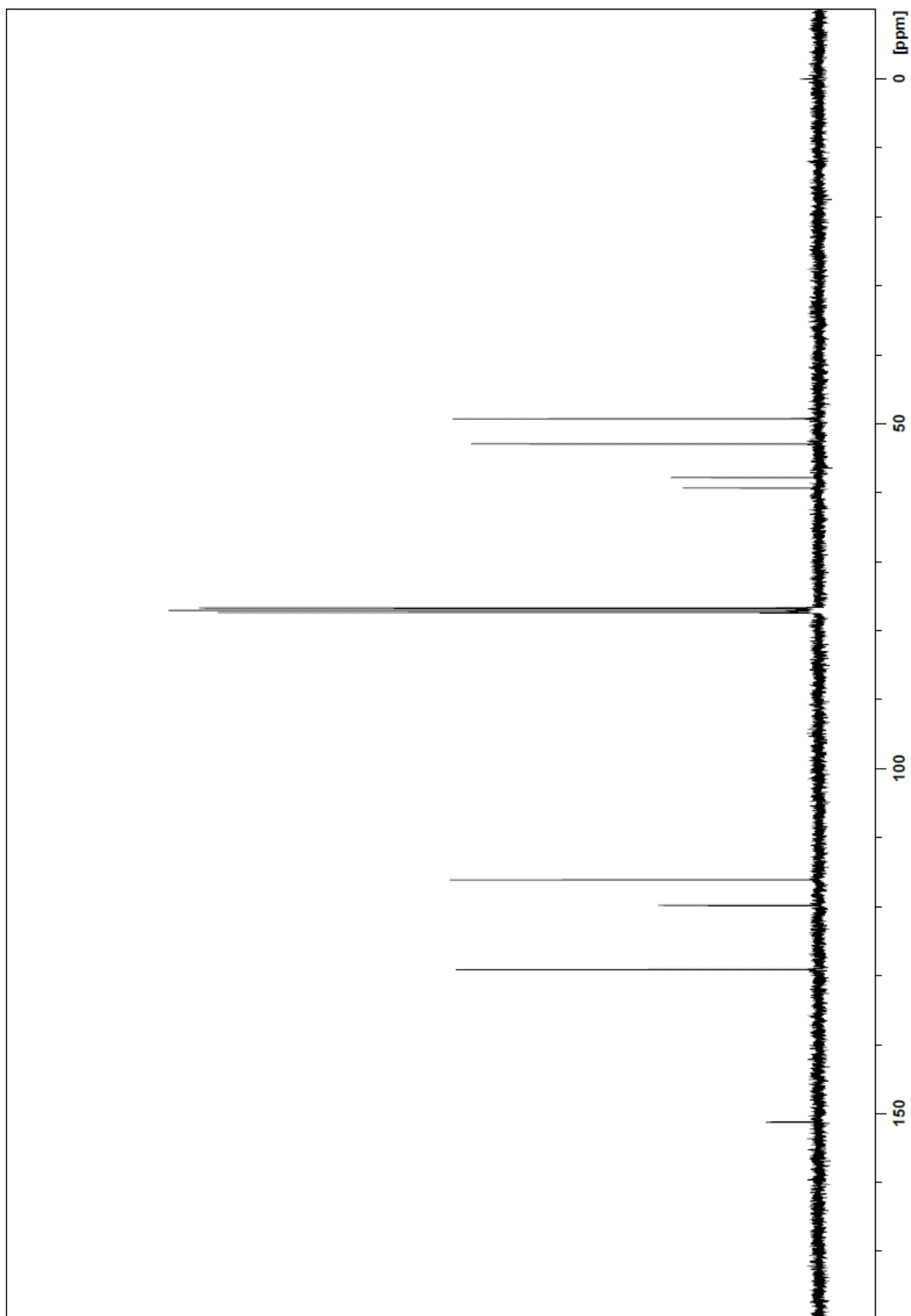


Fig. 2 ^{13}C NMR spectrum of 2-(4-phenylpiperazin-1-yl)ethan-1-ol (**3a**).

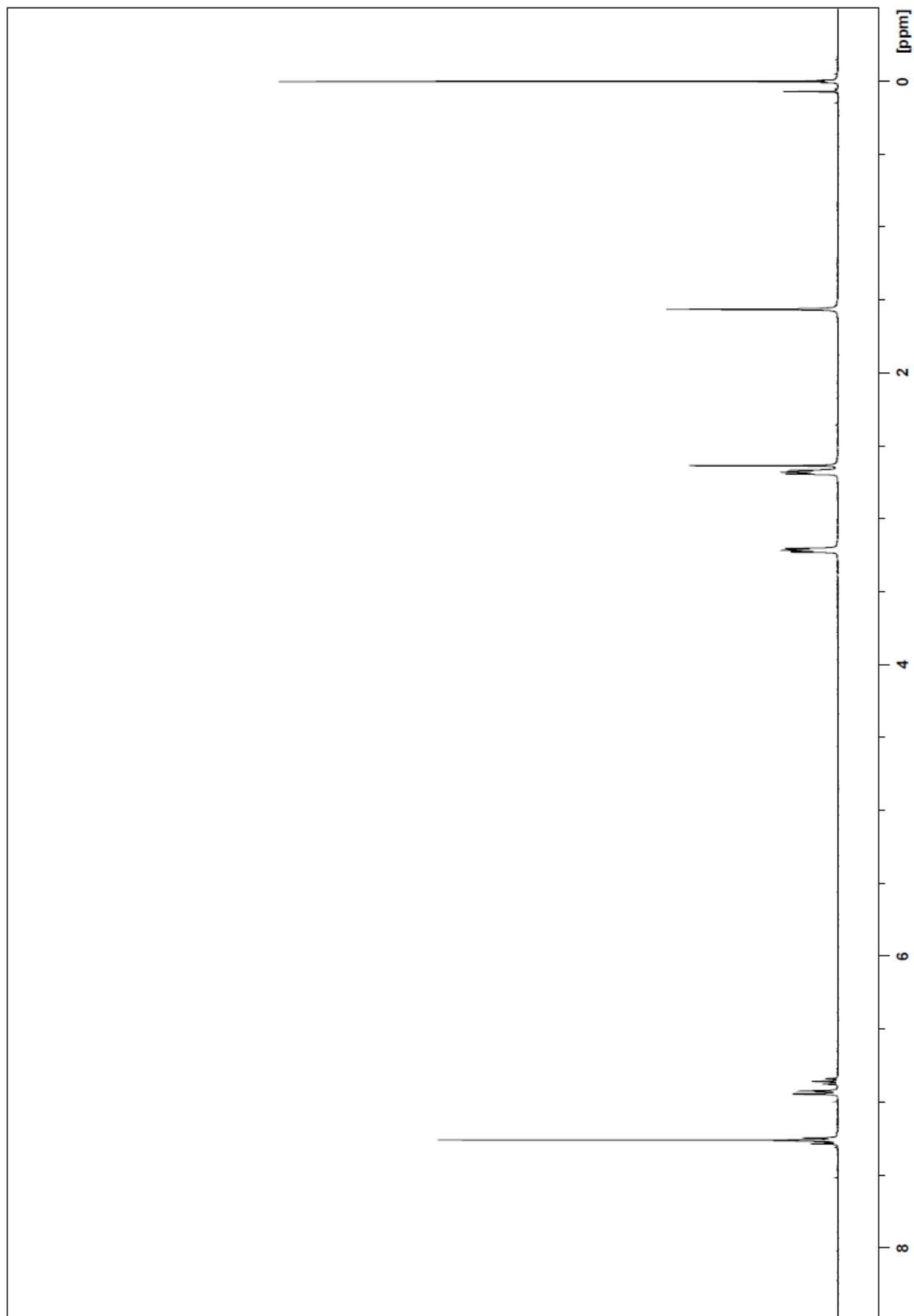


Fig. 3 ^1H NMR spectrum of 1,2-bis(4-phenylpiperazin-1-yl)ethane (**3a'**).

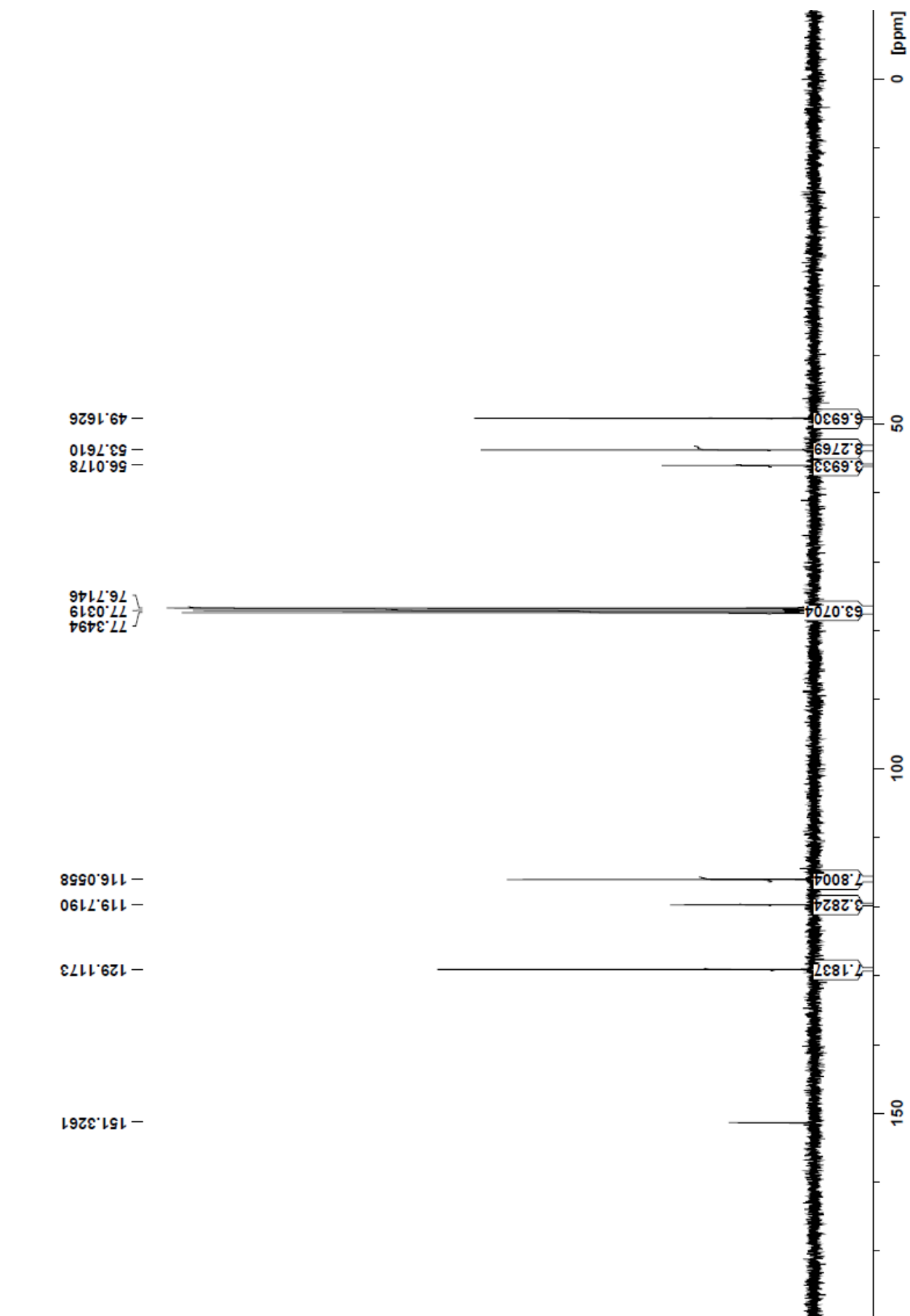


Fig. 4 ^{13}C NMR spectrum of 1,2-bis(4-phenylpiperazin-1-yl)ethane (3a').

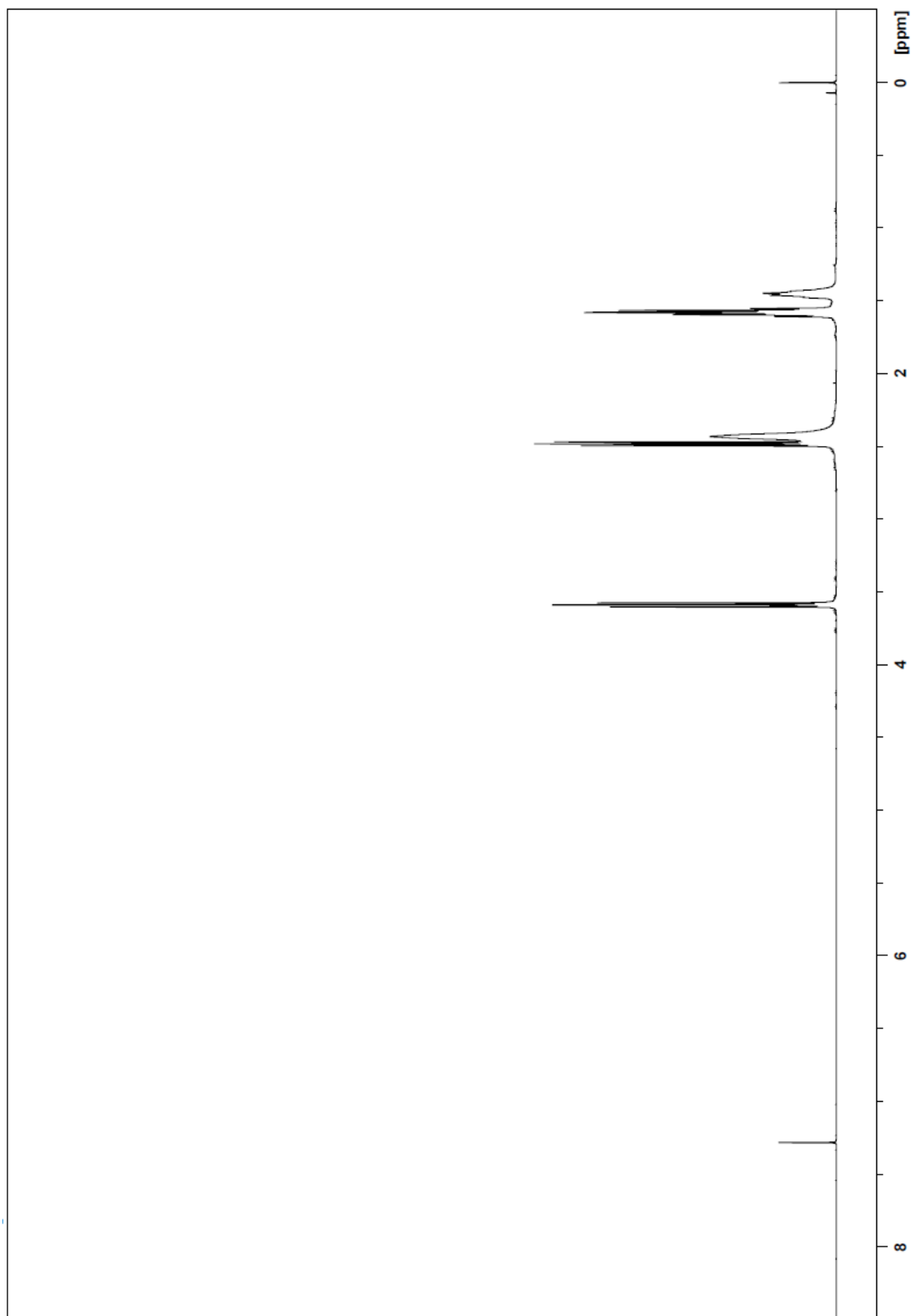


Fig. 5 ^1H NMR spectrum of 2-(piperidin-1-yl)ethan-1-ol (**3b**).

