BEILSTEIN JOURNAL OF ORGANIC CHEMISTRY

Supporting Information

for

Regioselective synthesis of heterocyclic *N*-sulfonyl amidines from heteroaromatic thioamides and sulfonyl azides

Vladimir Ilkin, Vera Berseneva, Tetyana Beryozkina, Tatiana Glukhareva, Lidia Dianova, Wim Dehaen, Eugenia Seliverstova and Vasiliy Bakulev

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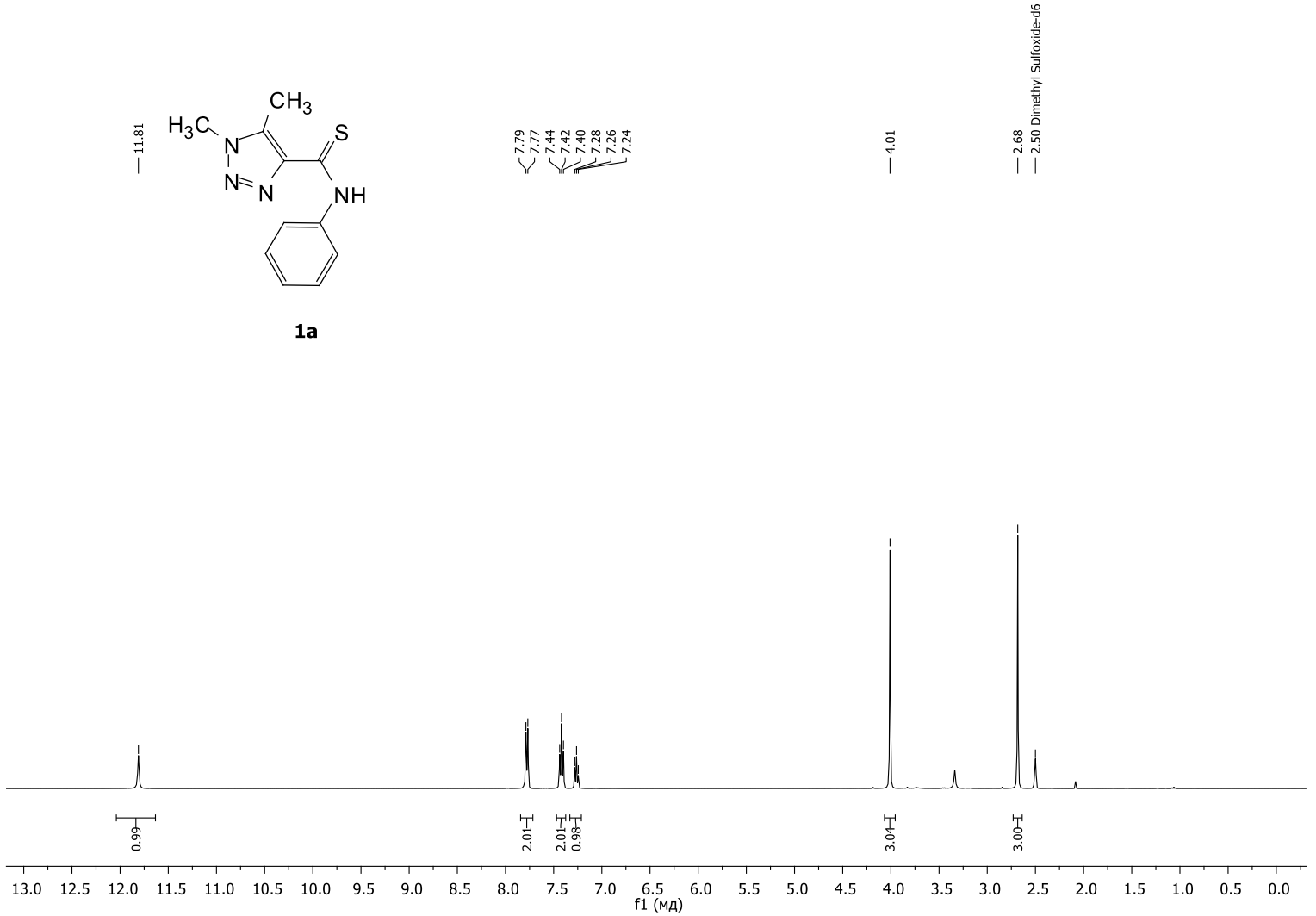
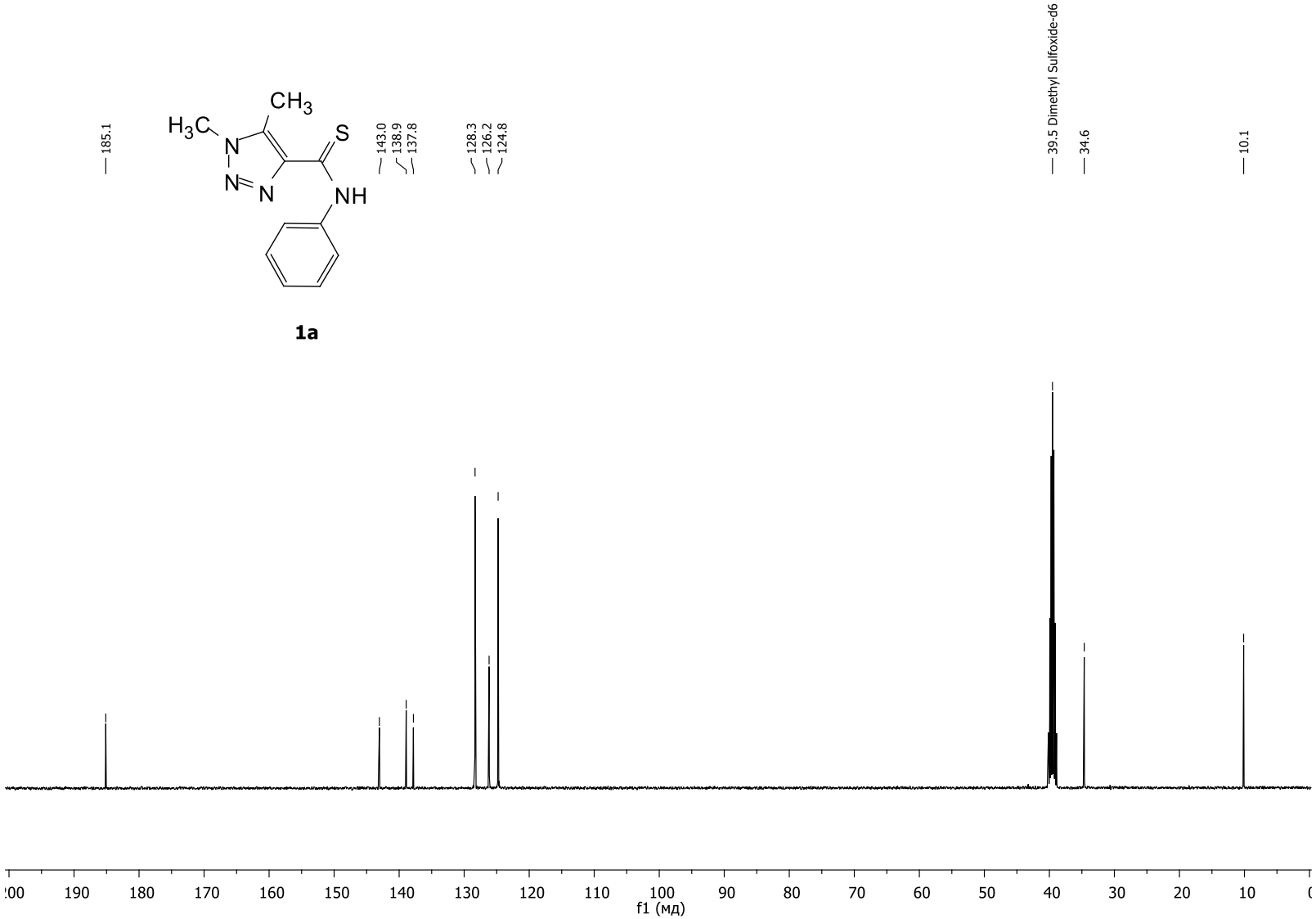
Copies of NMR spectra of all new compounds

NMR spectra

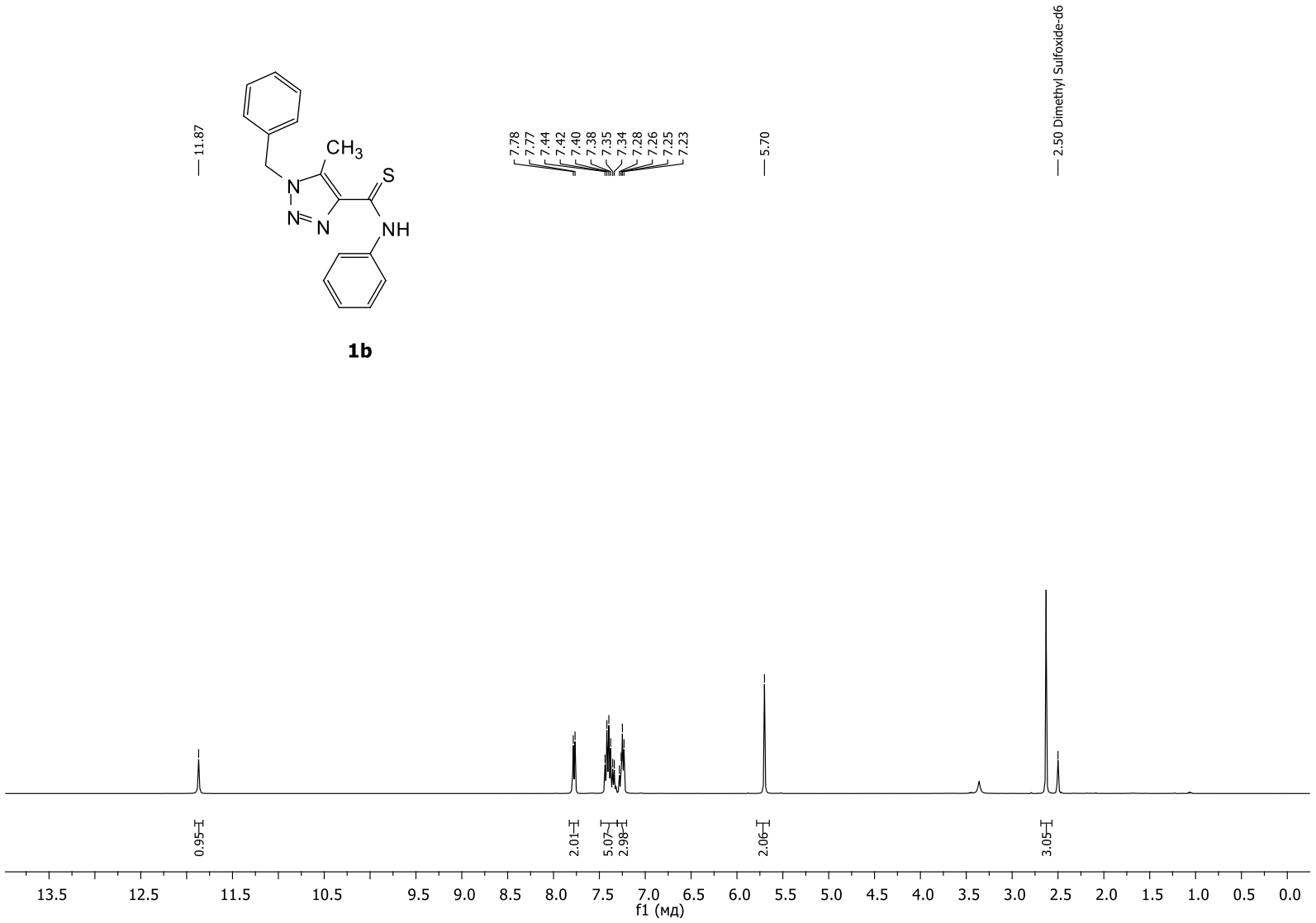


1a

The ^{1}H NMR (400 MHz, DMSO-d_6) spectrum of compound **1a**.