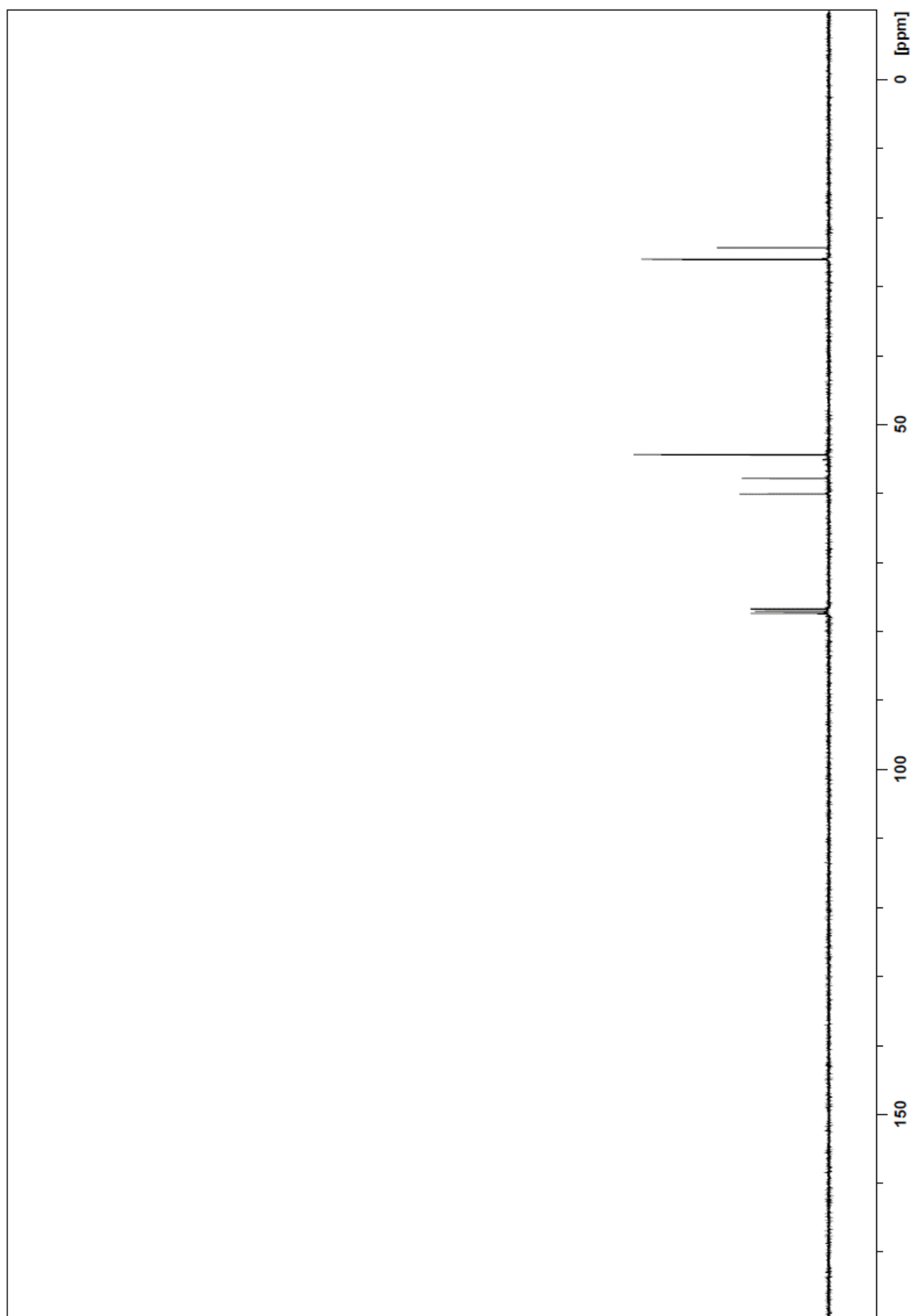


Fig. 6 ^{13}C NMR spectrum of 2-(piperidin-1-yl)ethan-1-ol (**3b**).

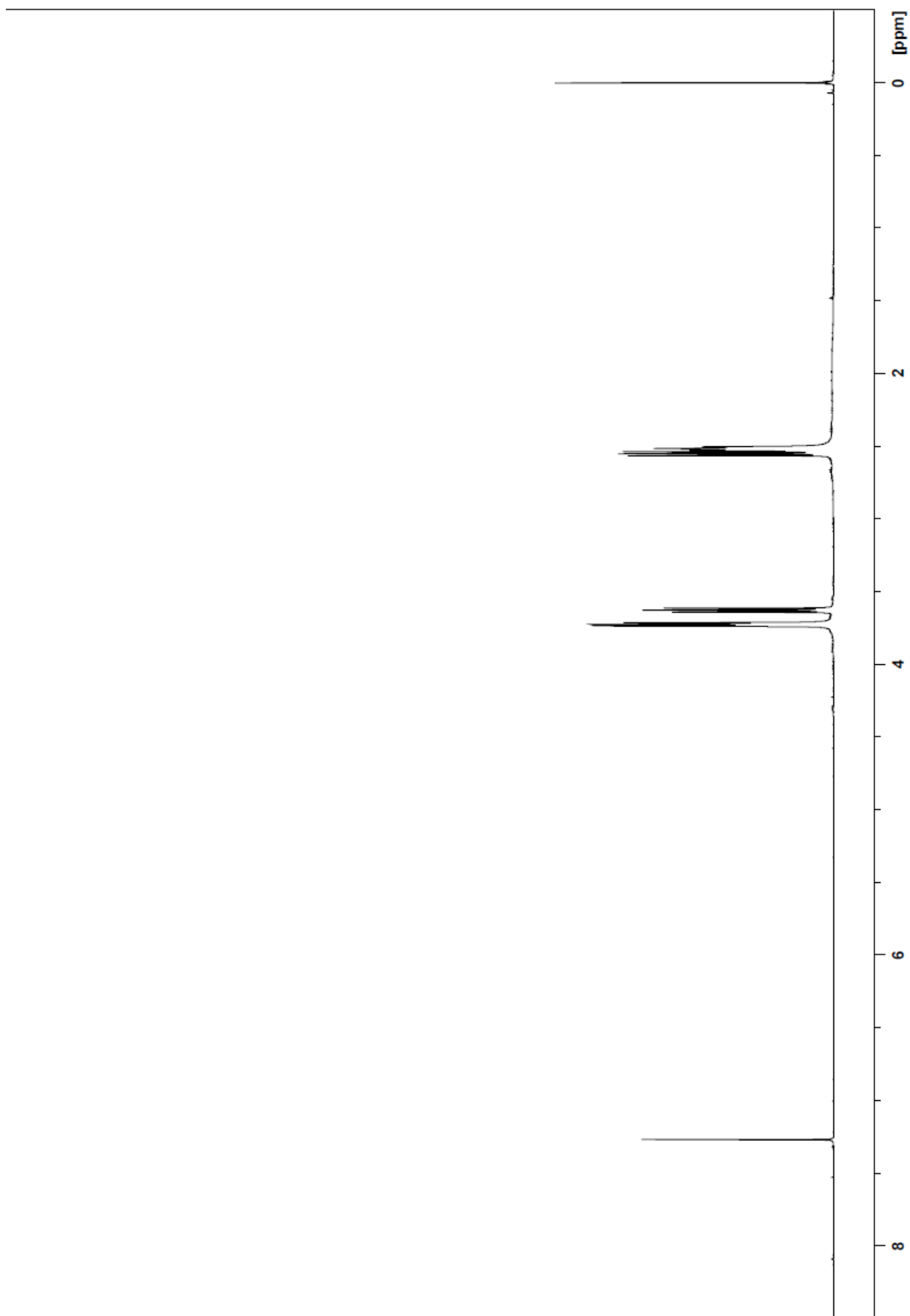


Fig. 7 ^1H NMR spectrum of 2-(morpholin-1-yl)ethan-1-ol (**3c**).

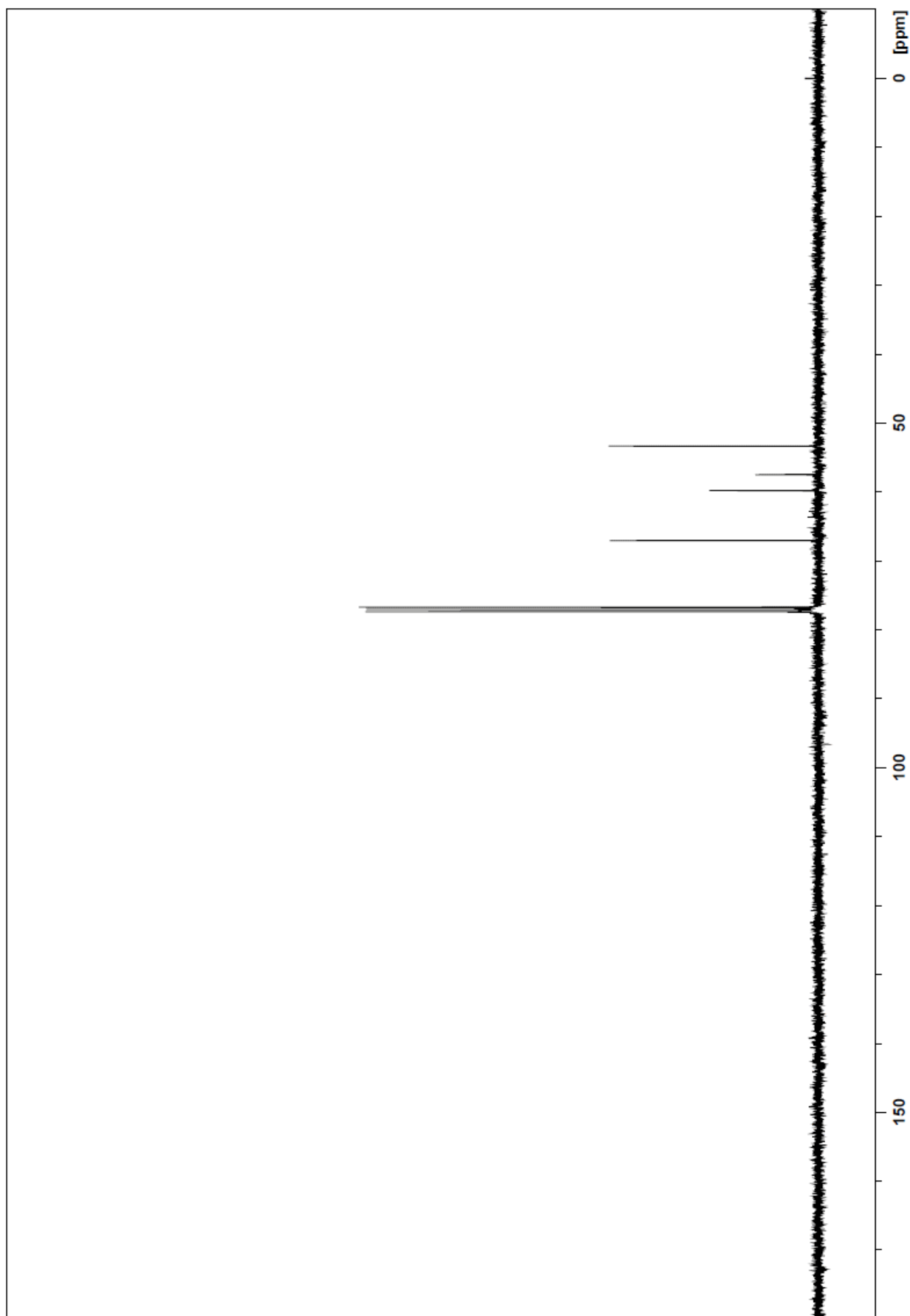


Fig. 8 ^{13}C NMR spectrum of 2-(morpholin-1-yl)ethan-1-ol (**3c**).

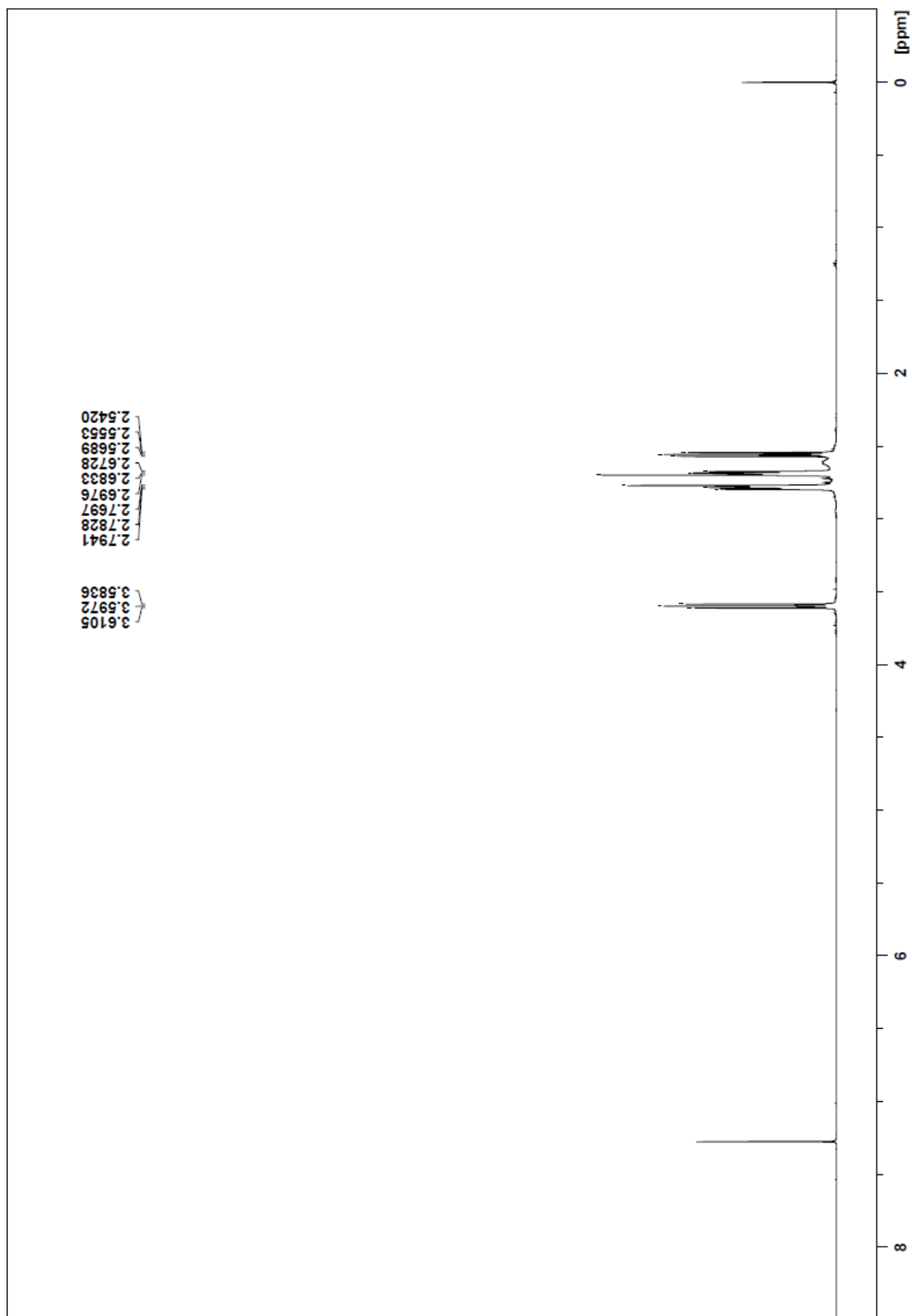


Fig. 9 ^1H NMR spectrum of 2-(thiomorpholin-1-yl)ethan-1-ol (**3d**).