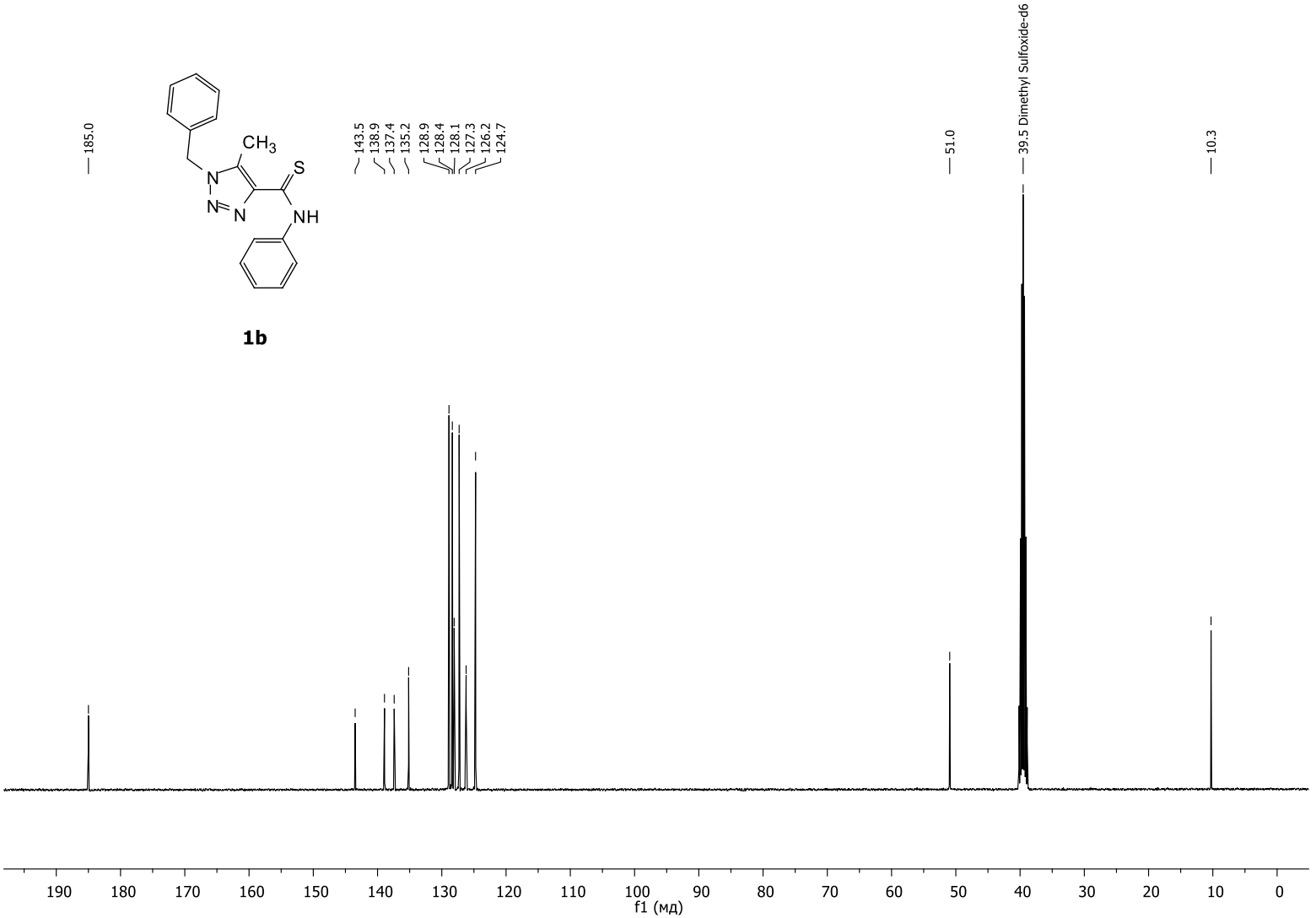


The ^{13}C NMR (100 MHz, DMSO-d_6) spectrum of compound **1a**.

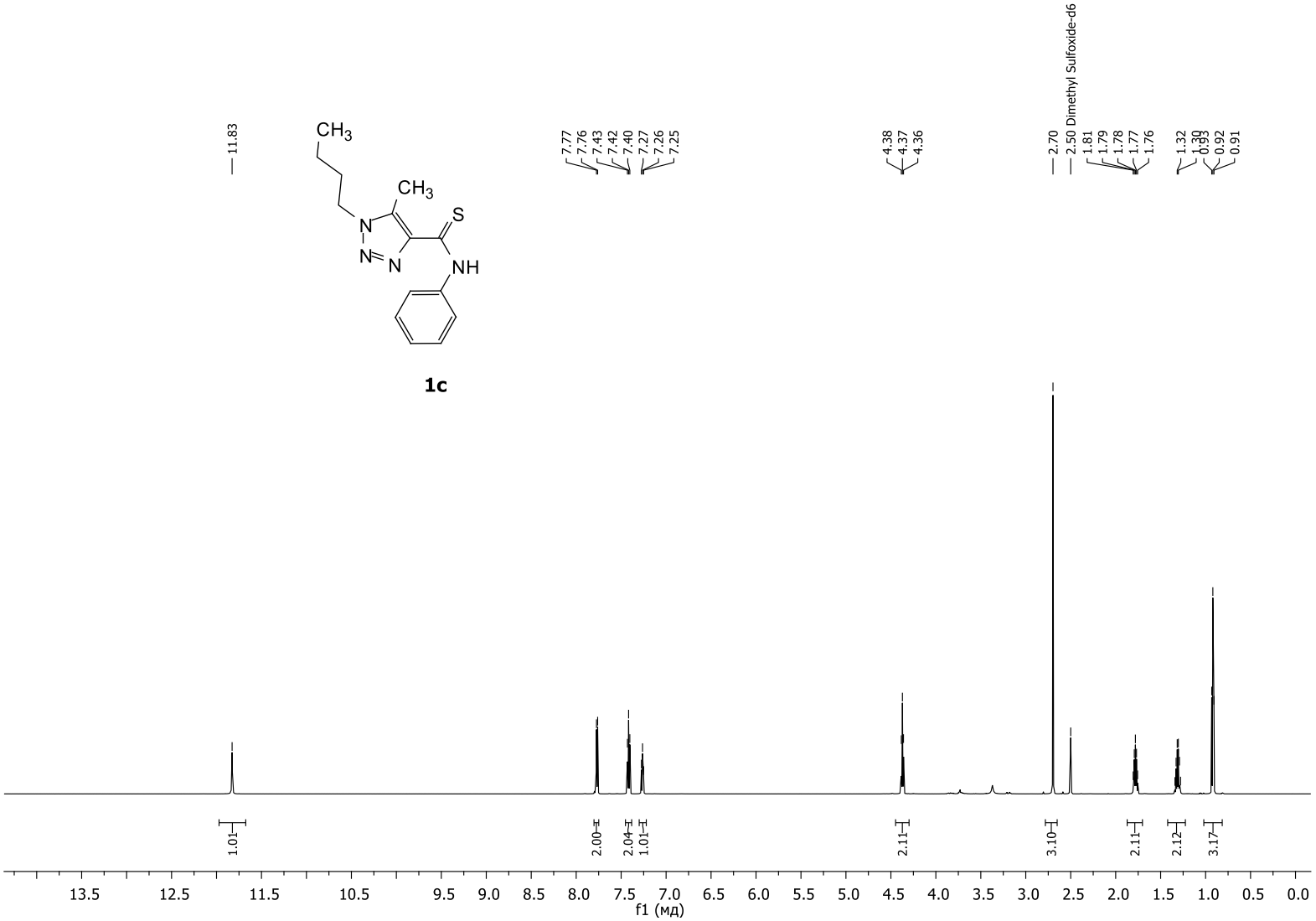


1b

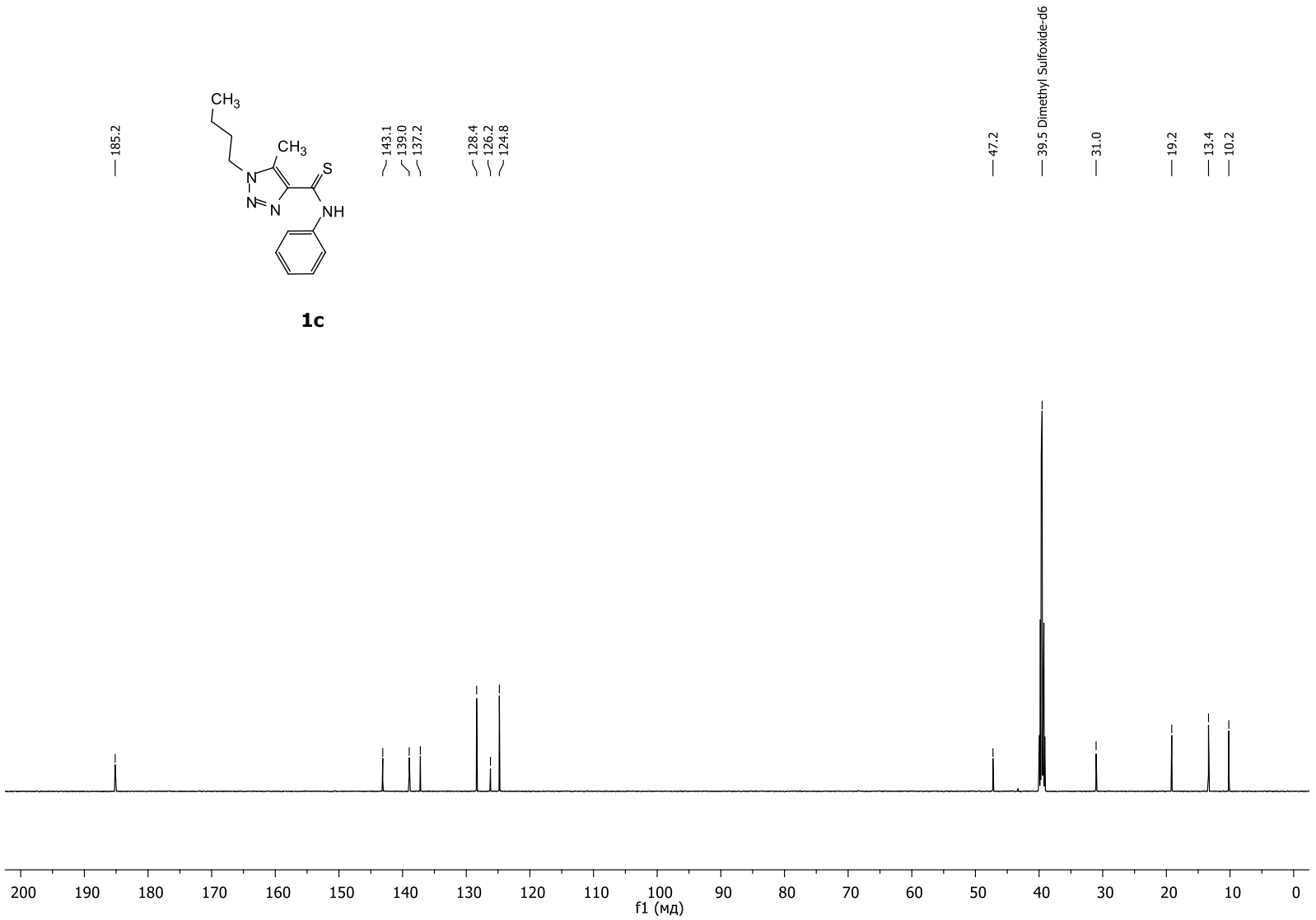
The ^{1}H NMR (400 MHz, DMSO-d_6) spectrum of compound **1b**.



The ^{13}C NMR (100 MHz, DMSO-d_6) spectrum of compound **1b**.

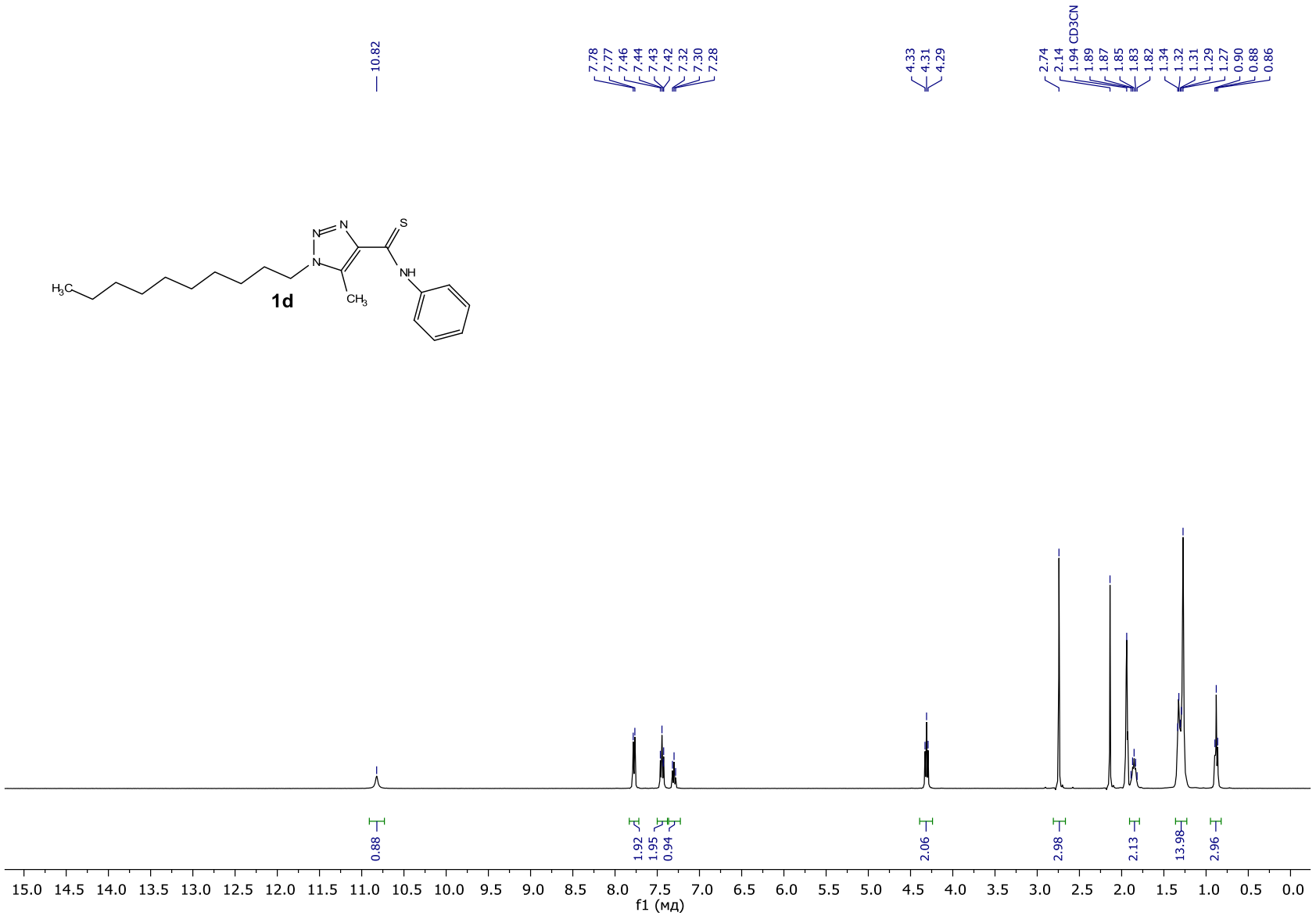


The ^{1}H NMR (400 MHz, DMSO-d_6) spectrum of compound **1c**.

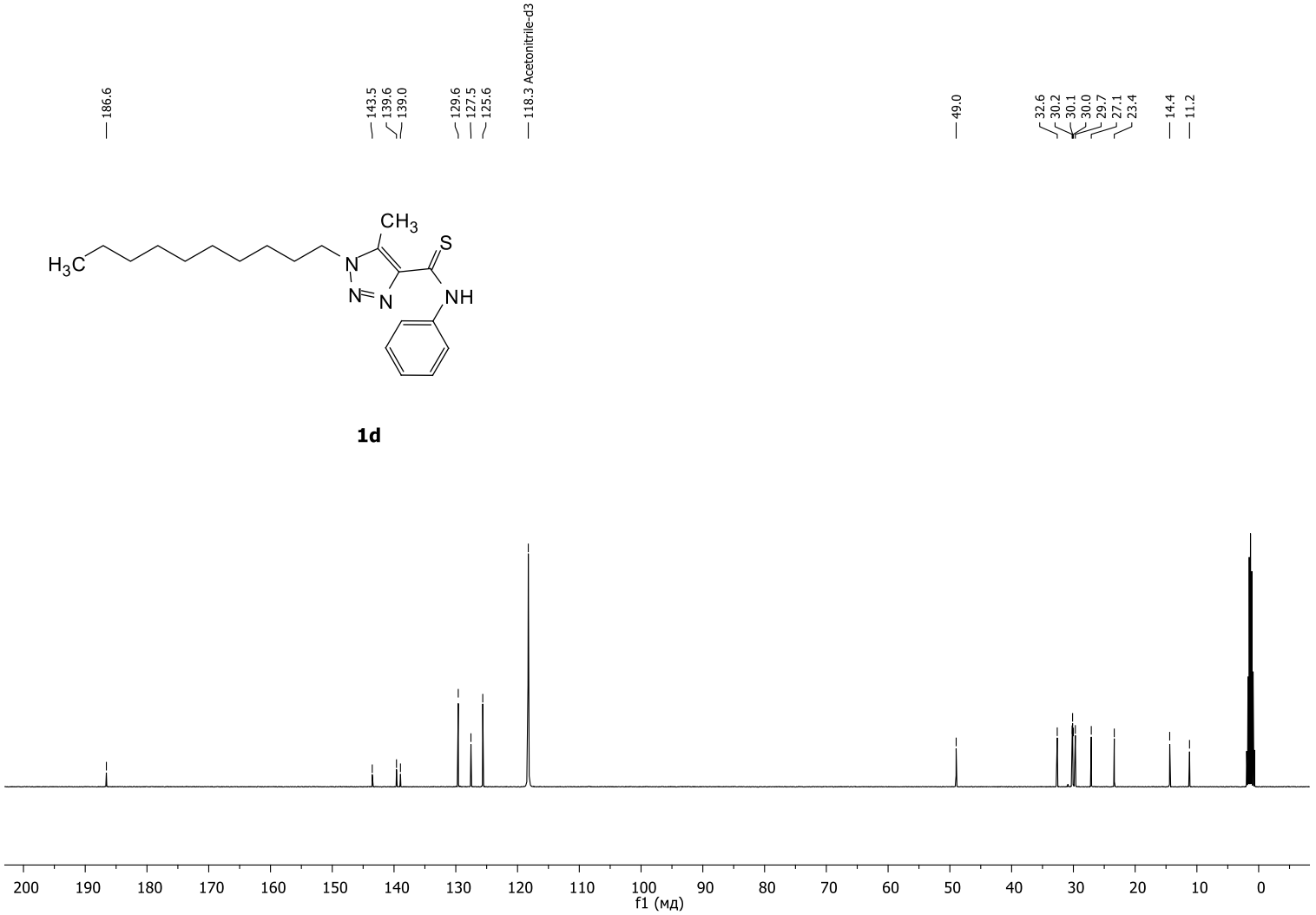


1c

The ^{13}C NMR (100 MHz, DMSO-d_6) spectrum of compound **1c**.