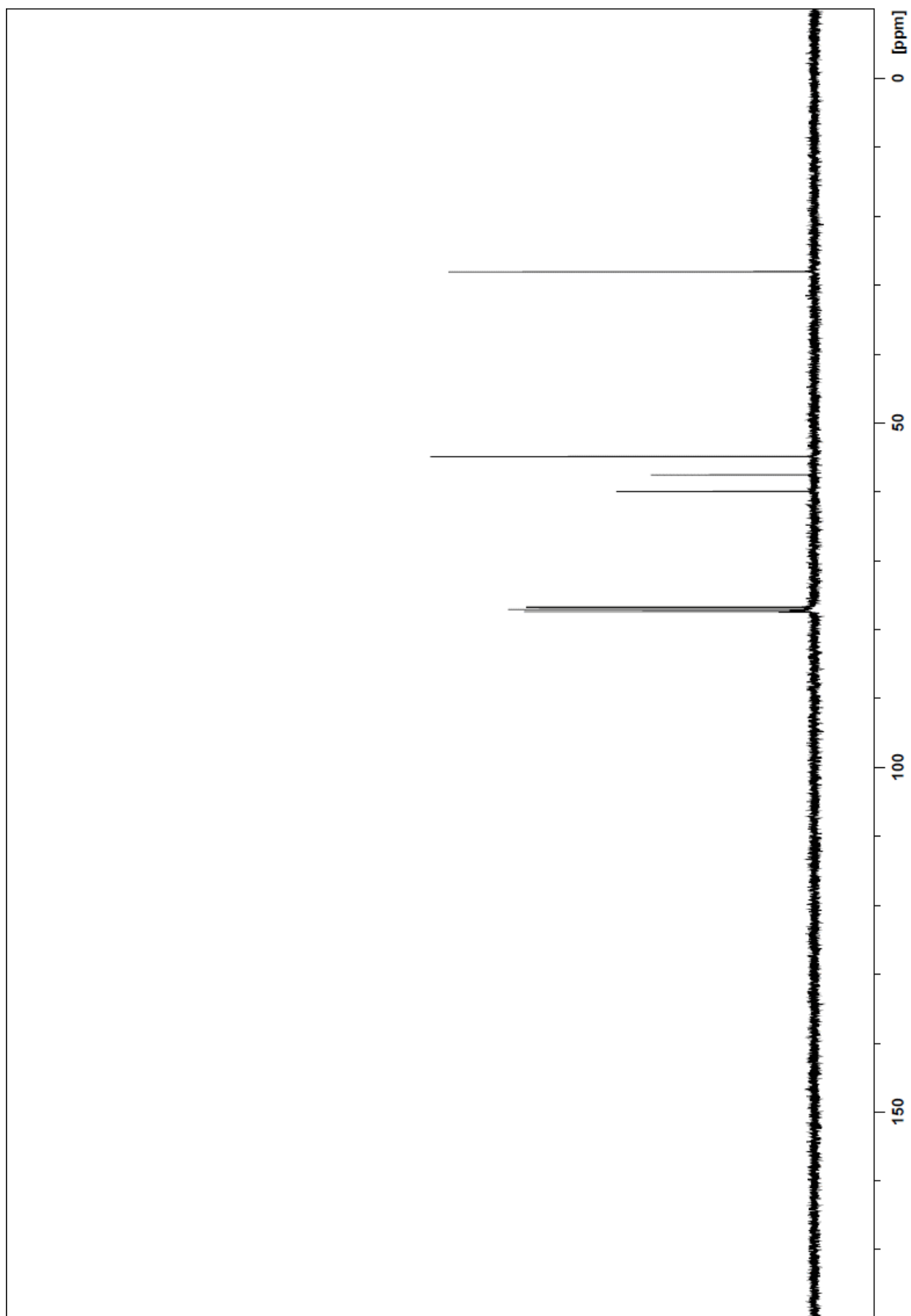


Fig. 10 ^{13}C NMR spectrum of 2-(thiomorpholin-1-yl)ethan-1-ol (**3d**).

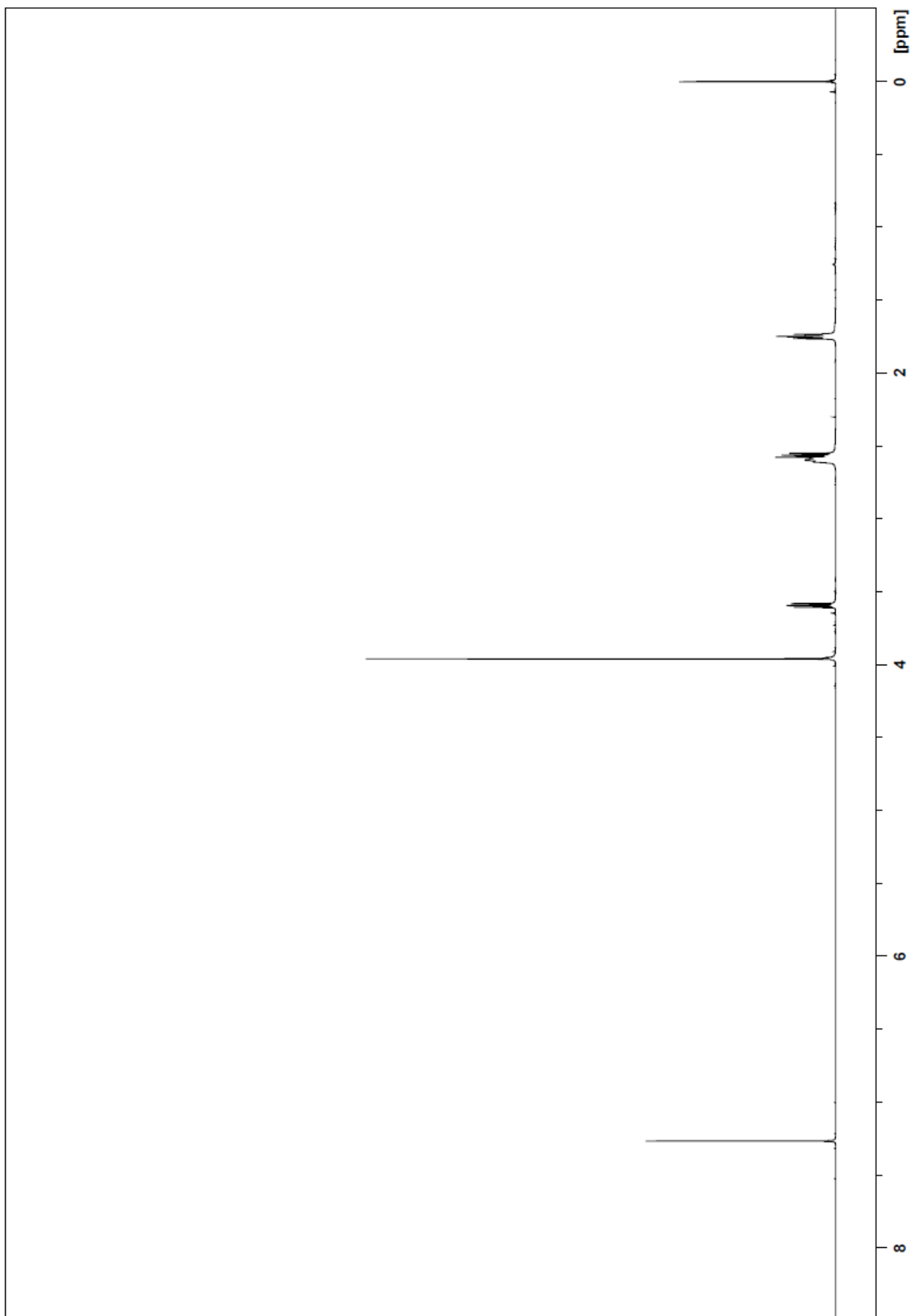


Fig. 11 ^1H NMR spectrum of 2-(1,4-dioxo-8-azaspiro[4.5]decan-8-yl)ethan-1-ol (**3e**).

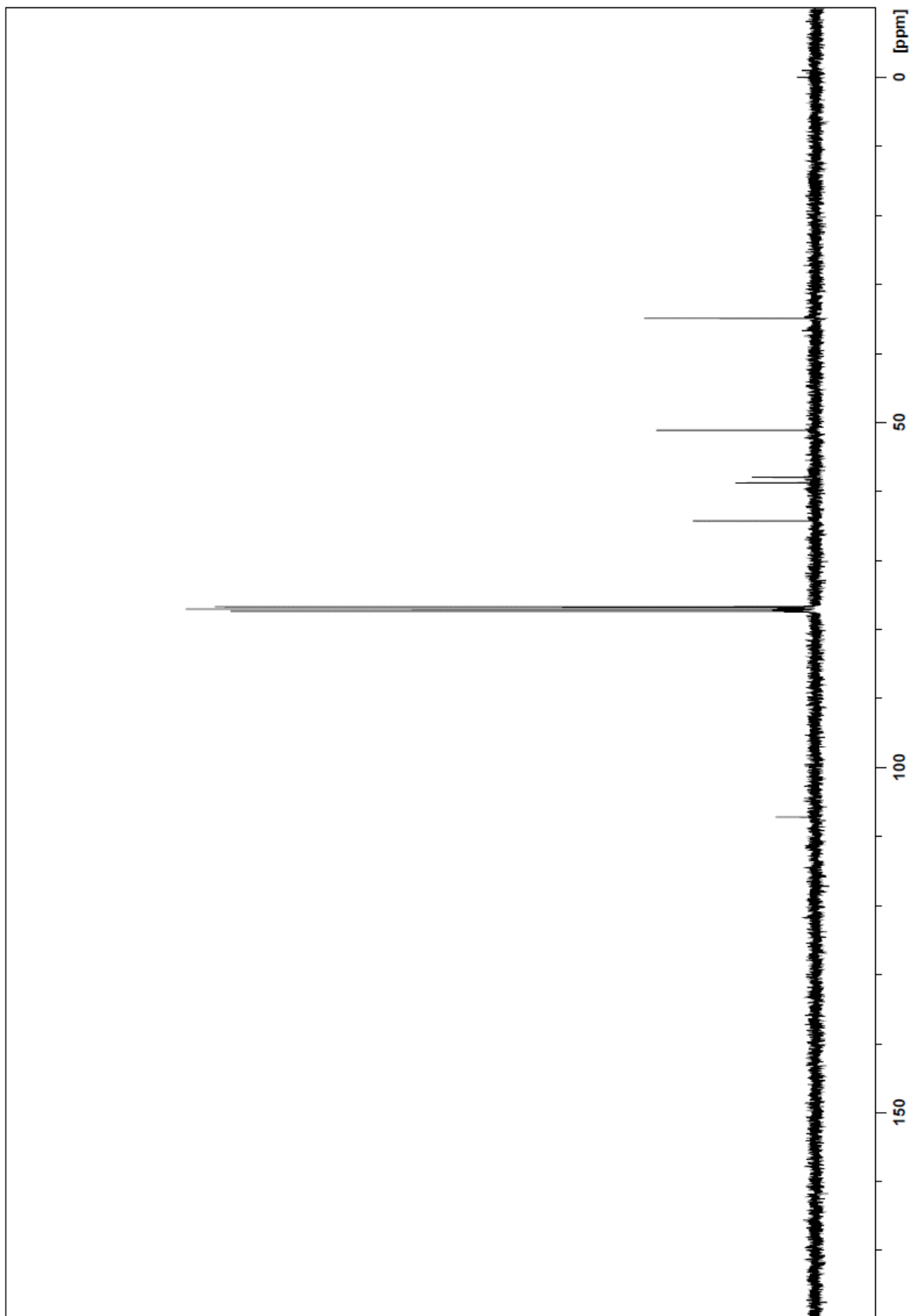


Fig. 12 ^{13}C NMR spectrum of 2-(1,4-dioxo-8-azaspiro[4.5]decan-8-yl)ethan-1-ol (**3e**).

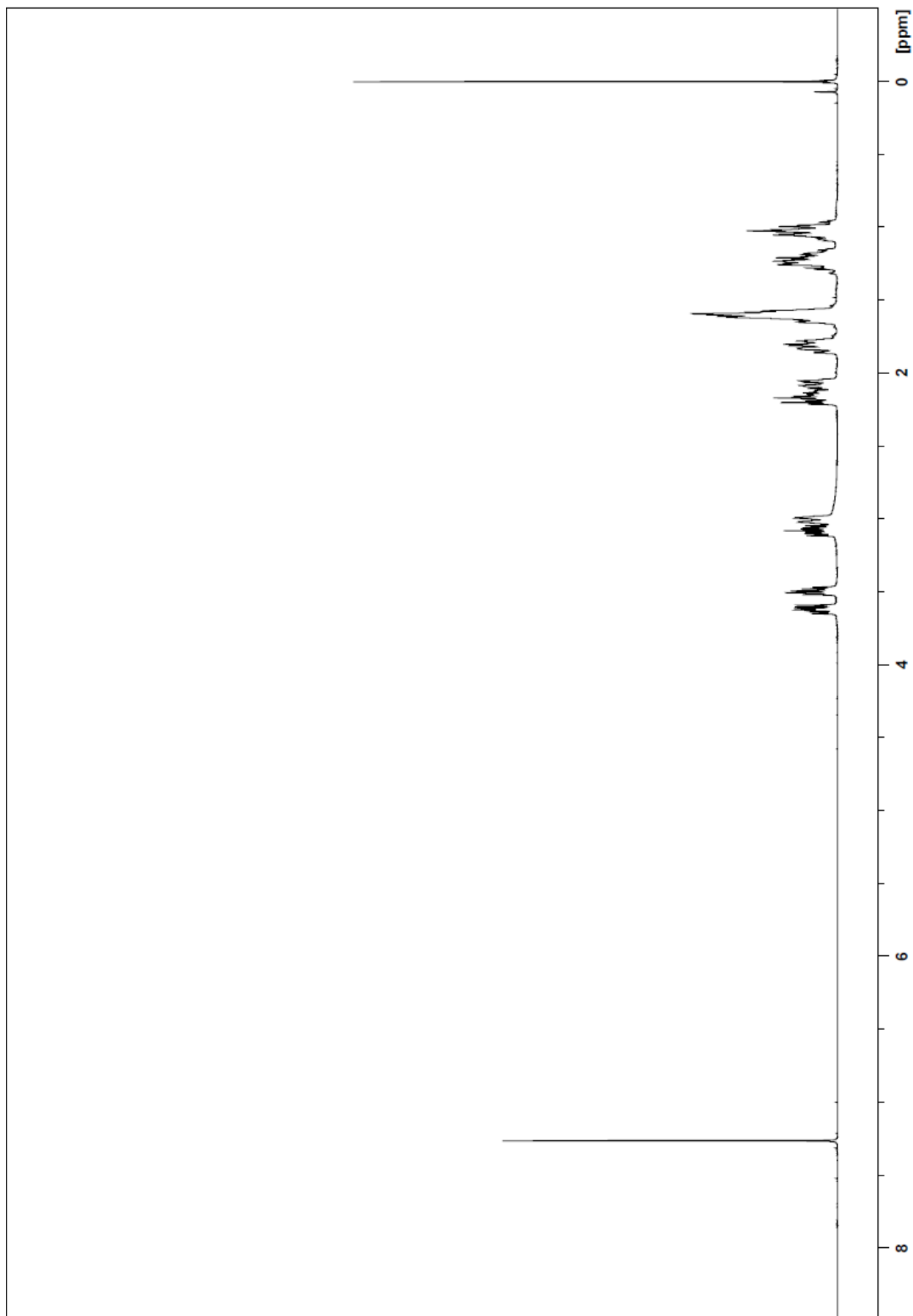


Fig. 13 ^1H NMR spectrum of *trans*-2-(octahydroquinolin-1(2H)-yl)ethan-1-ol (**3f**).

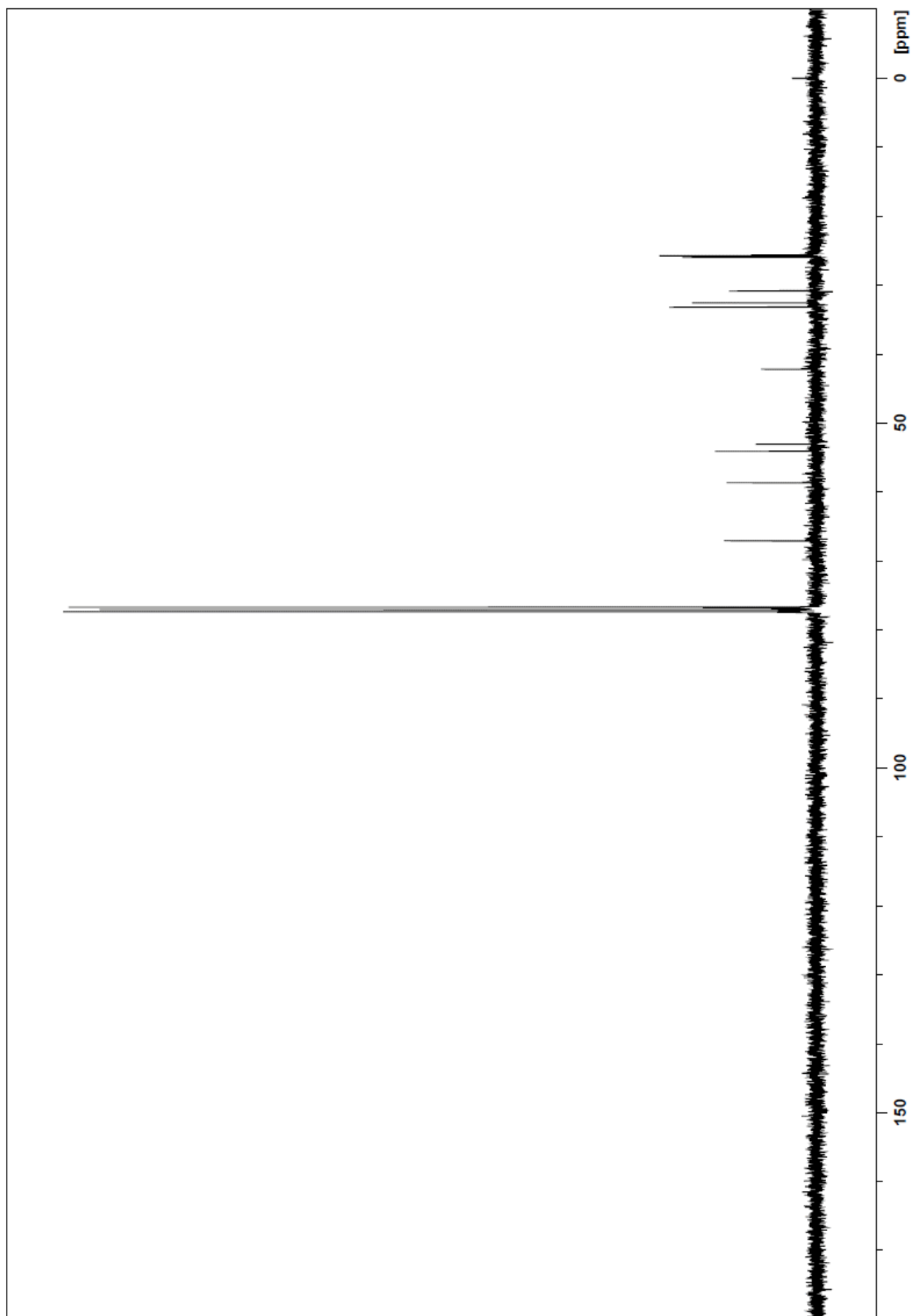


Fig. 14 ^{13}C NMR spectrum of *trans*-2-(octahydroquinolin-1(2H)-yl)ethan-1-ol (**3f**).

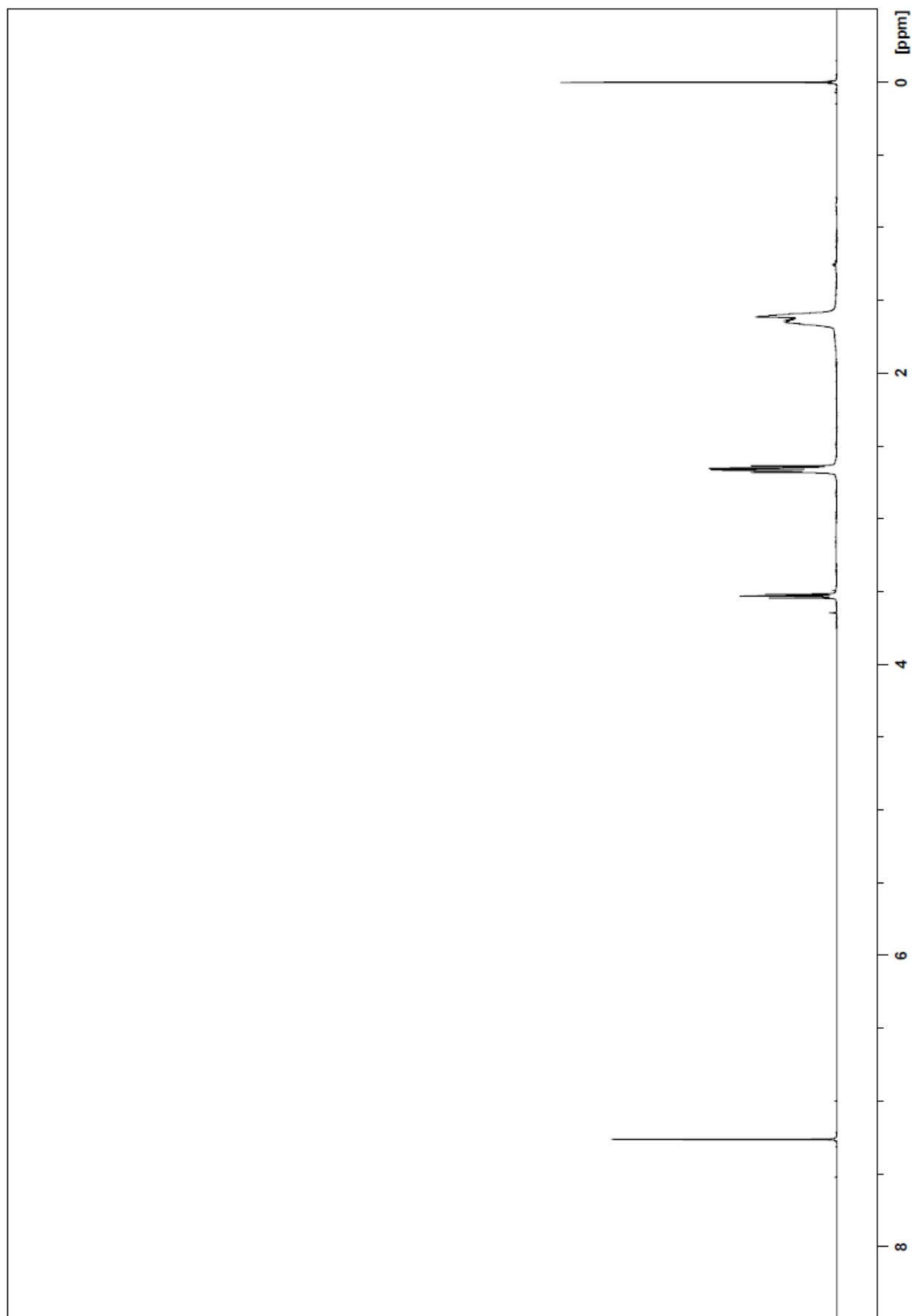


Fig. 15 ^1H NMR spectrum of 2-(azepan-1-yl)ethan-1-ol (**3g**).

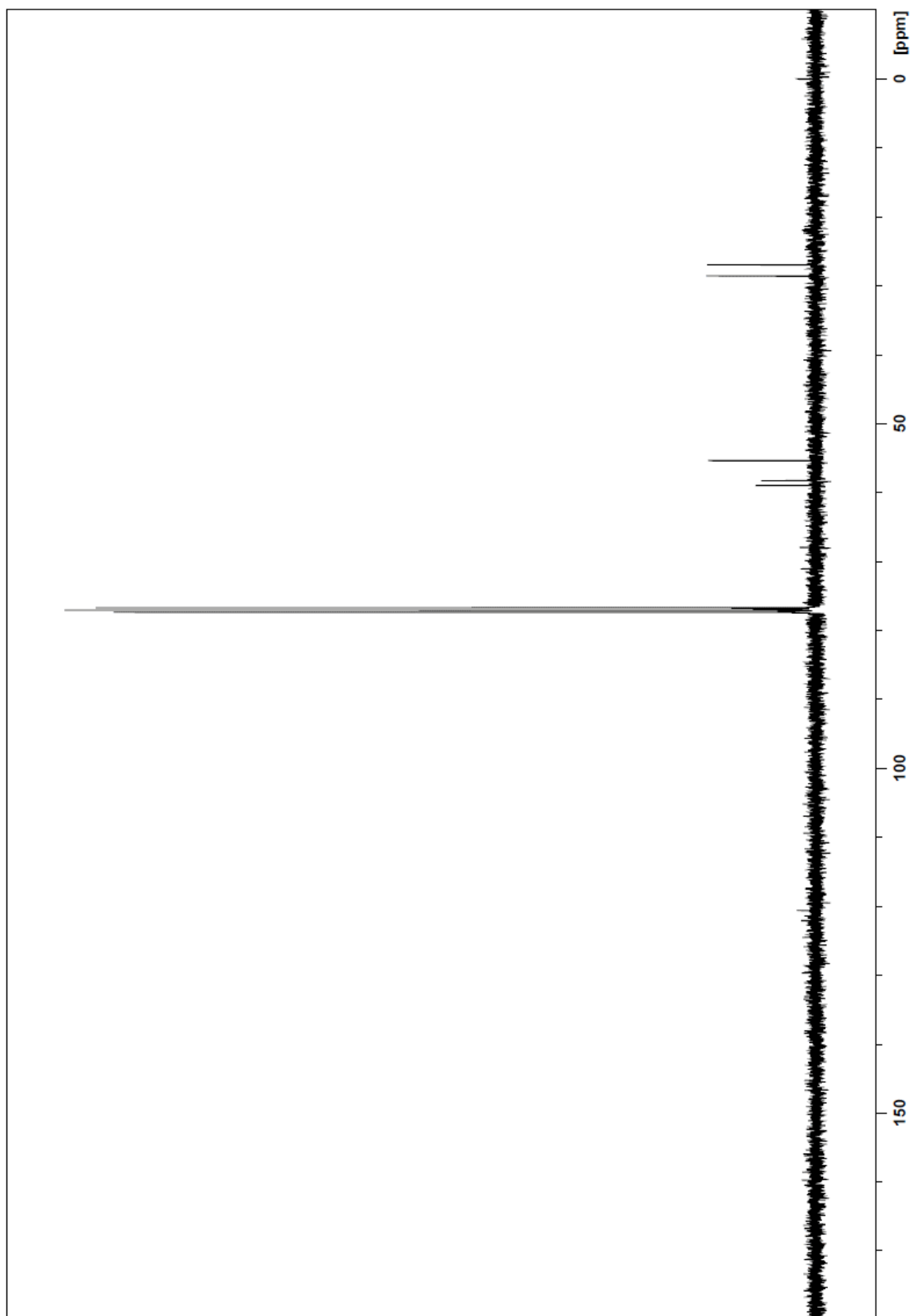


Fig. 16 ^{13}C NMR spectrum of 2-(azepan-1-yl)ethan-1-ol (**3g**).

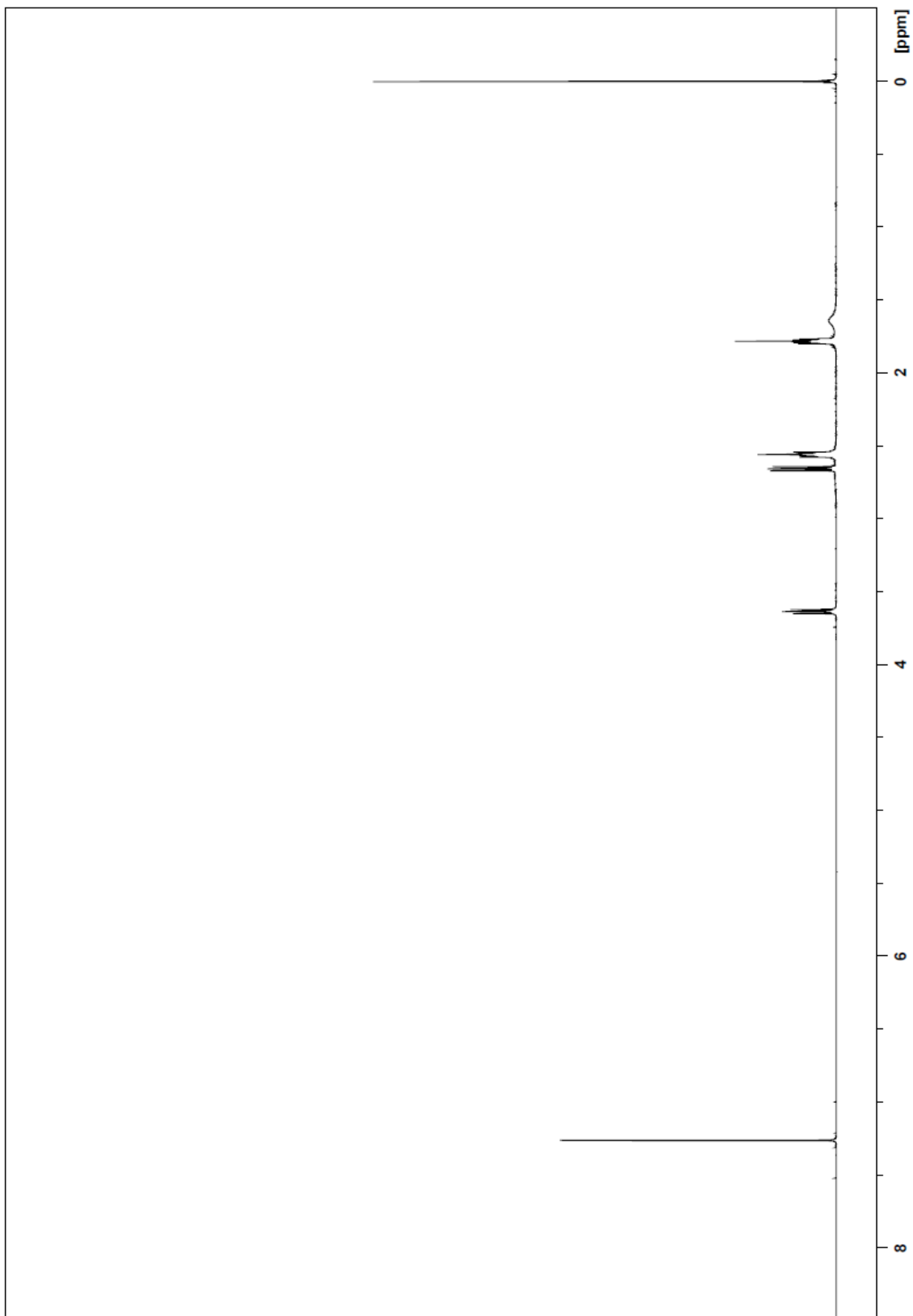


Fig. 17 ^1H NMR spectrum of 2-(pyrrolidin-1-yl)ethan-1-ol (**3h**).

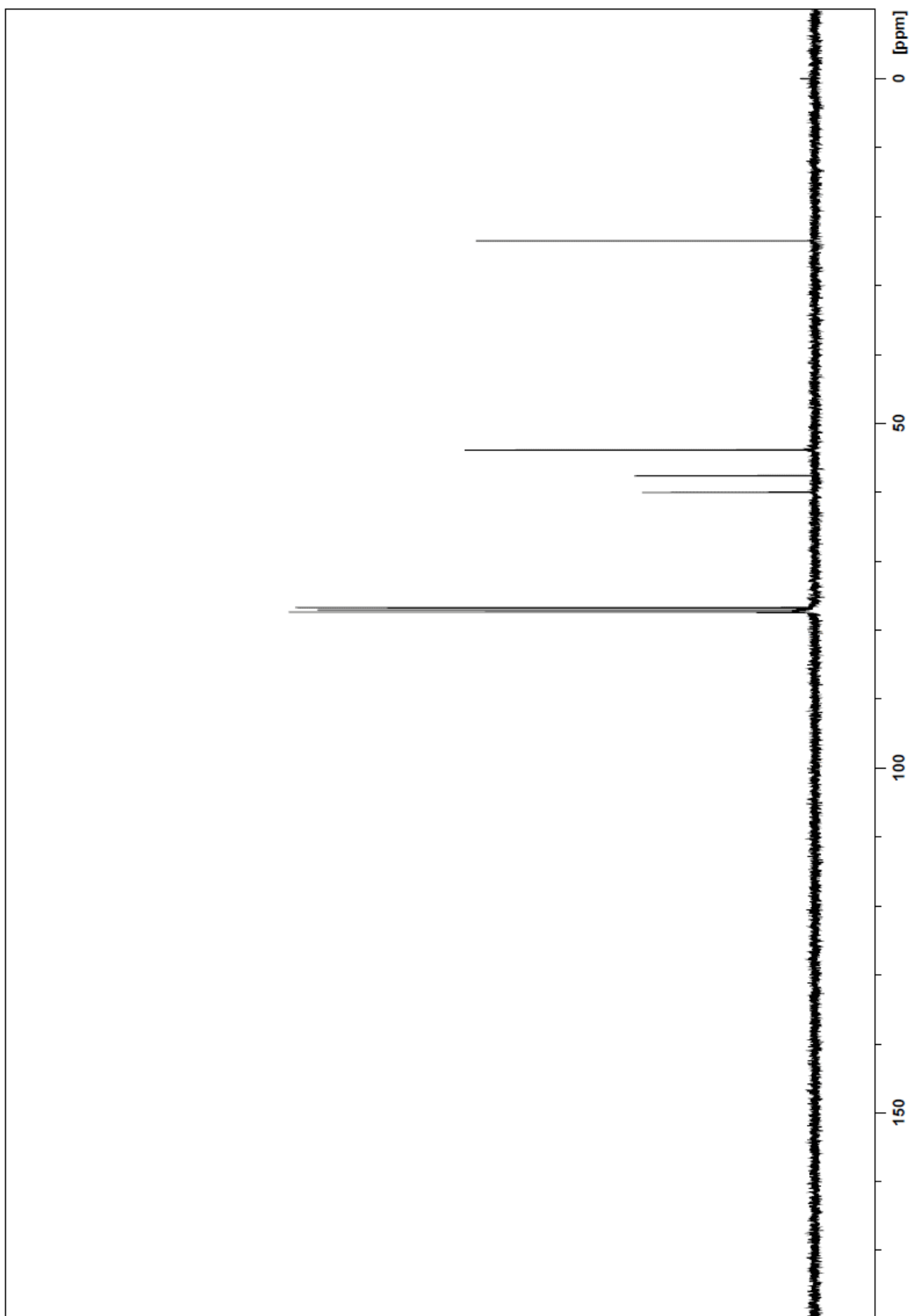


Fig. 18 ^{13}C NMR spectrum of 2-(pyrrolidin-1-yl)ethan-1-ol (**3h**).