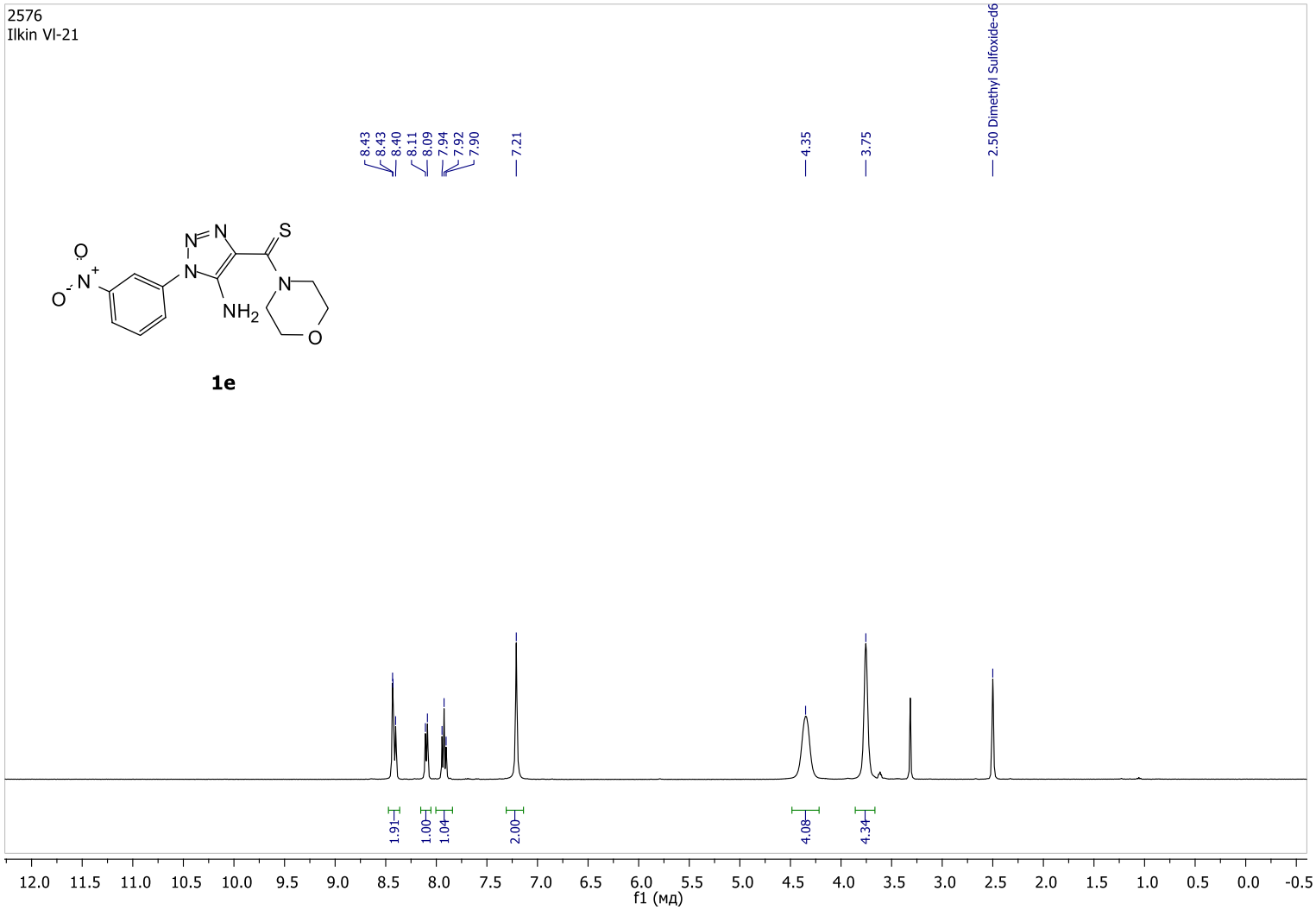


The ^{1}H NMR (400 MHz, CD_3CN) spectrum of compound **1d**. 7

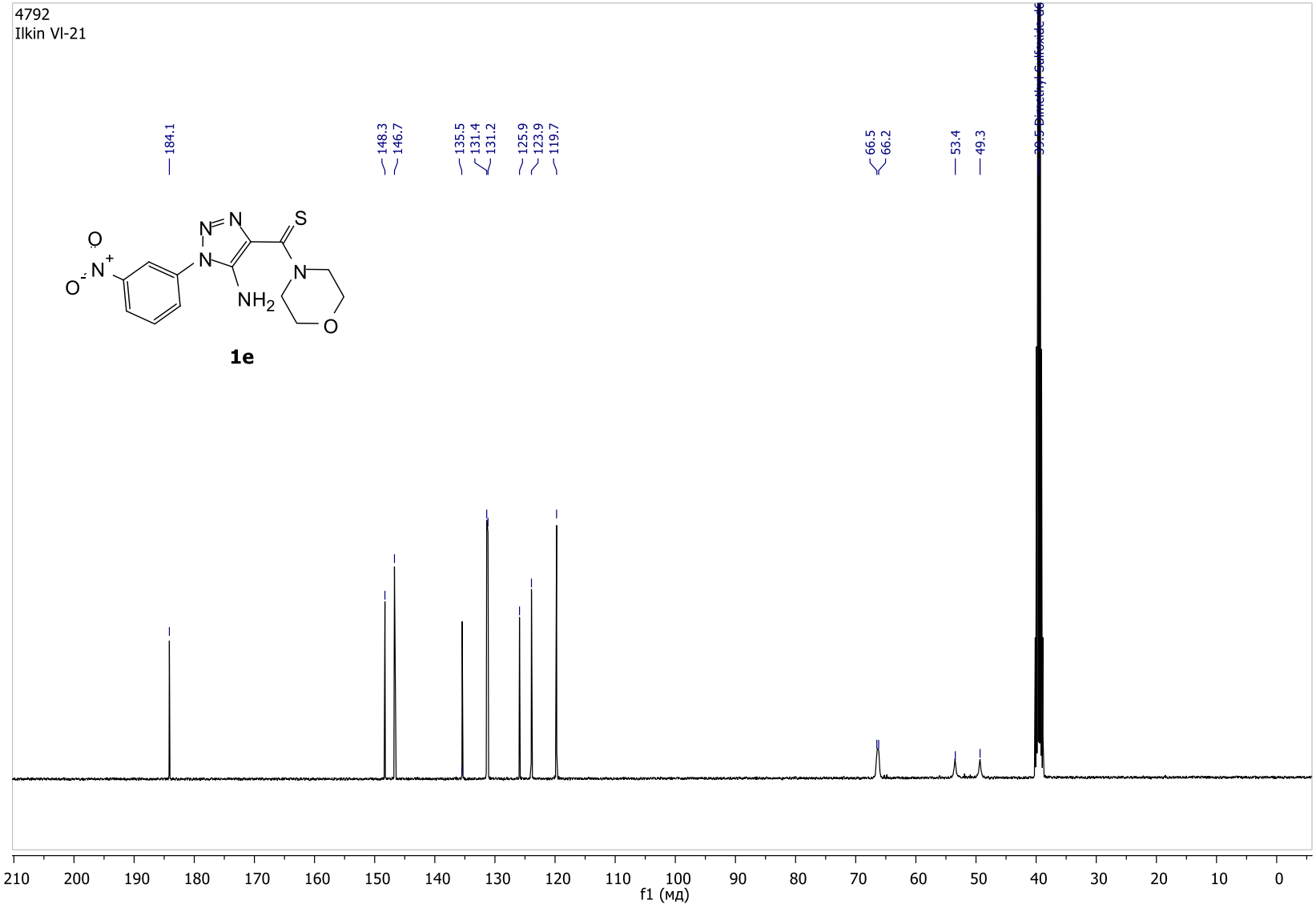


1d

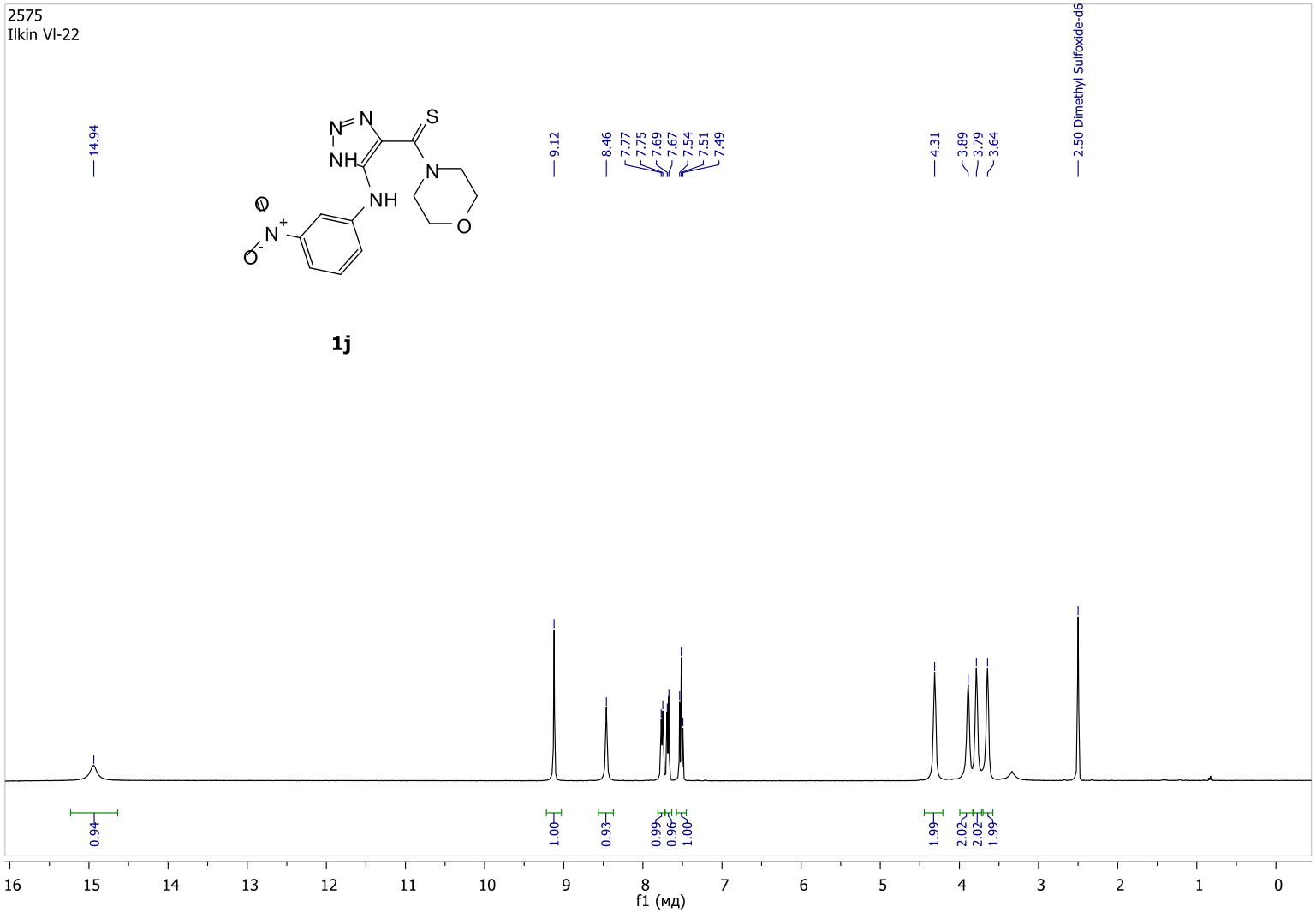
The ^{13}C NMR (100 MHz, CD_3CN) spectrum of compound **1d**.



The ^{1}H NMR (400 MHz, DMSO-d_6) spectrum of compound **1e**.