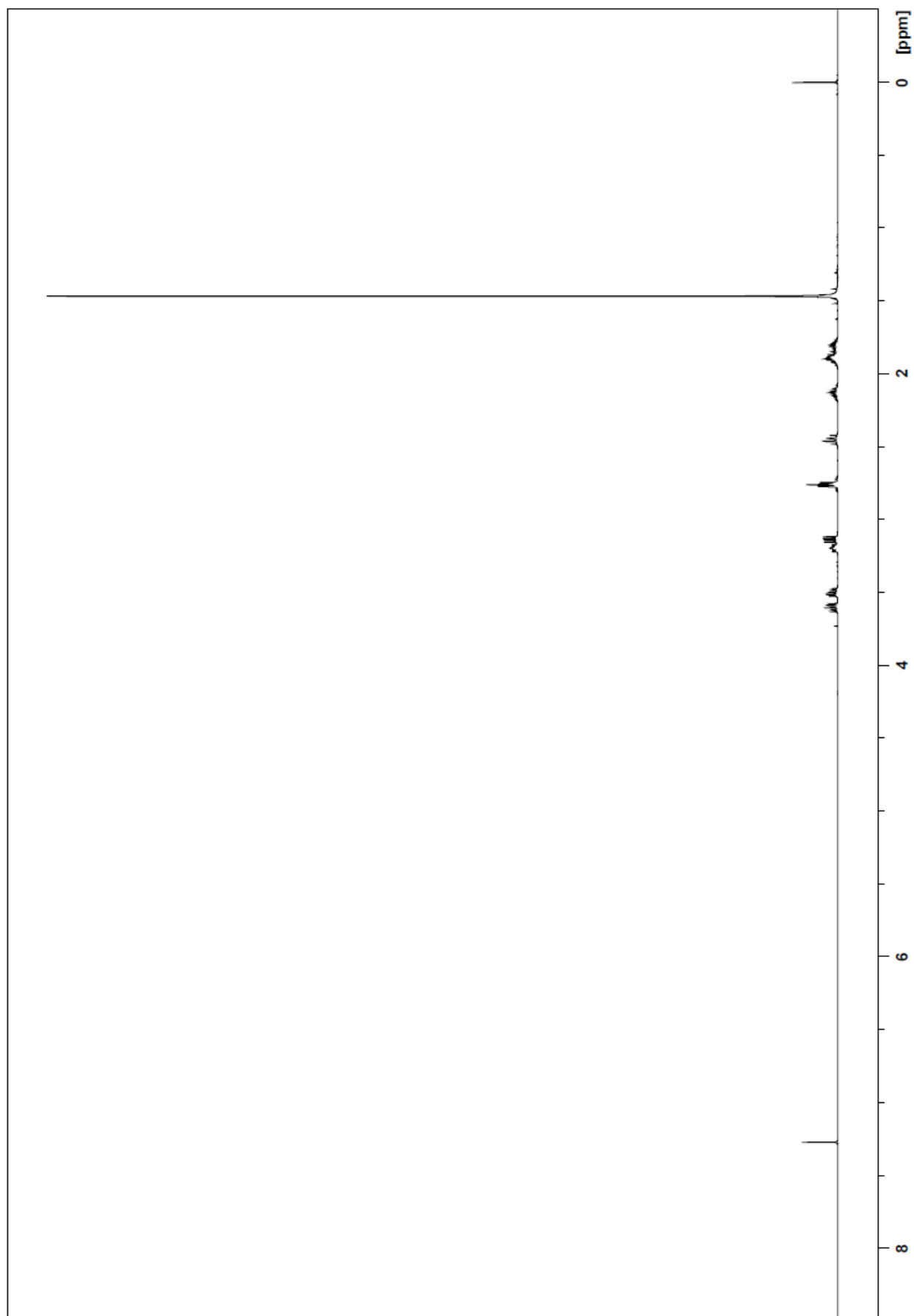


Fig. 19 ^1H NMR spectrum of 1-(2-hydroxyethyl)pyrrolidine-2-carboxylic acid *tert*-butyl ester (**3i**).

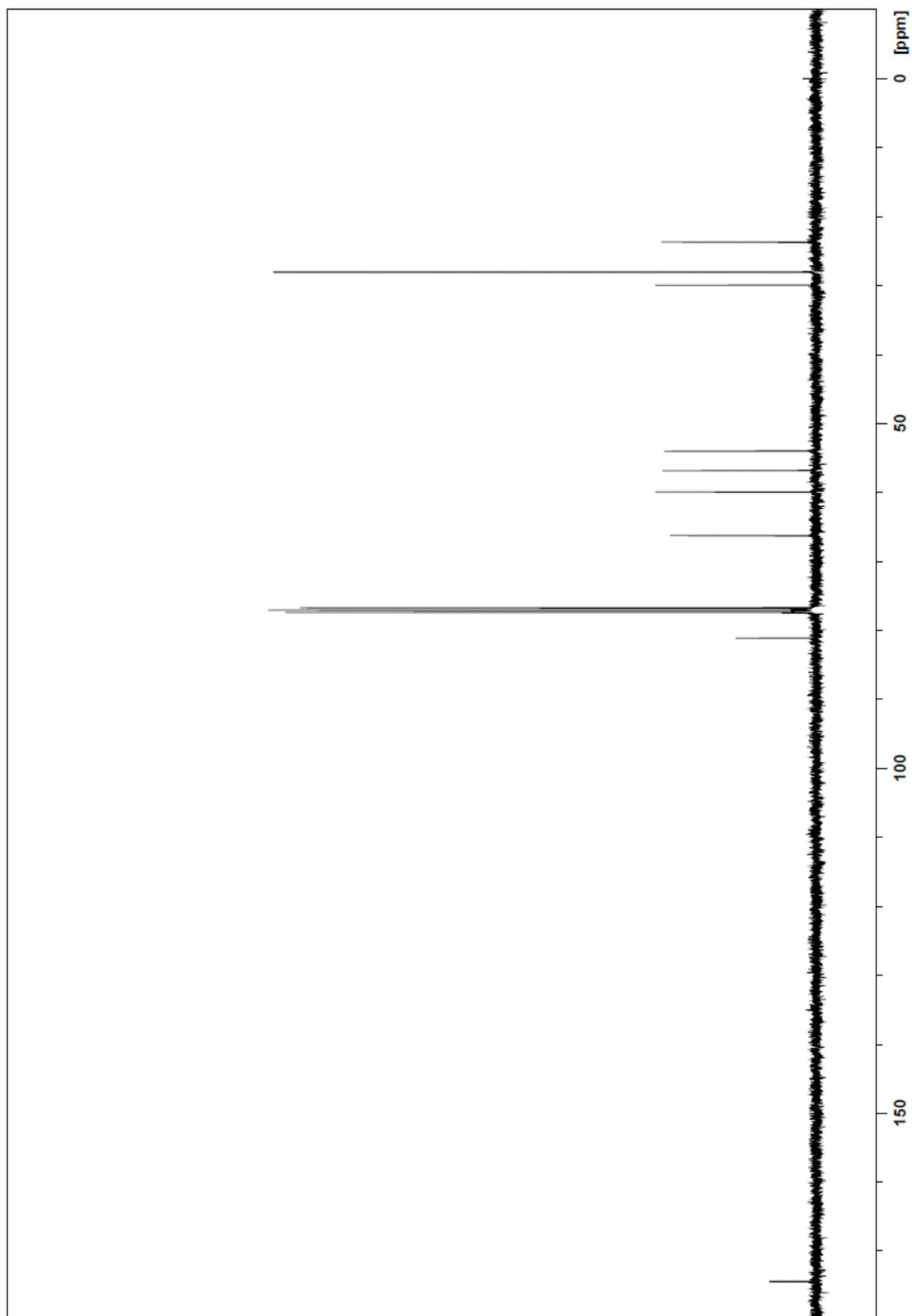


Fig. 20 ^{13}C NMR spectrum of 1-(2-hydroxyethyl)pyrrolidine-2-carboxylic acid *tert*-butyl ester (**3i**).

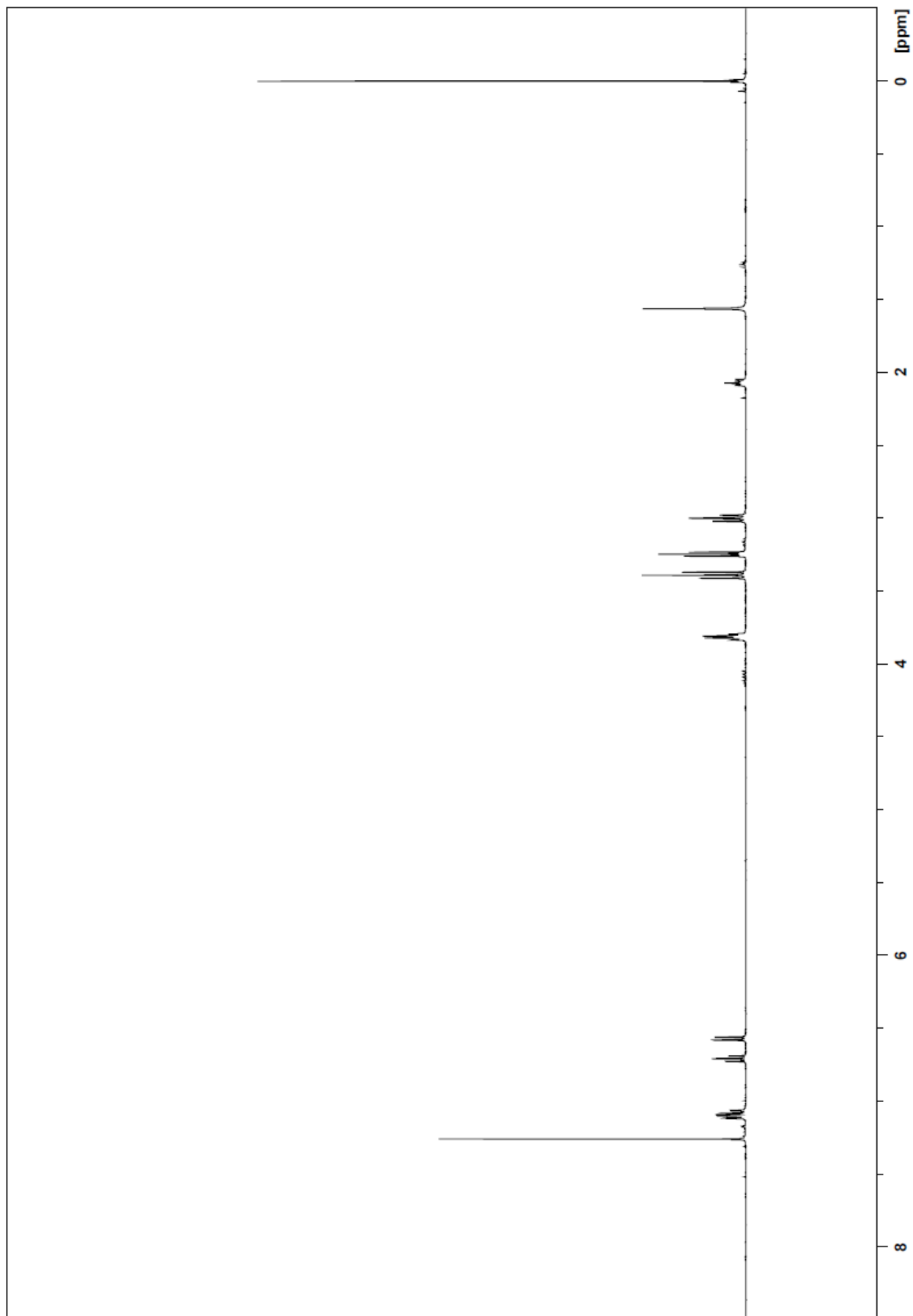


Fig. 21 ^1H NMR spectrum of 2-(indolin-1-yl)ethan-1-ol (**3j**).

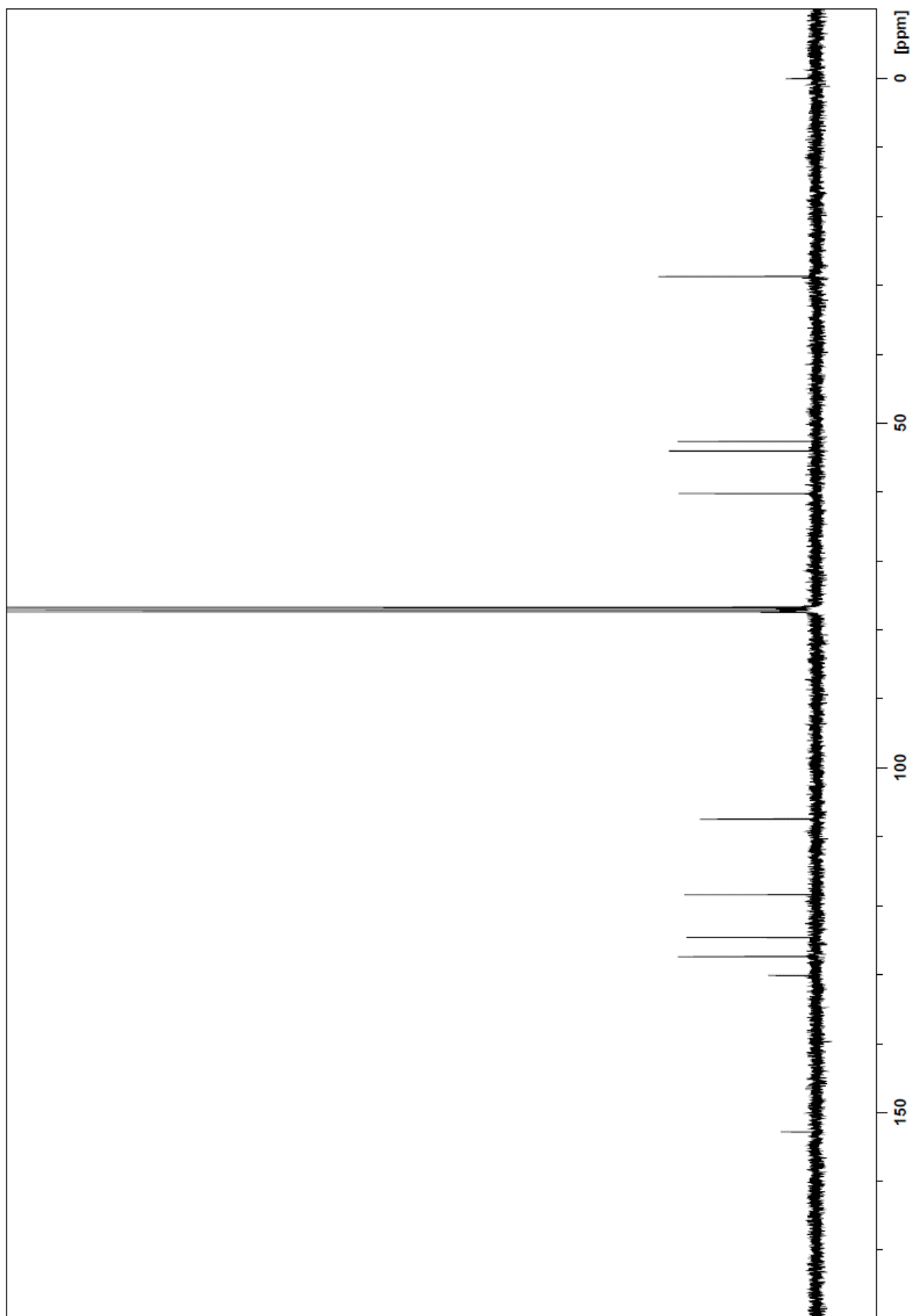


Fig. 22 ^{13}C NMR spectrum of 2-(indolin-1-yl)ethan-1-ol (**3j**).