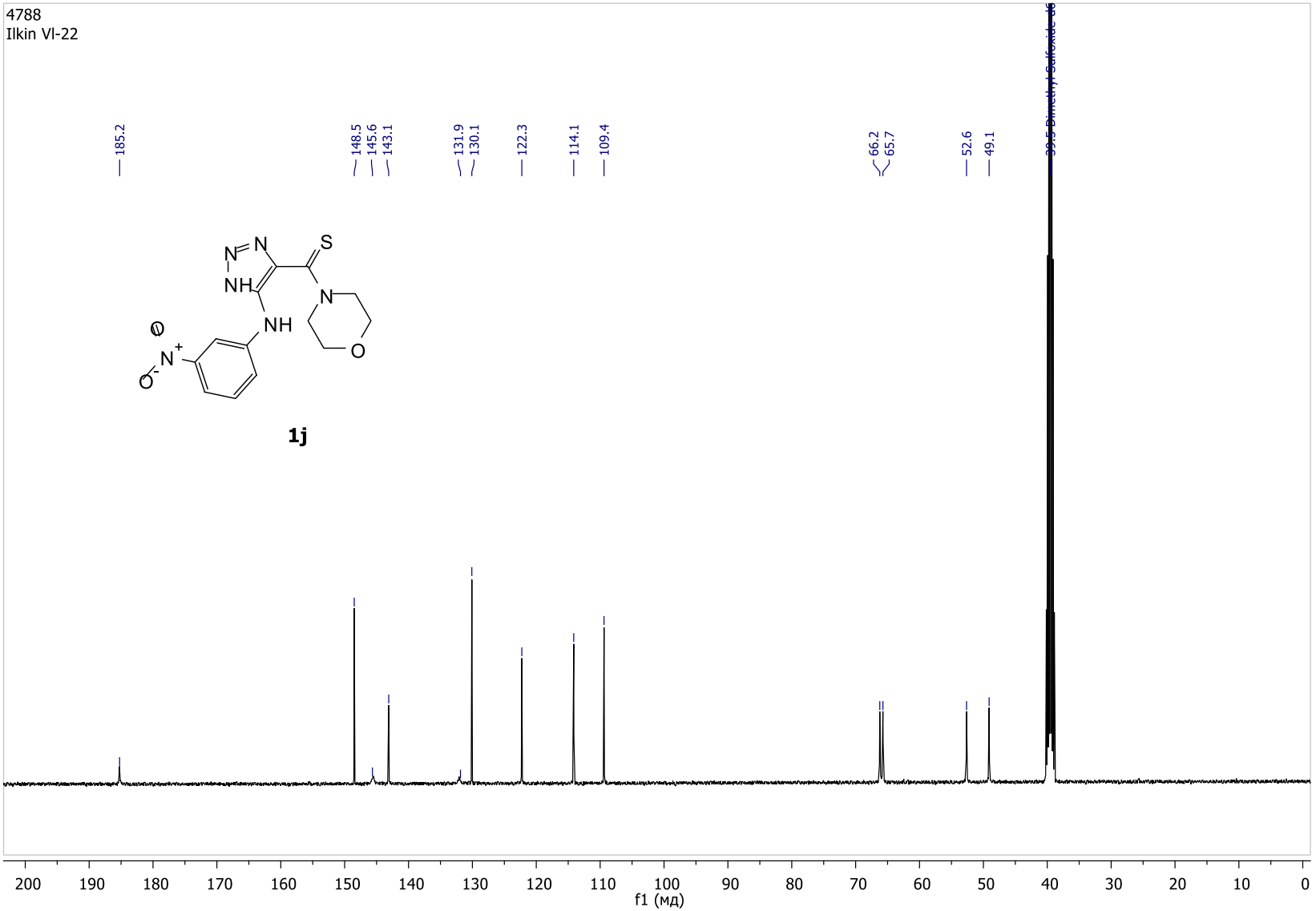


The ^{13}C NMR (100 MHz, DMSO-d_6) spectrum of compound **1e**.

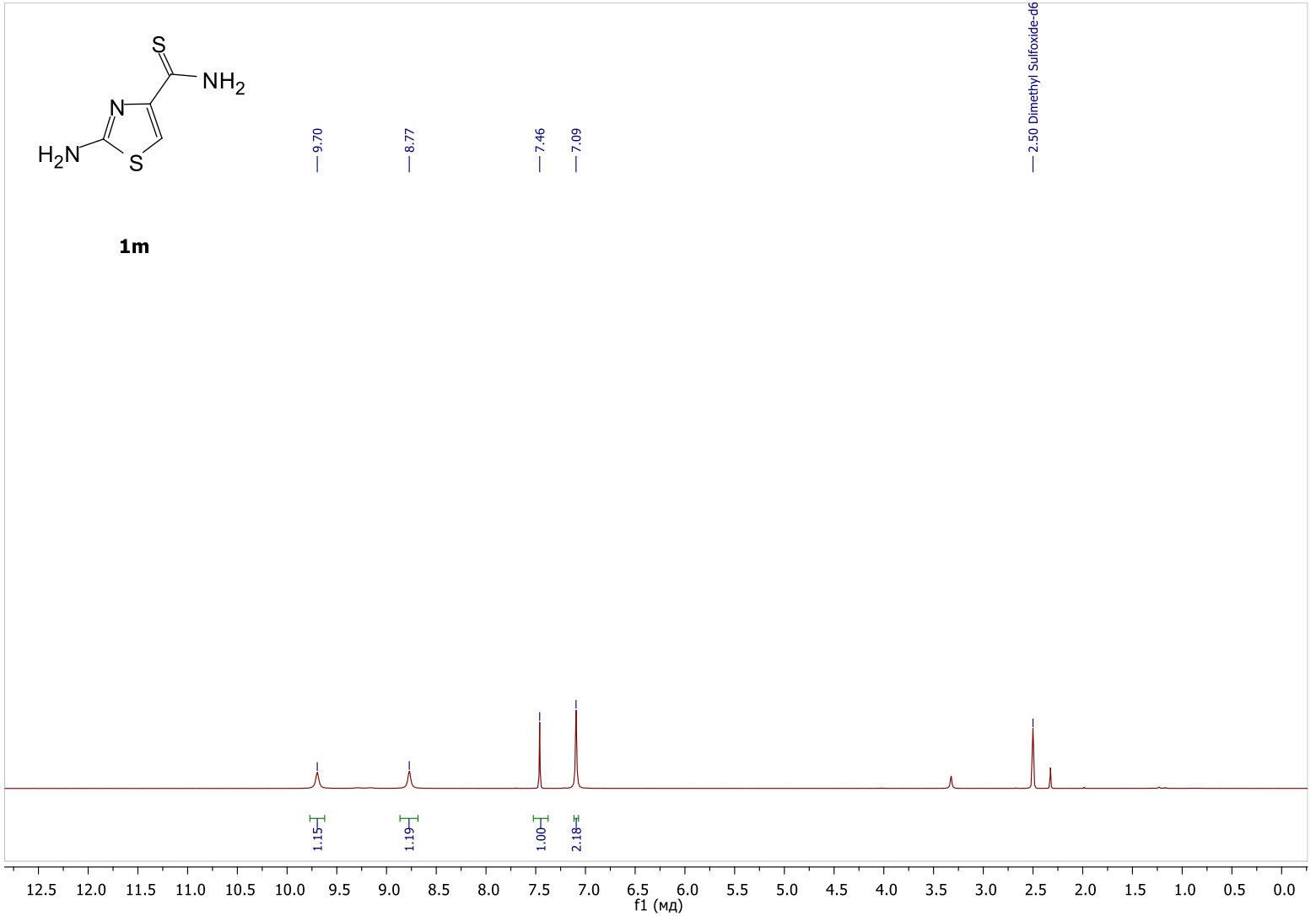


1j

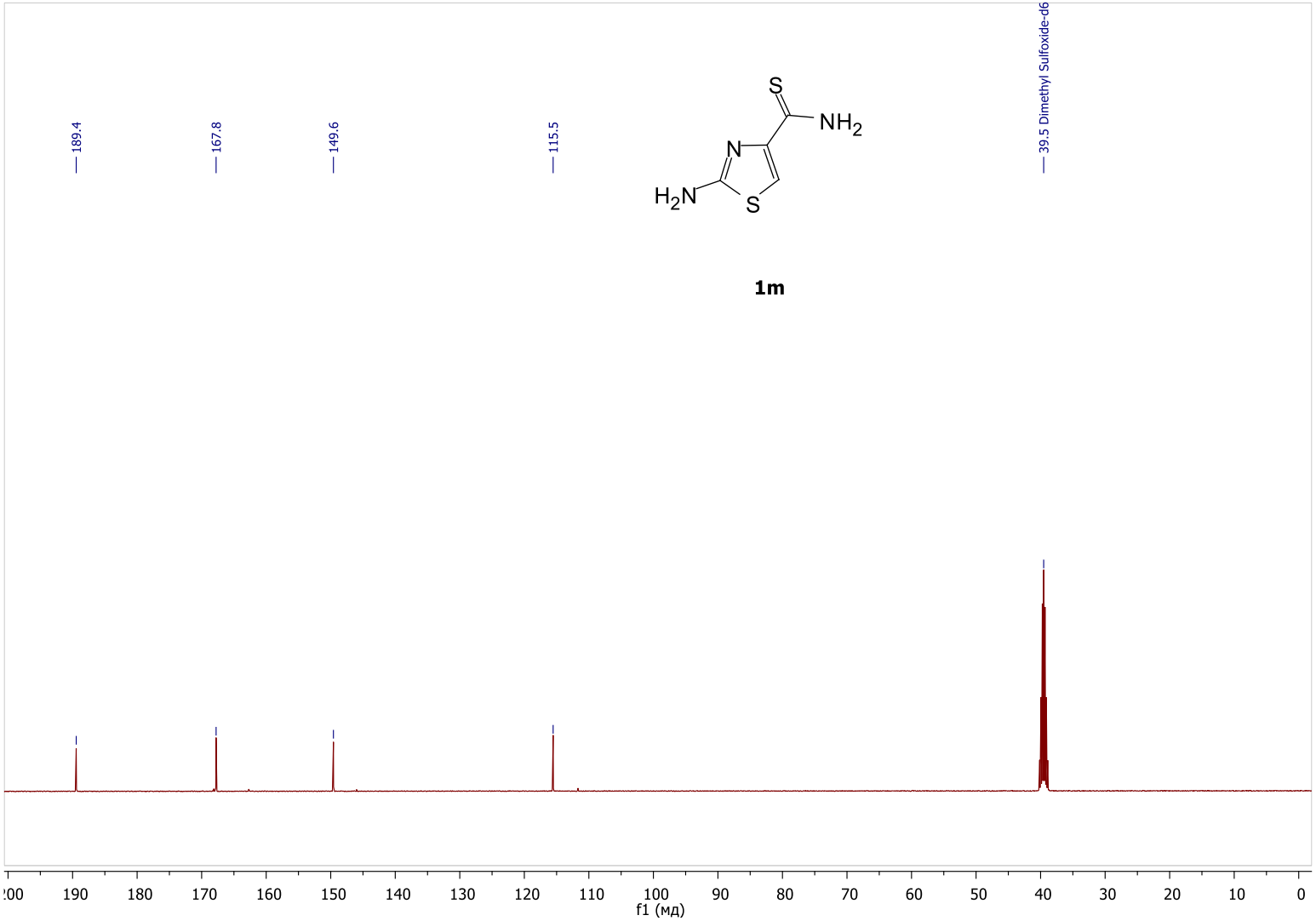
The ^{1}H NMR (400 MHz, DMSO-d_6) spectrum of compound **1j**.