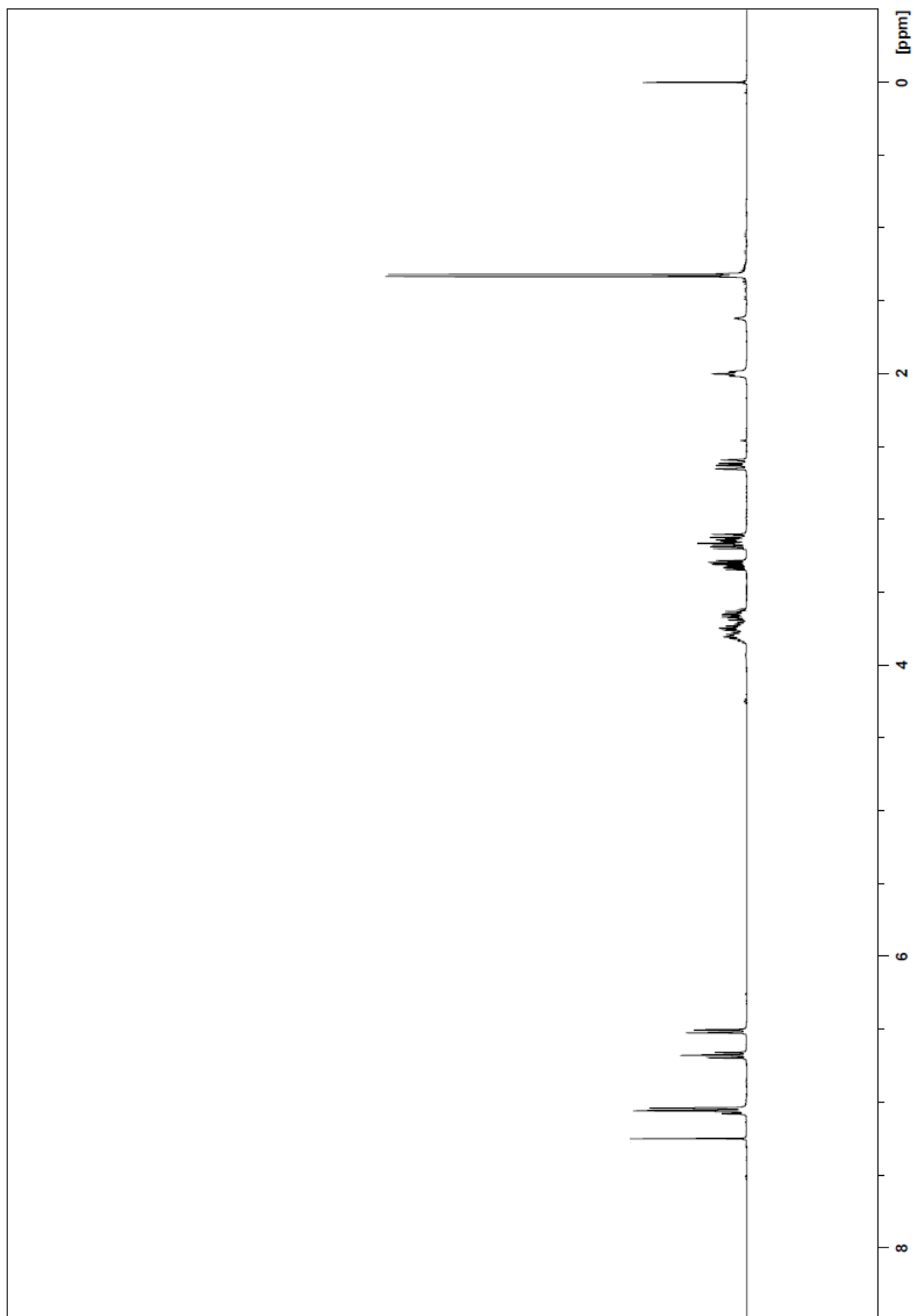


Fig. 23 ¹H NMR spectrum of 2-(2-methylindolin-1-yl)ethan-1-ol (**3k**).

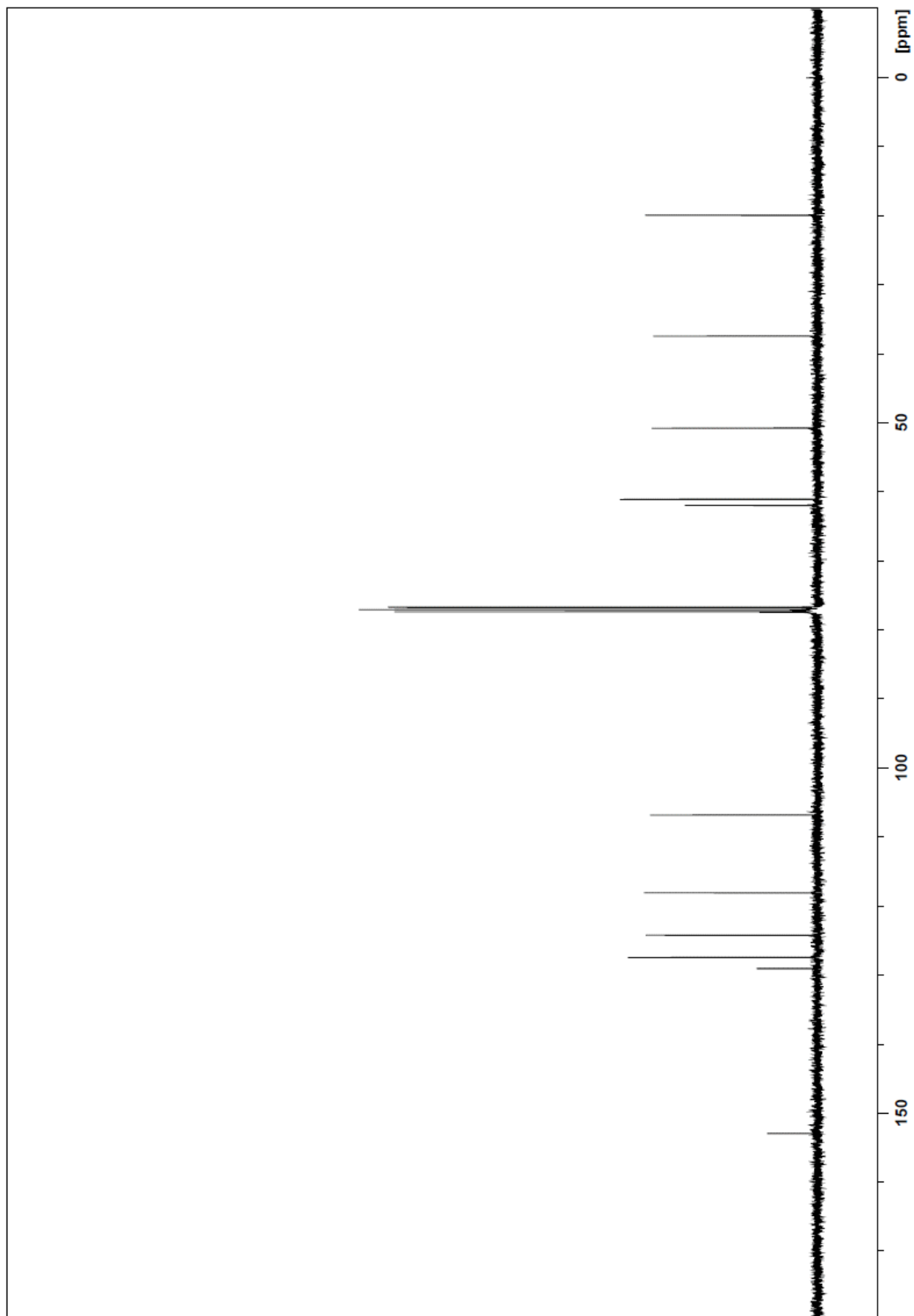


Fig. 24 ^{13}C NMR spectrum of 2-(2-methylindolin-1-yl)ethan-1-ol (**3k**).

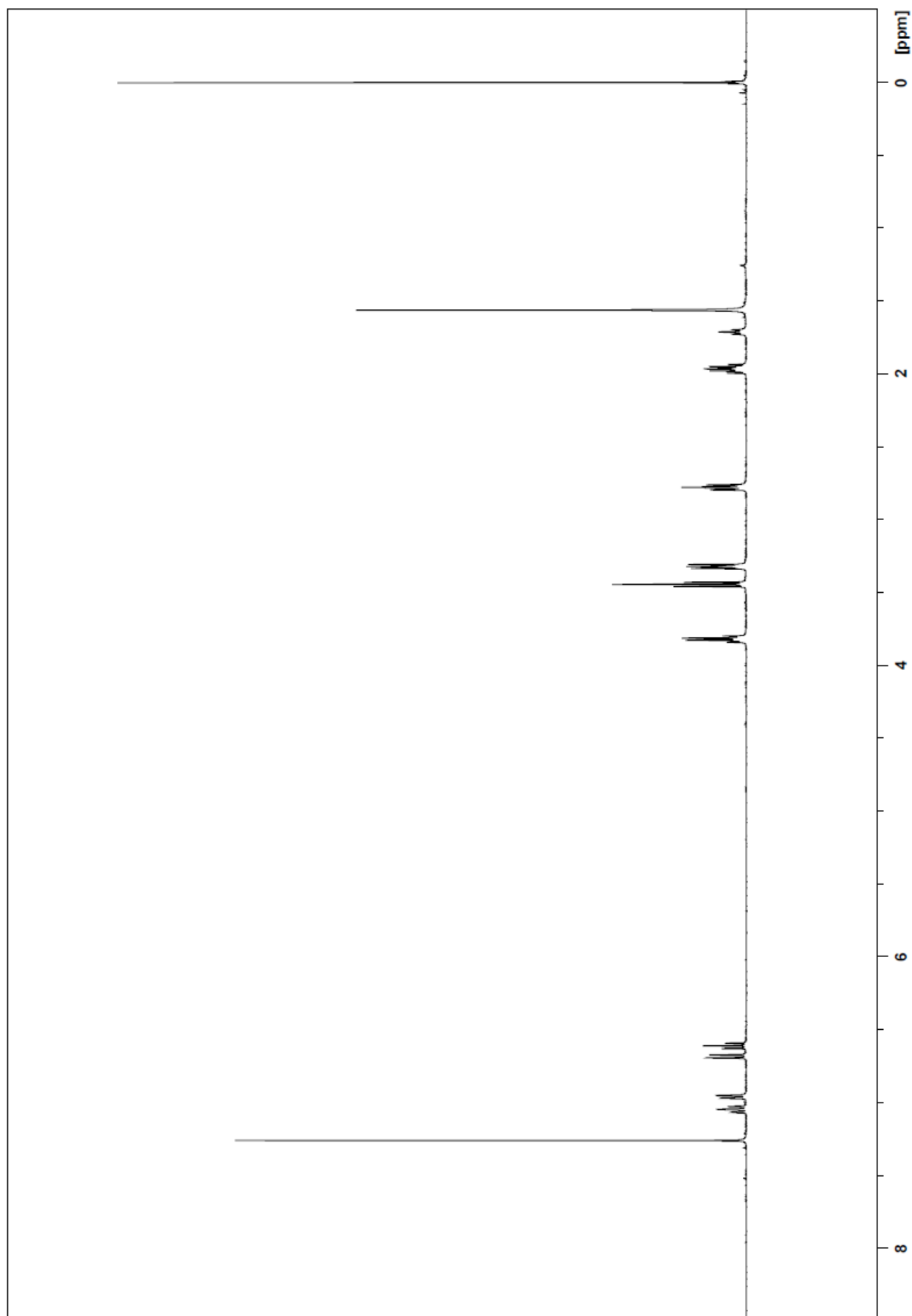


Fig. 25 ^1H NMR spectrum of 2-(3,4-dihydroquinolin-1(2H)-yl)ethan-1-ol (**3m**).

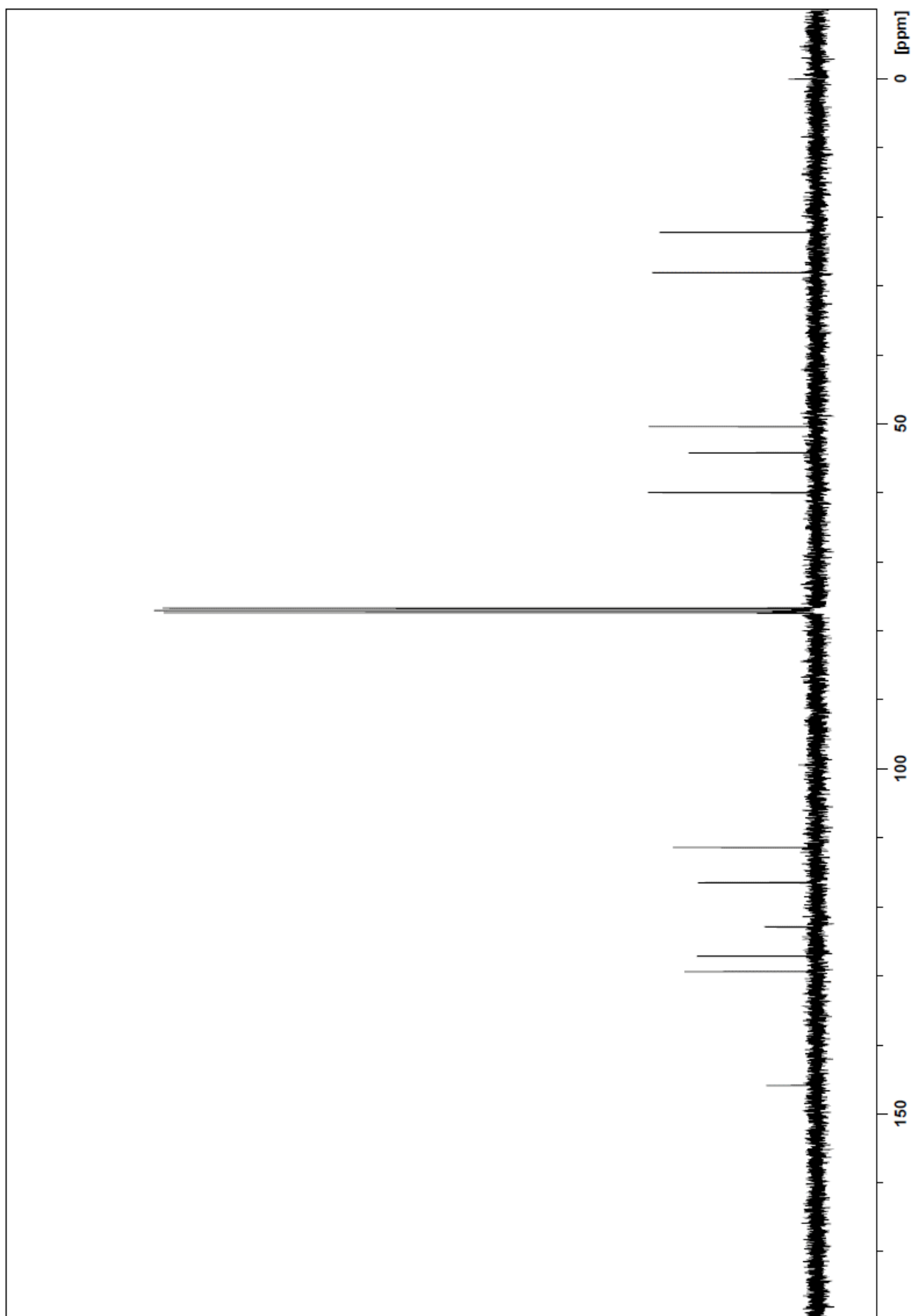


Fig. 26 ^{13}C NMR spectrum of 2-(3,4-dihydroquinolin-1(2H)-yl)ethan-1-ol (**3m**).