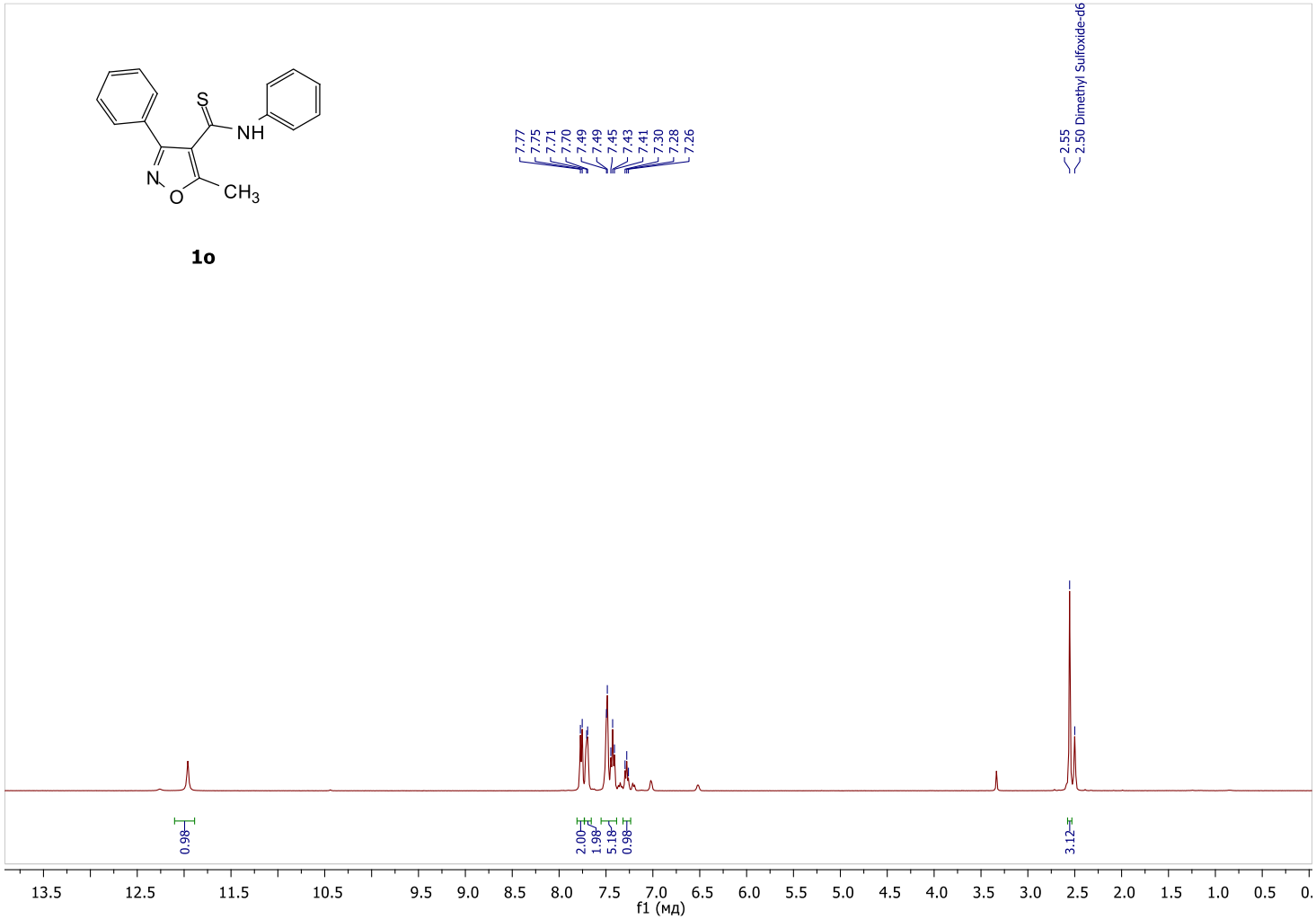
The ^{13}C NMR (100 MHz, DMSO-d_6) spectrum of compound **1j**.



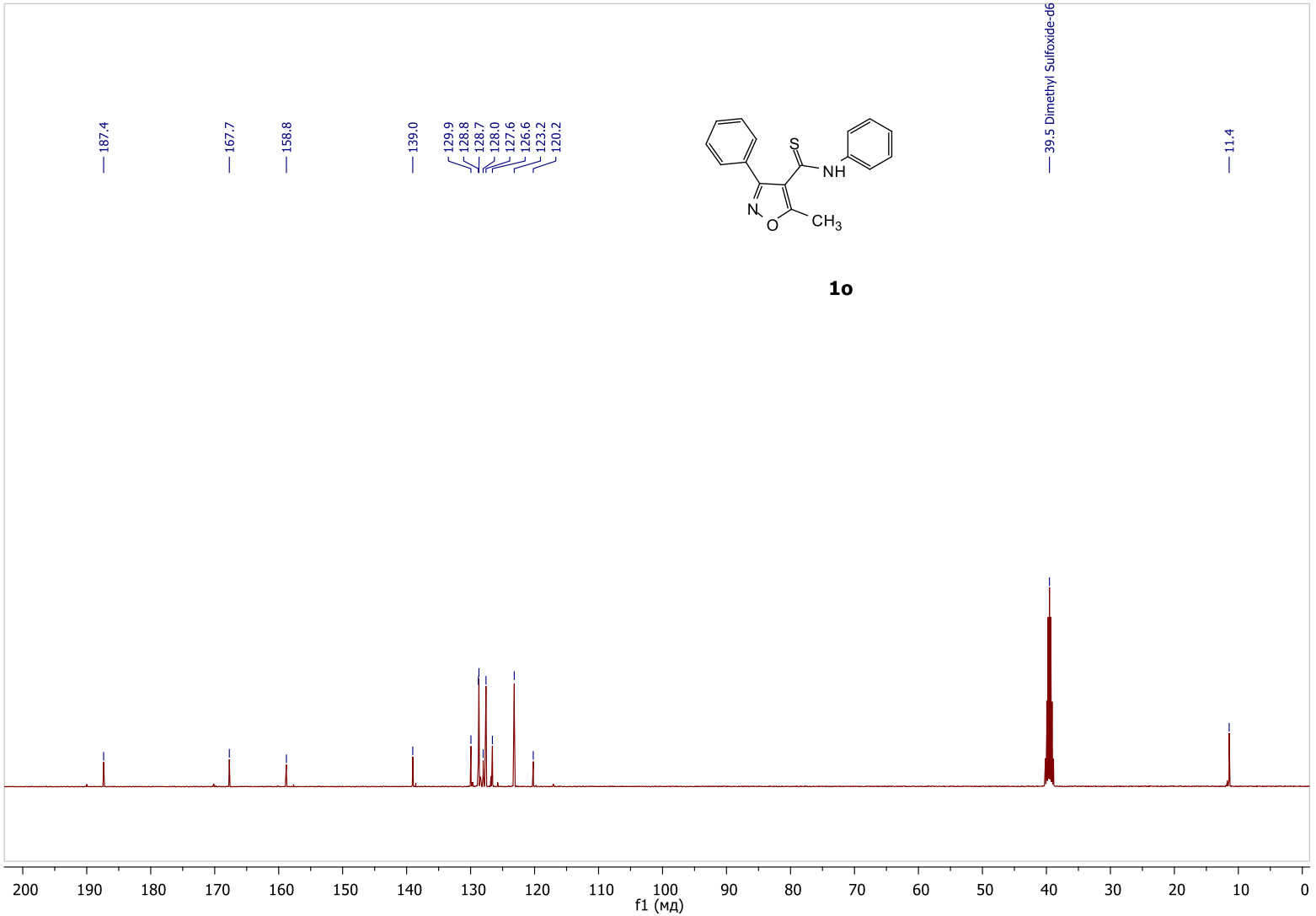
The ^{1}H NMR (400 MHz, DMSO-d_6) spectrum of compound **1m**.



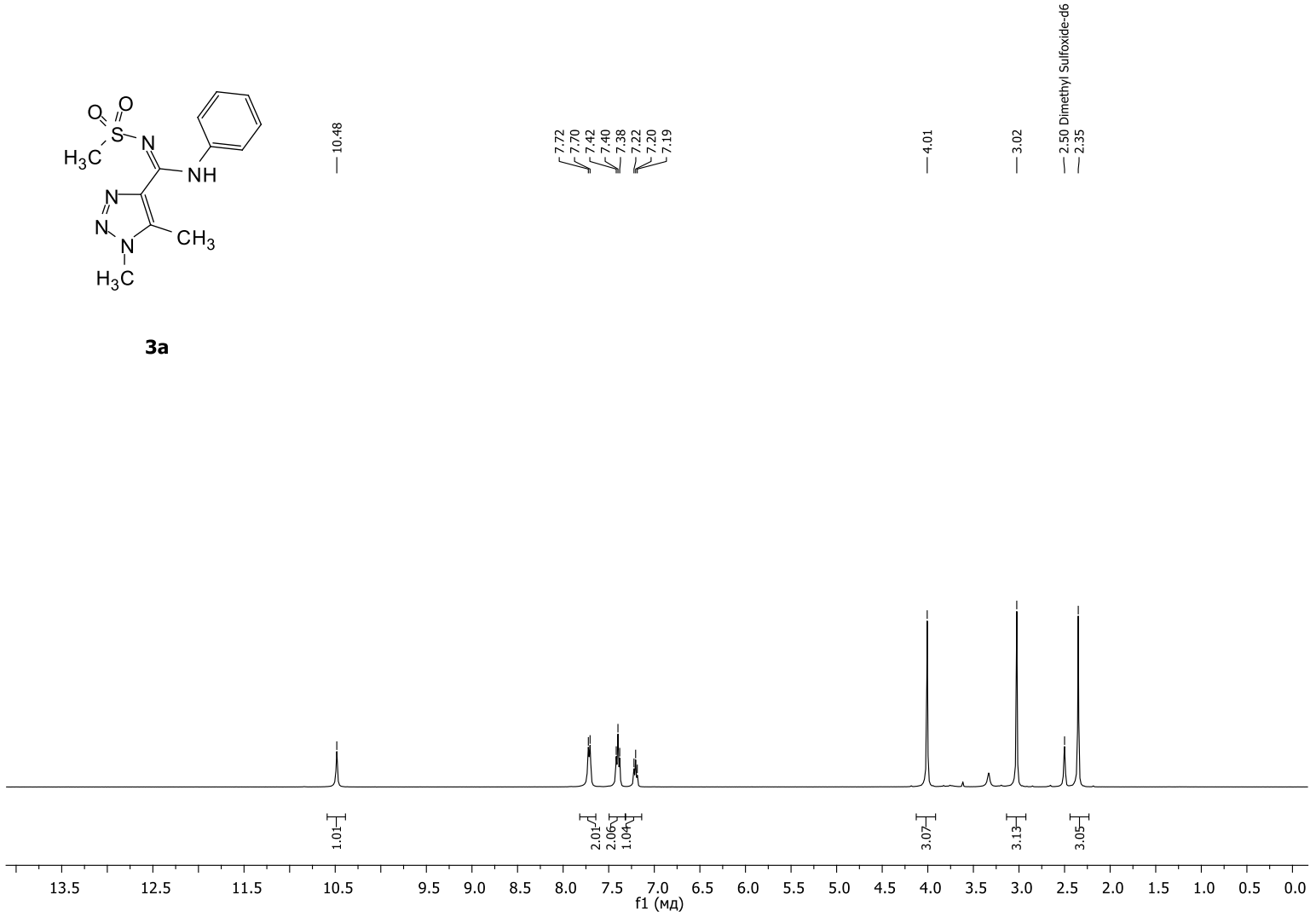
The ^{13}C NMR (100 MHz, DMSO-d_6) spectrum of compound **1m**.



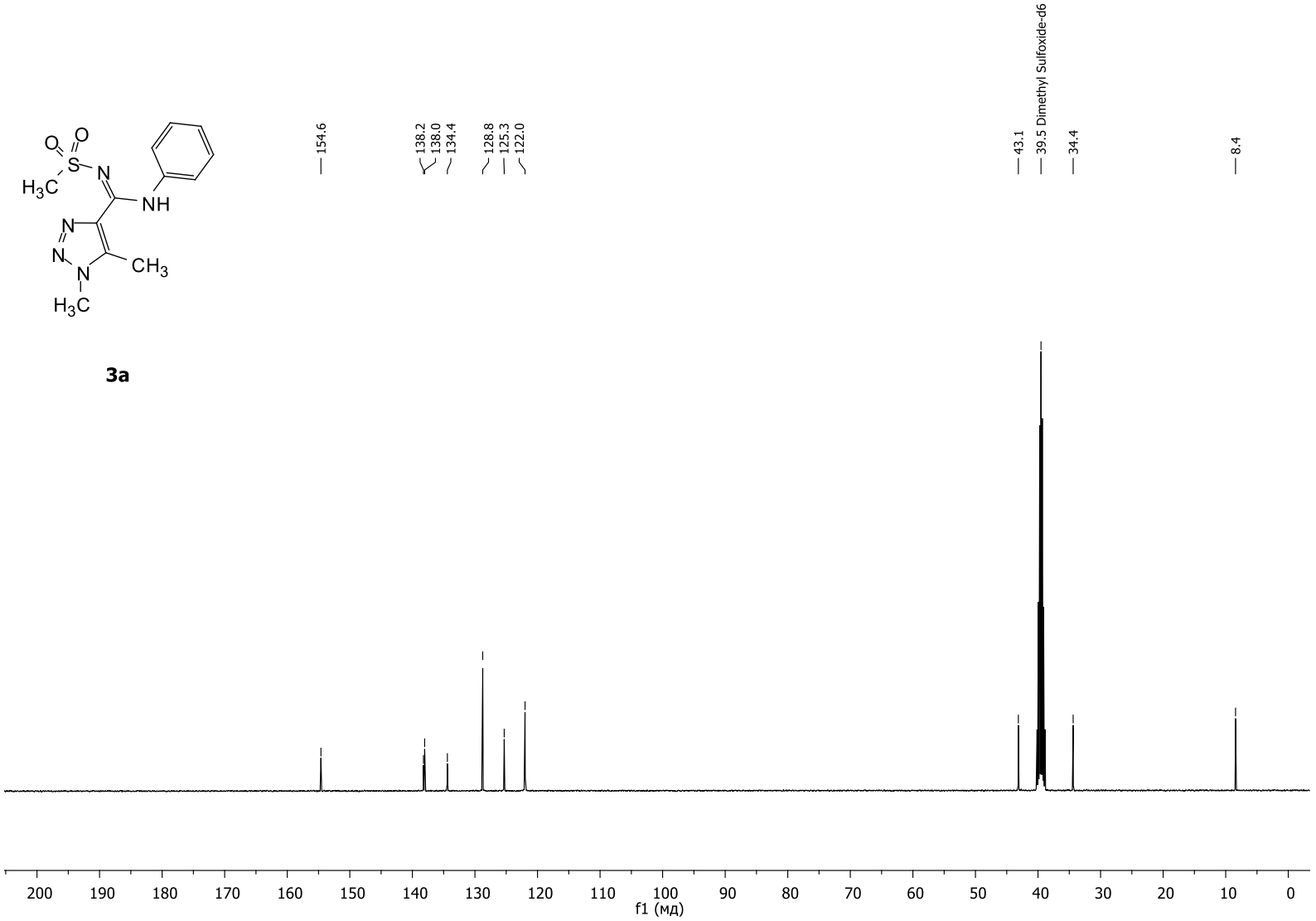
The ^{1}H NMR (400 MHz, DMSO-d_6) spectrum of compound **1o**.



The ^{13}C NMR (100 MHz, DMSO-d_6) spectrum of compound **1o** .

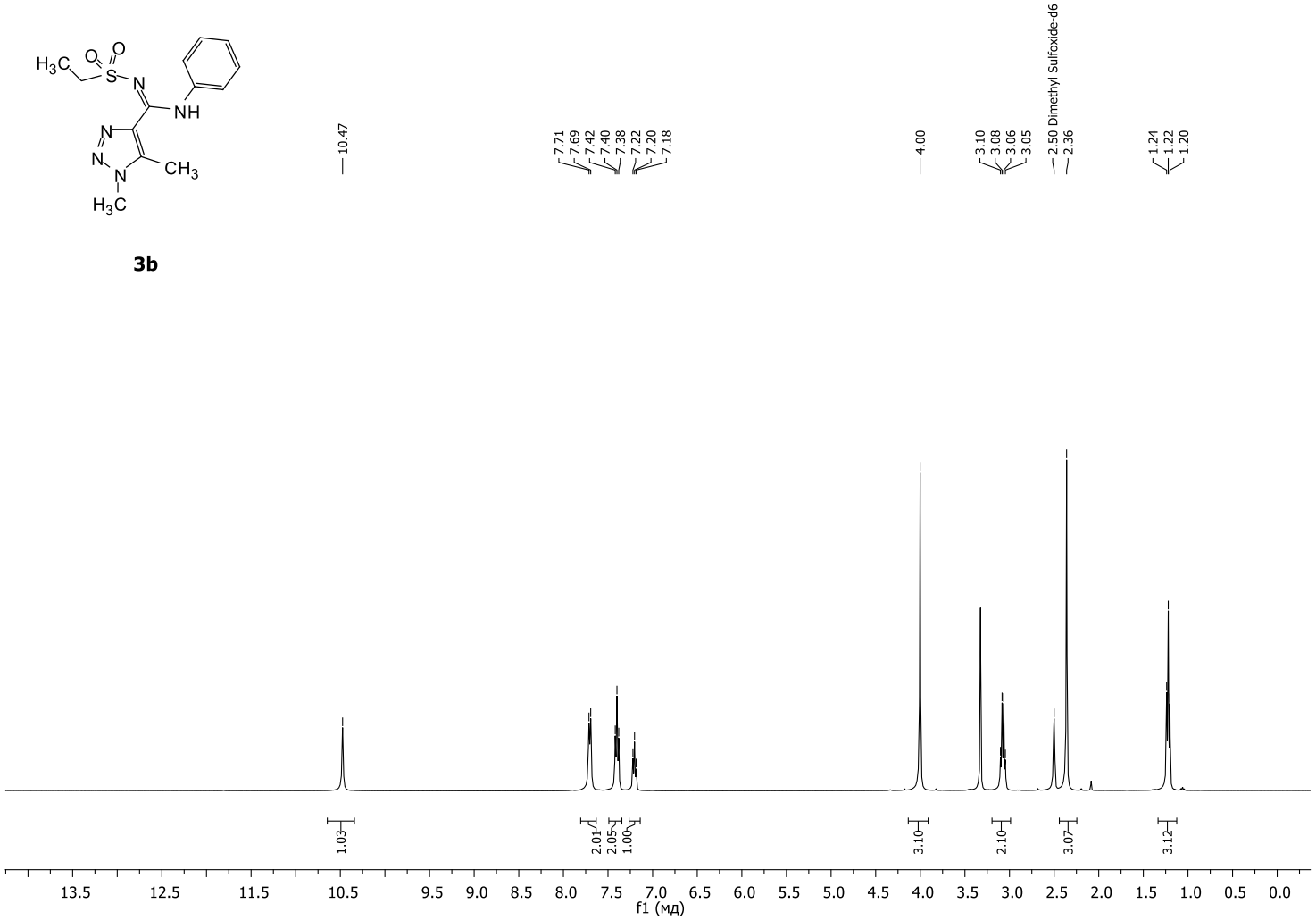


The ^{1}H NMR (400 MHz, DMSO-d_6) spectrum of compound **3a**.