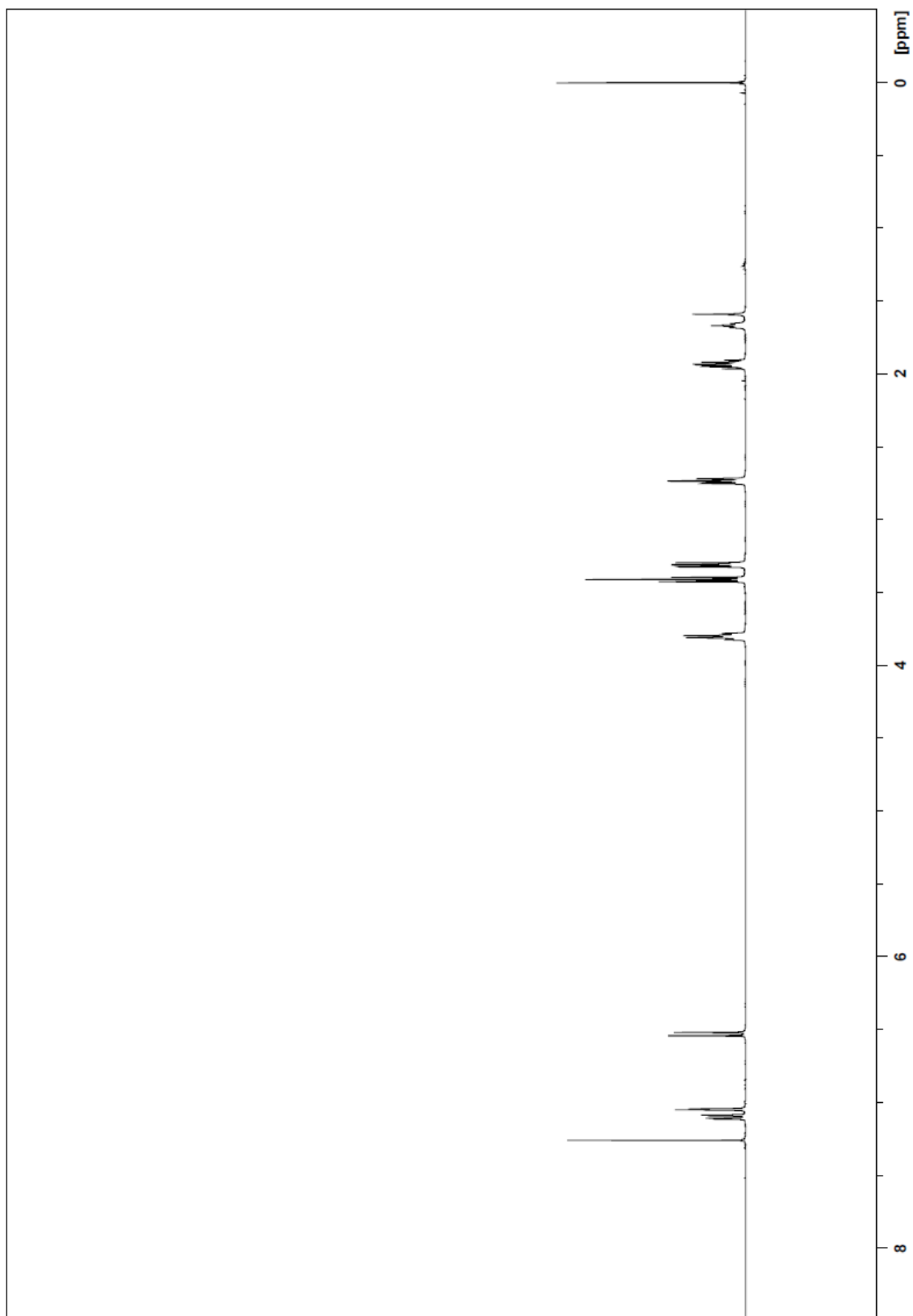


Fig. 27 ^1H NMR spectrum of 2-(6-bromo-3,4-dihydroquinolin-1(2H)-yl)ethan-1-ol (**3n**).

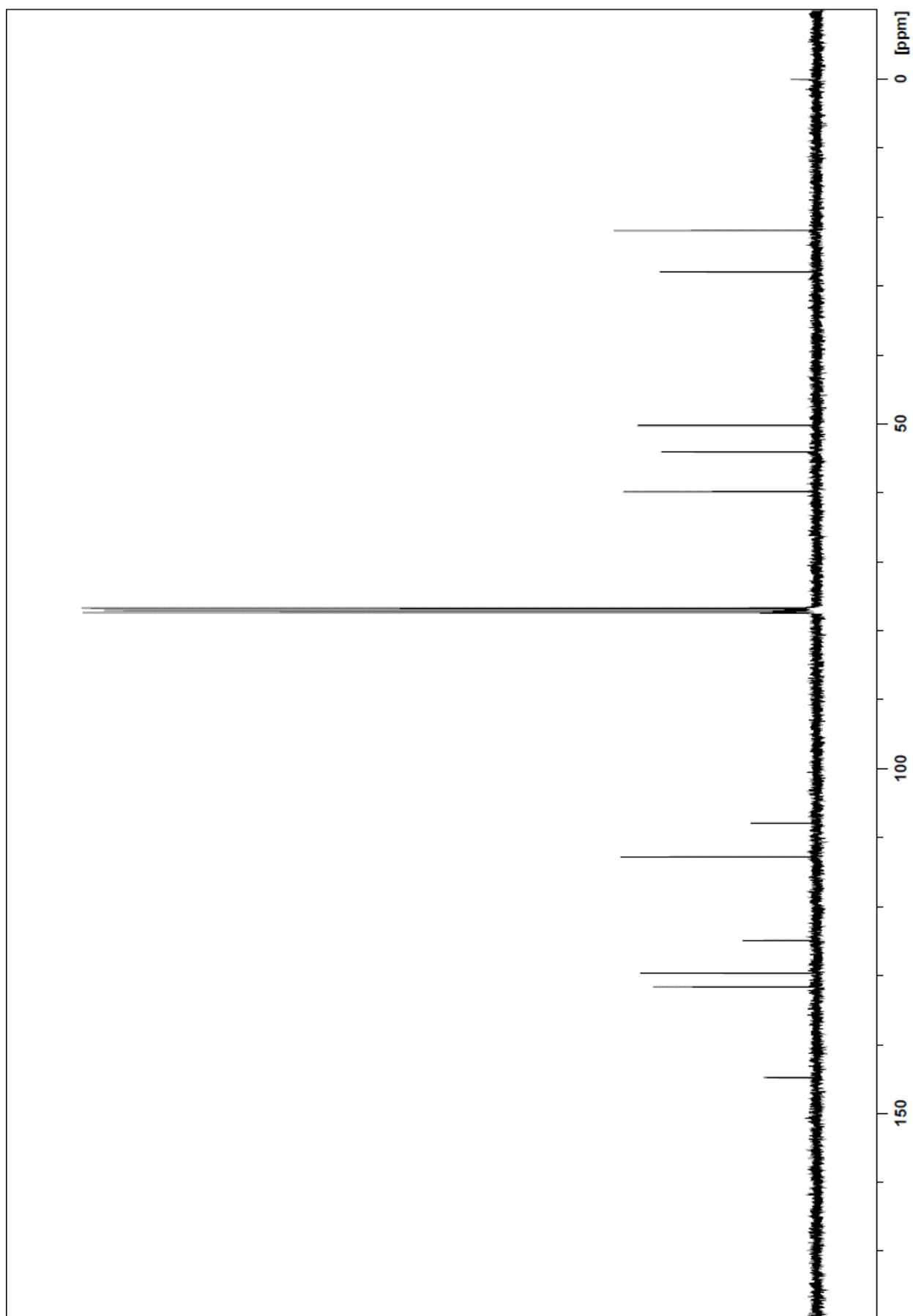


Fig. 28 ^{13}C NMR spectrum of 2-(6-bromo-3,4-dihydroquinolin-1(2H)-yl)ethan-1-ol (**3n**).

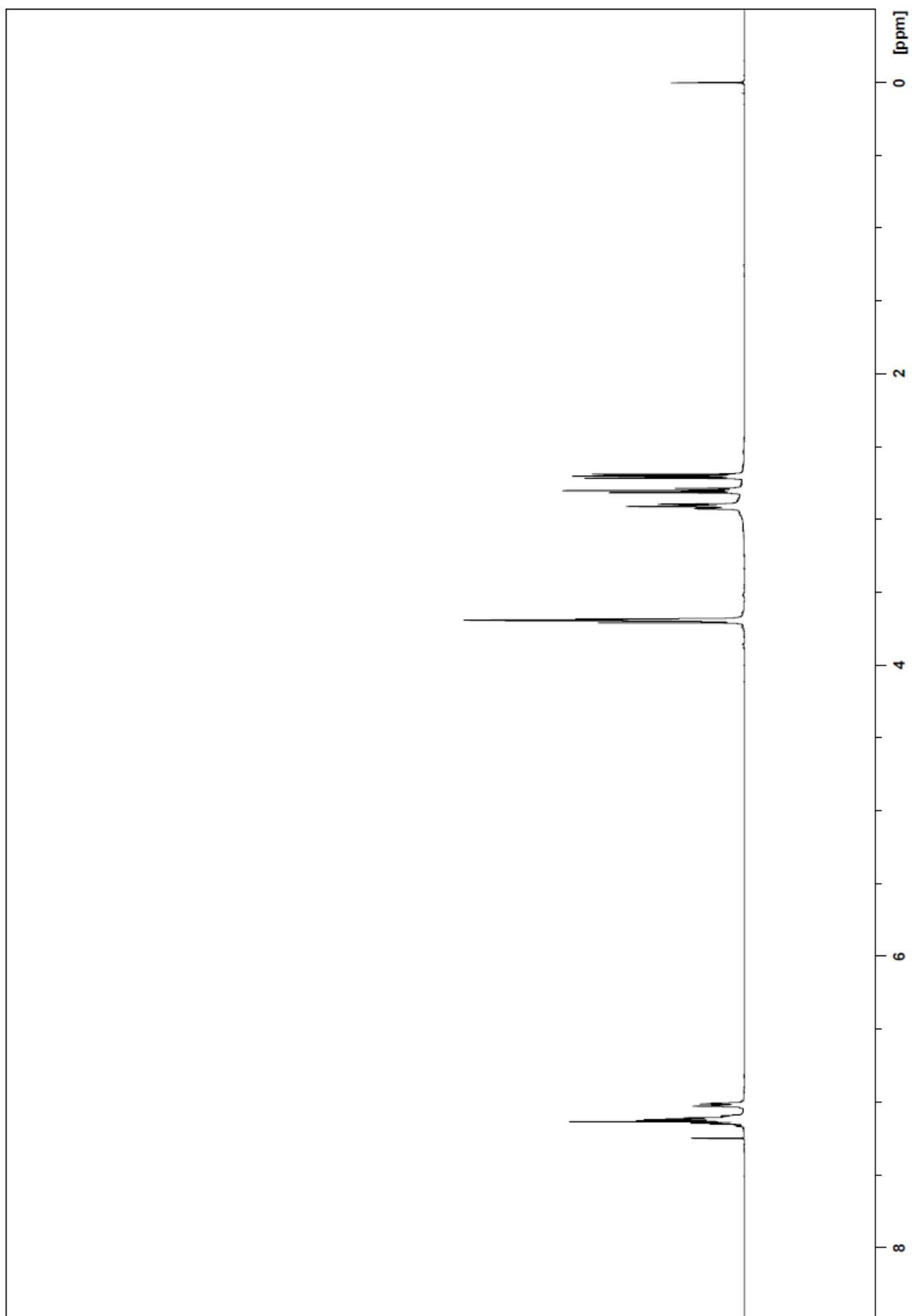


Fig. 29 ^1H NMR spectrum of 2-(3,4-dihydroisoquinolin-2(*1H*)-yl)ethan-1-ol (**30**).

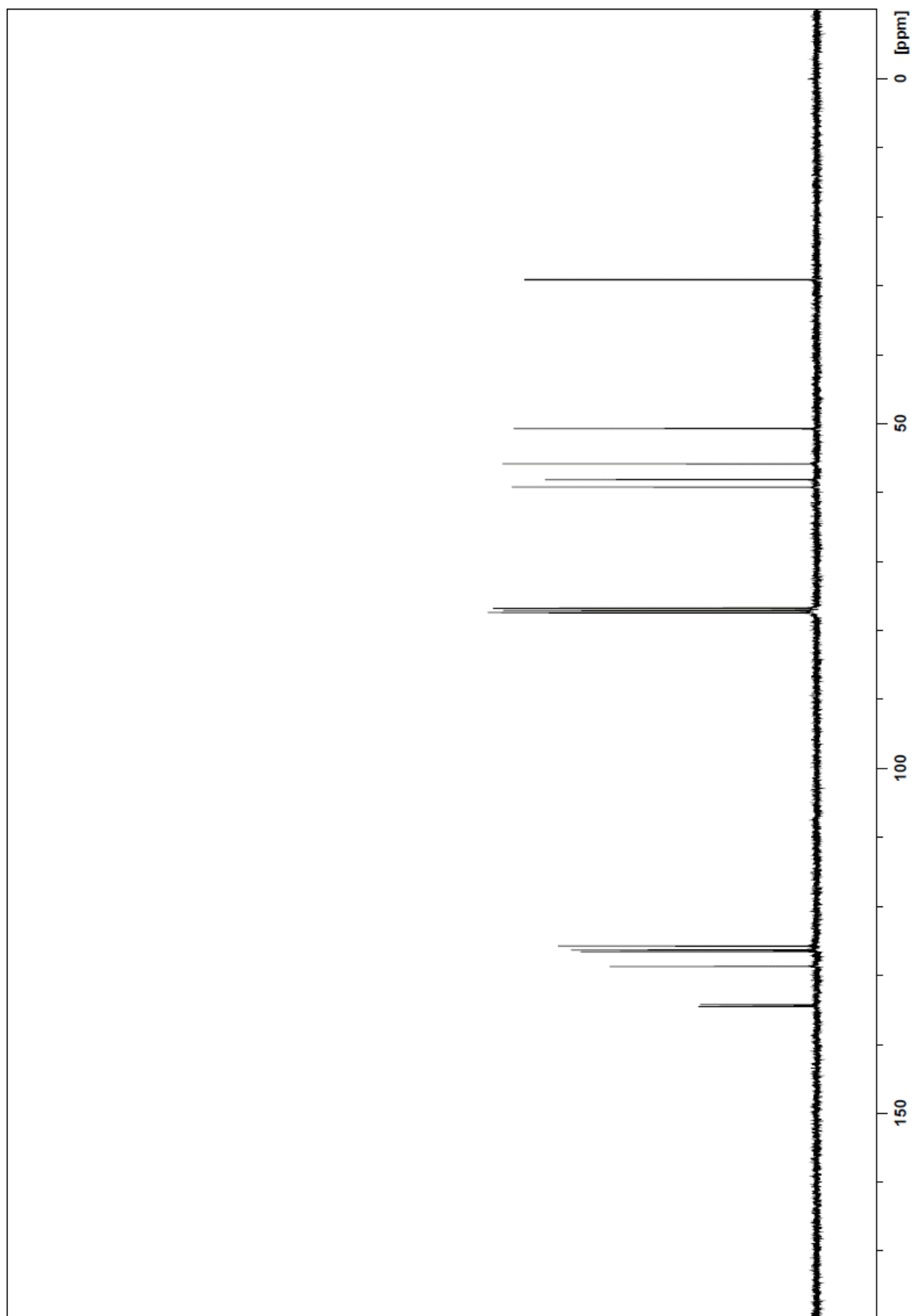


Fig. 30 ^{13}C NMR spectrum of 2-(3,4-dihydroisoquinolin-2(*1H*)-yl)ethan-1-ol (**30**).

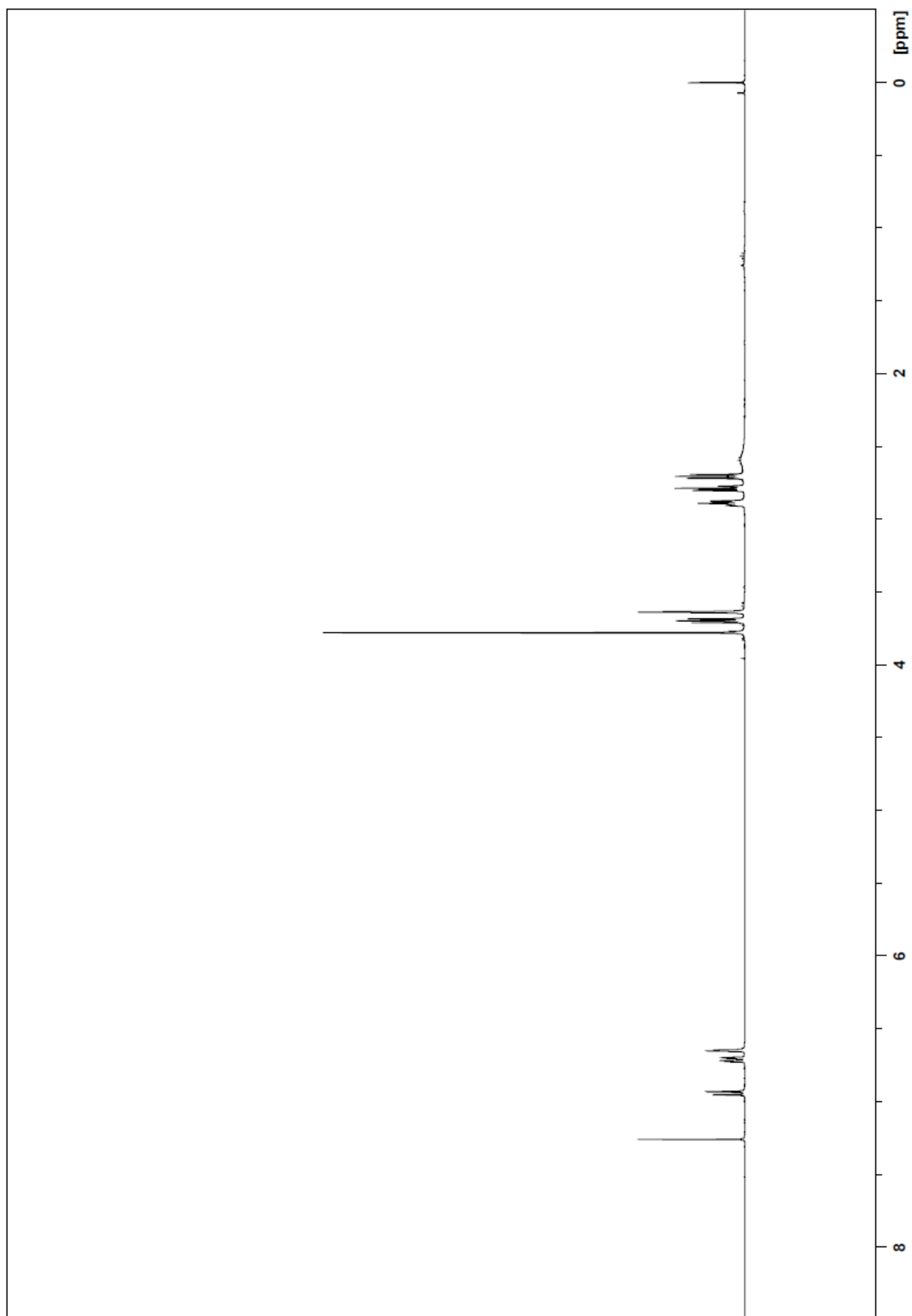


Fig. 31 ^1H NMR spectrum of 2-(6-methoxy-3,4-dihydroisoquinolin-2(*1H*)-yl)ethan-1-ol (**3p**)

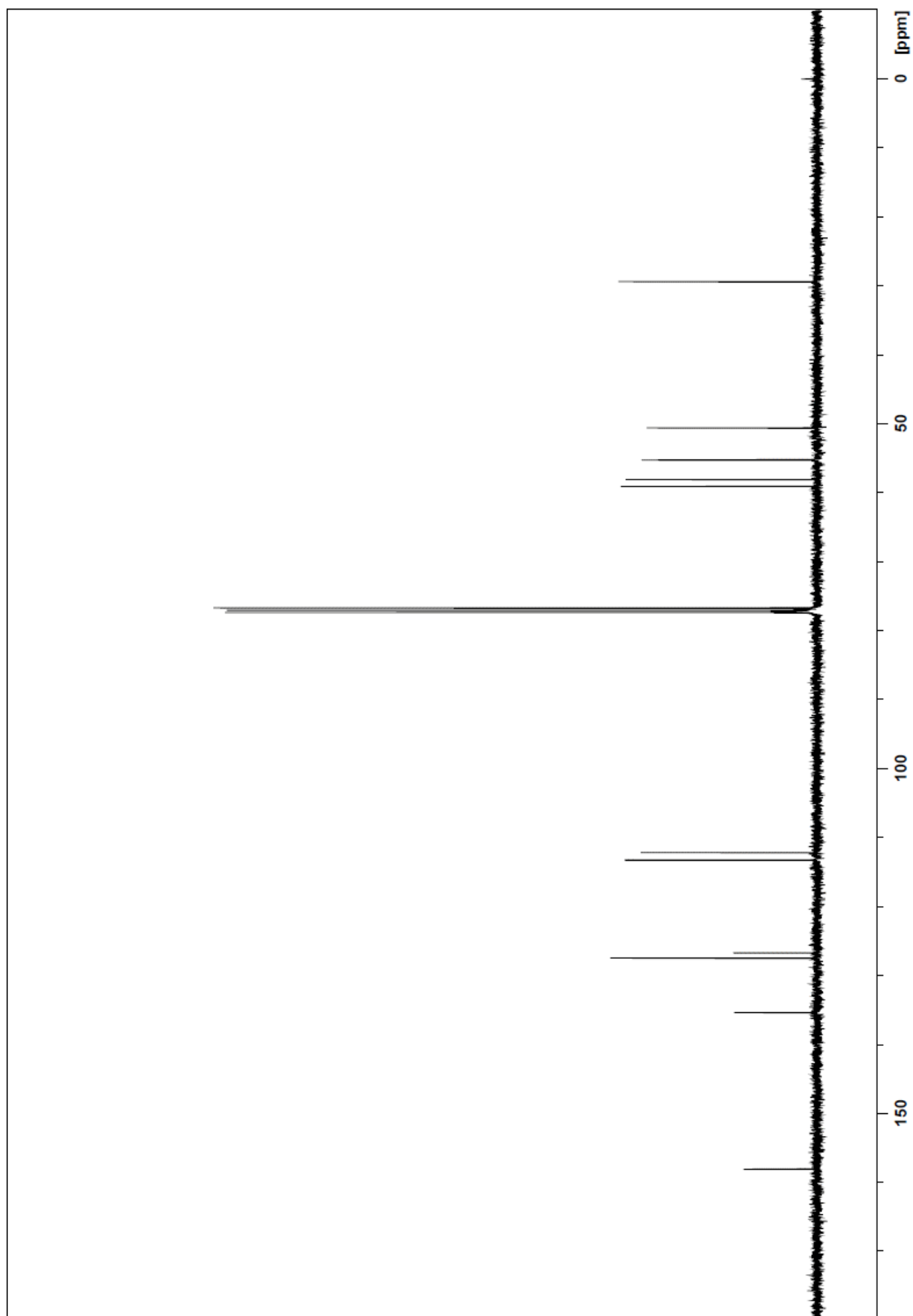


Fig. 32 ^{13}C NMR spectrum of 2-(6-methoxy-3,4-dihydroisoquinolin-2(*1H*)-yl)ethan-1-ol (**3p**)

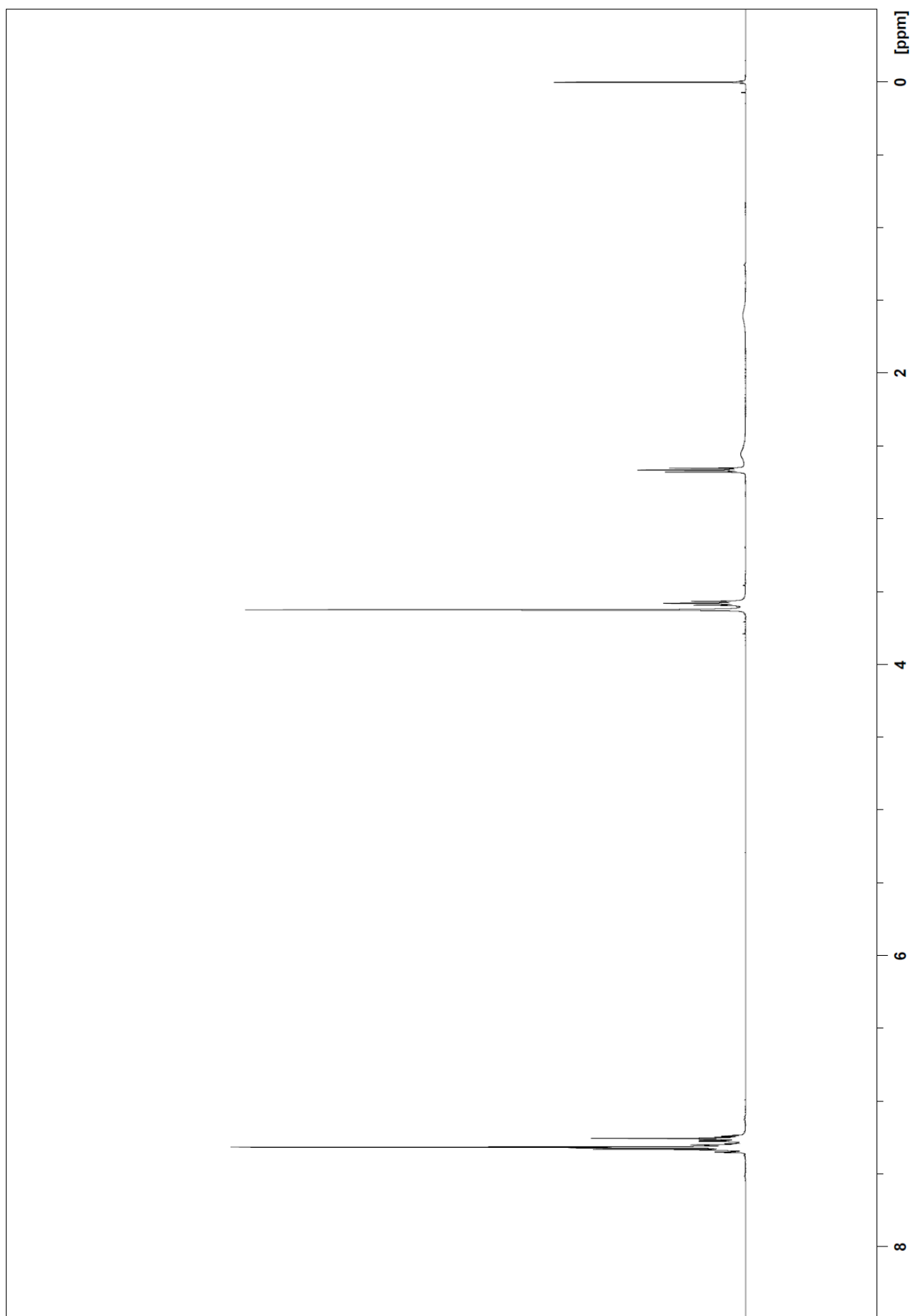


Fig. 31 ¹H NMR spectrum of 2-dibenzylaminoethanol (**3q**)

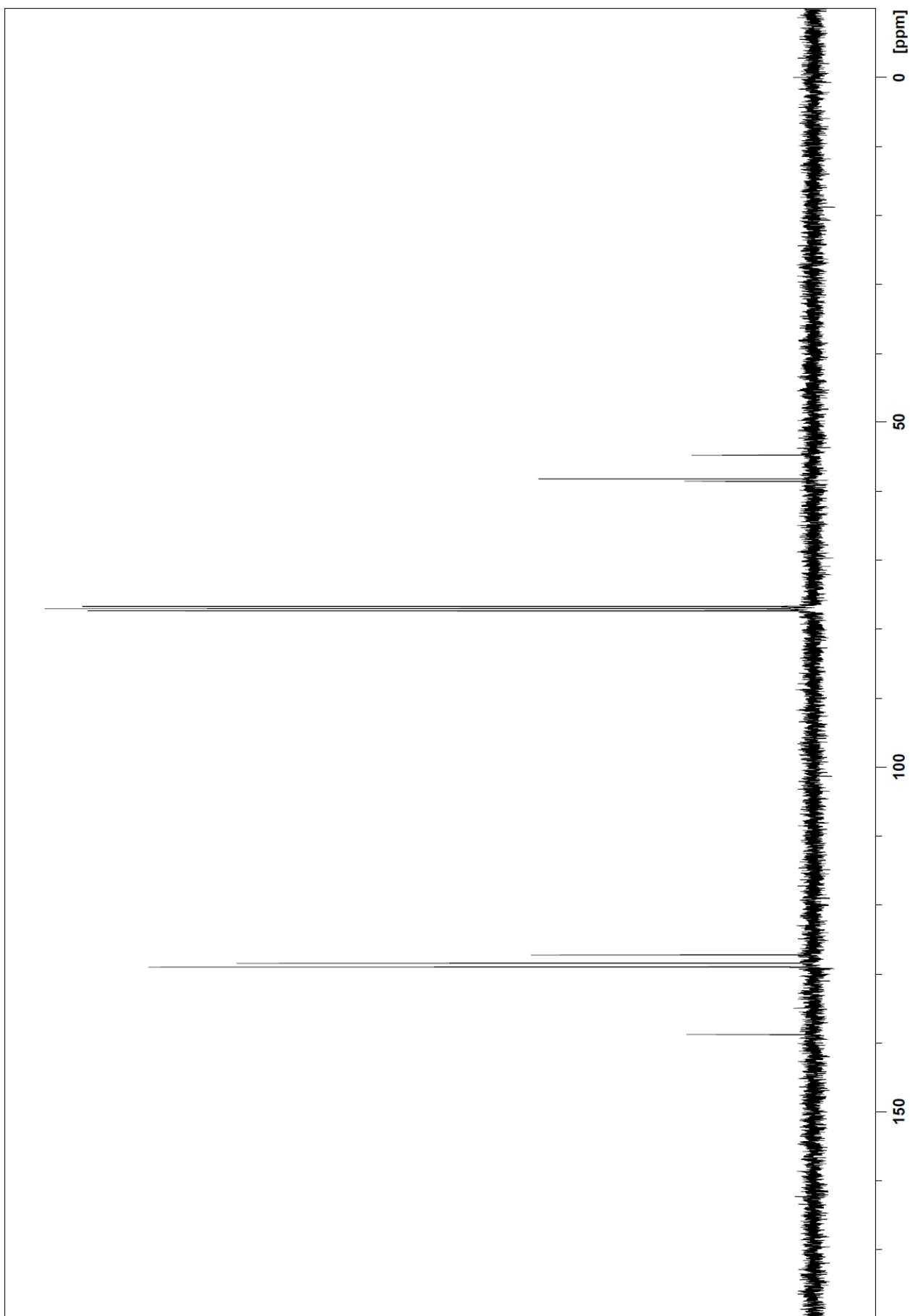


Fig. 32 ^{13}C NMR spectrum of 2-dibenzylaminoethanol (**3q**)