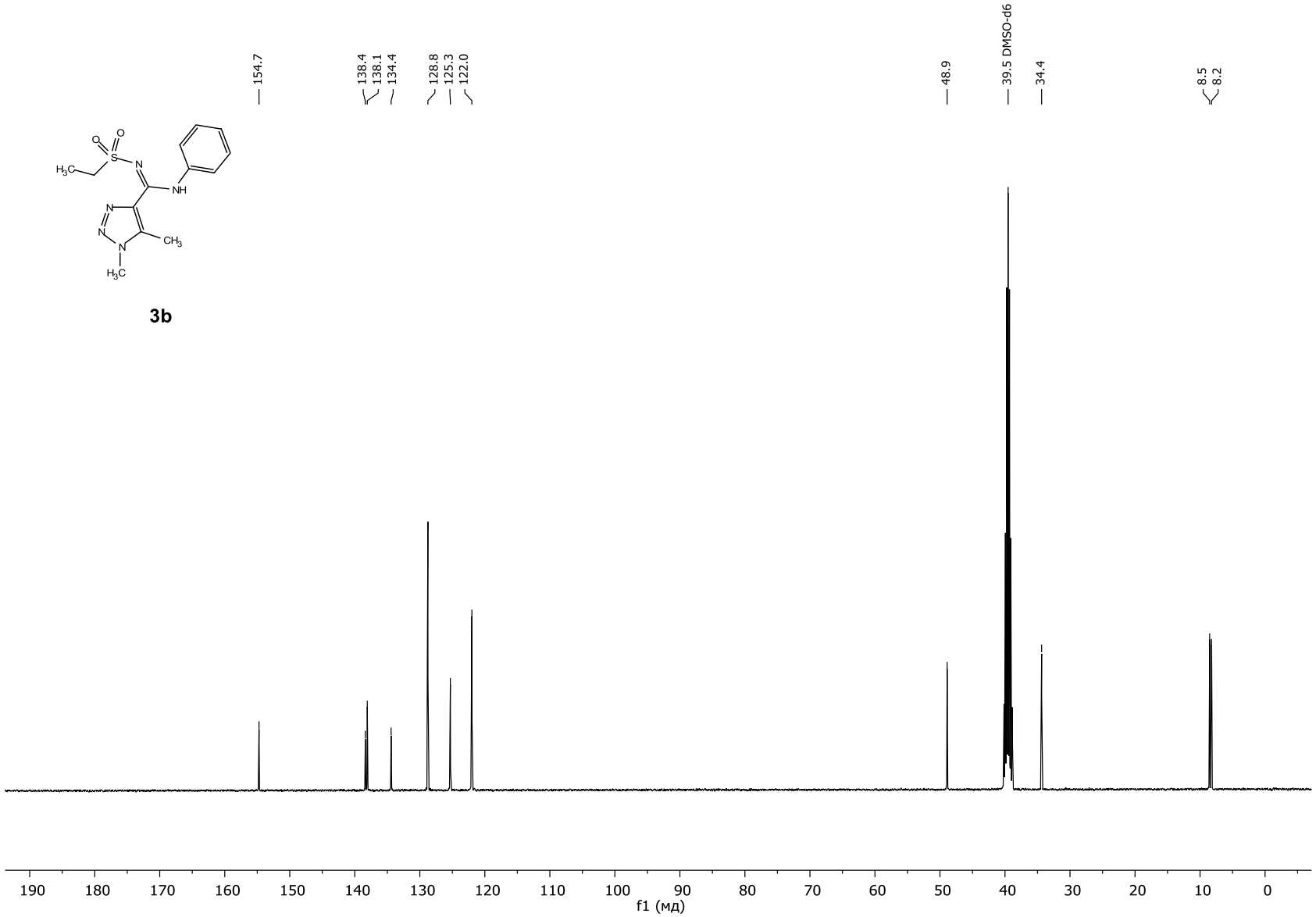


3a

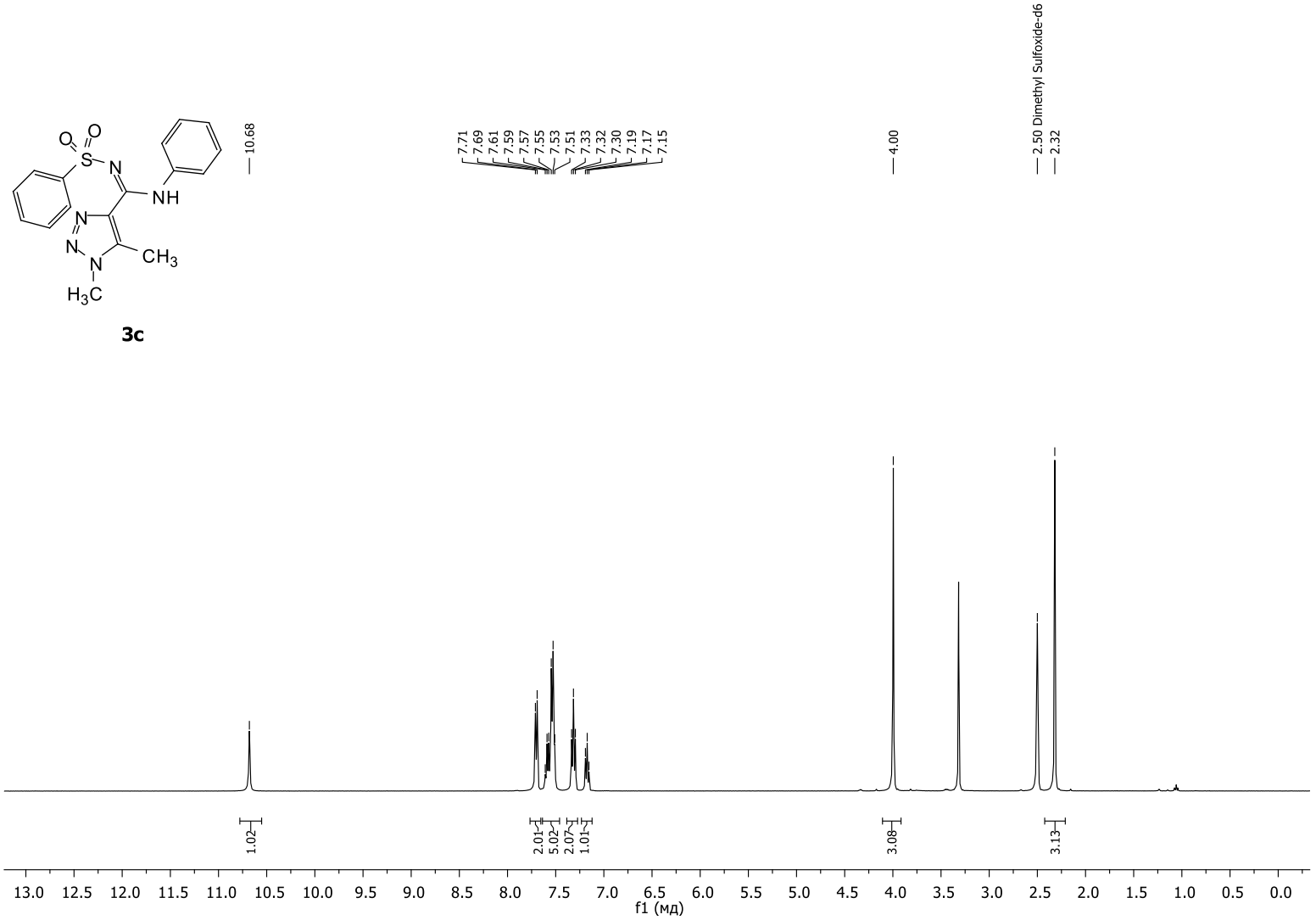
The ^{13}C NMR (100 MHz, DMSO-d_6) spectrum of compound **3a**.



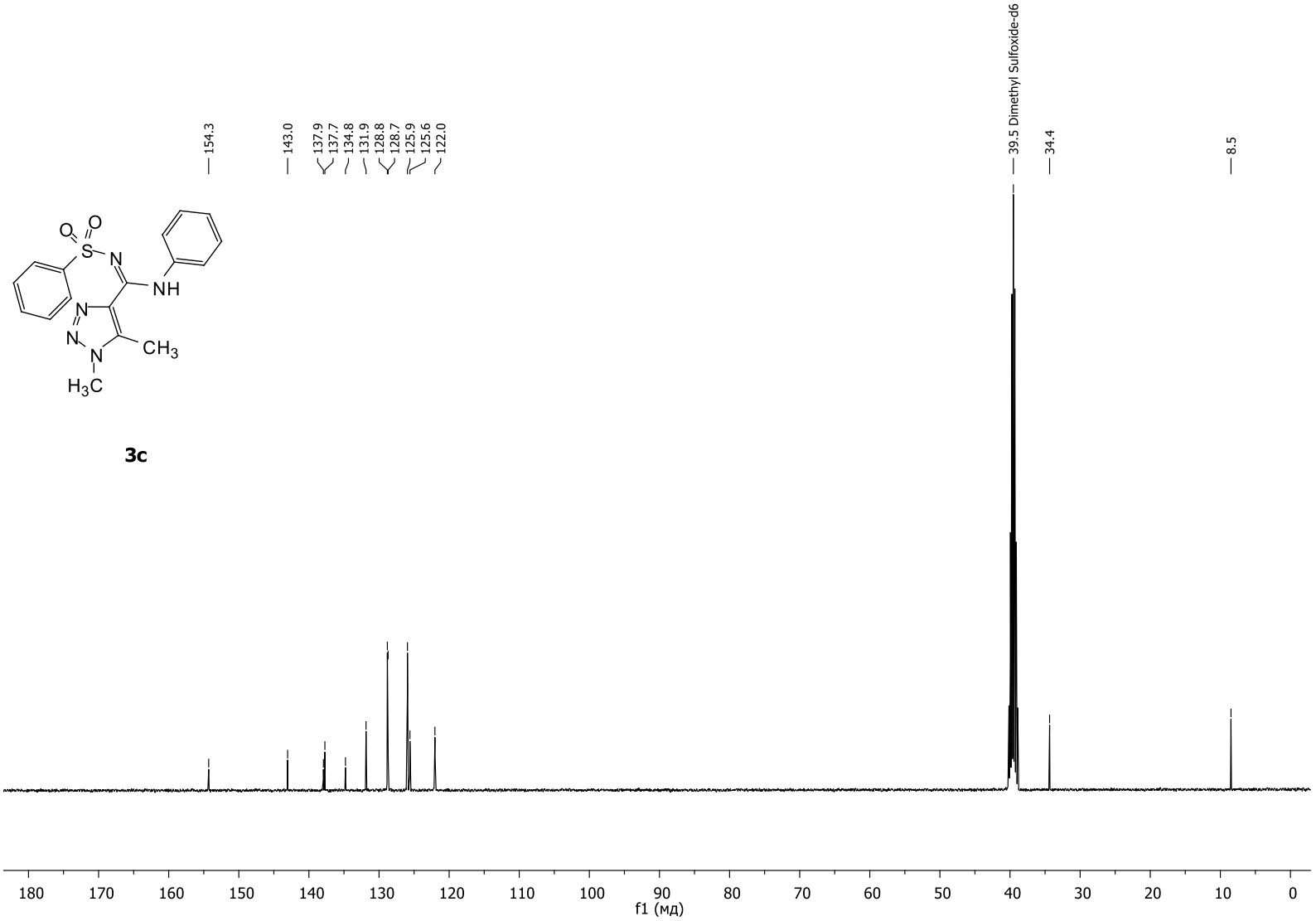
The ^{1}H NMR (400 MHz, DMSO-d_6) spectrum of compound **3b**.



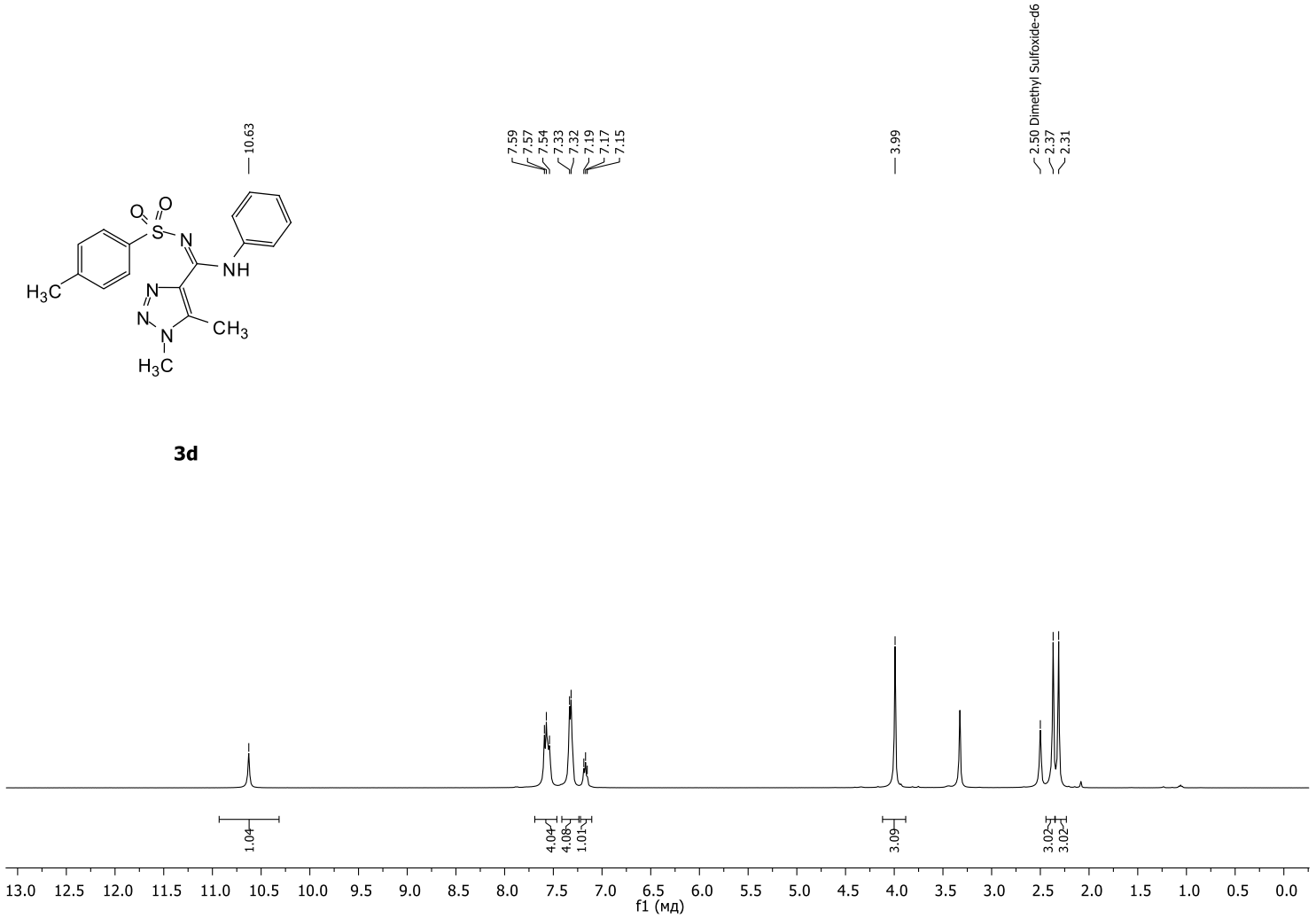
The ^{13}C NMR (100 MHz, DMSO-d_6) spectrum of compound **3b**.



The ^{1}H NMR (400 MHz, DMSO-d_6) spectrum of compound **3c**.

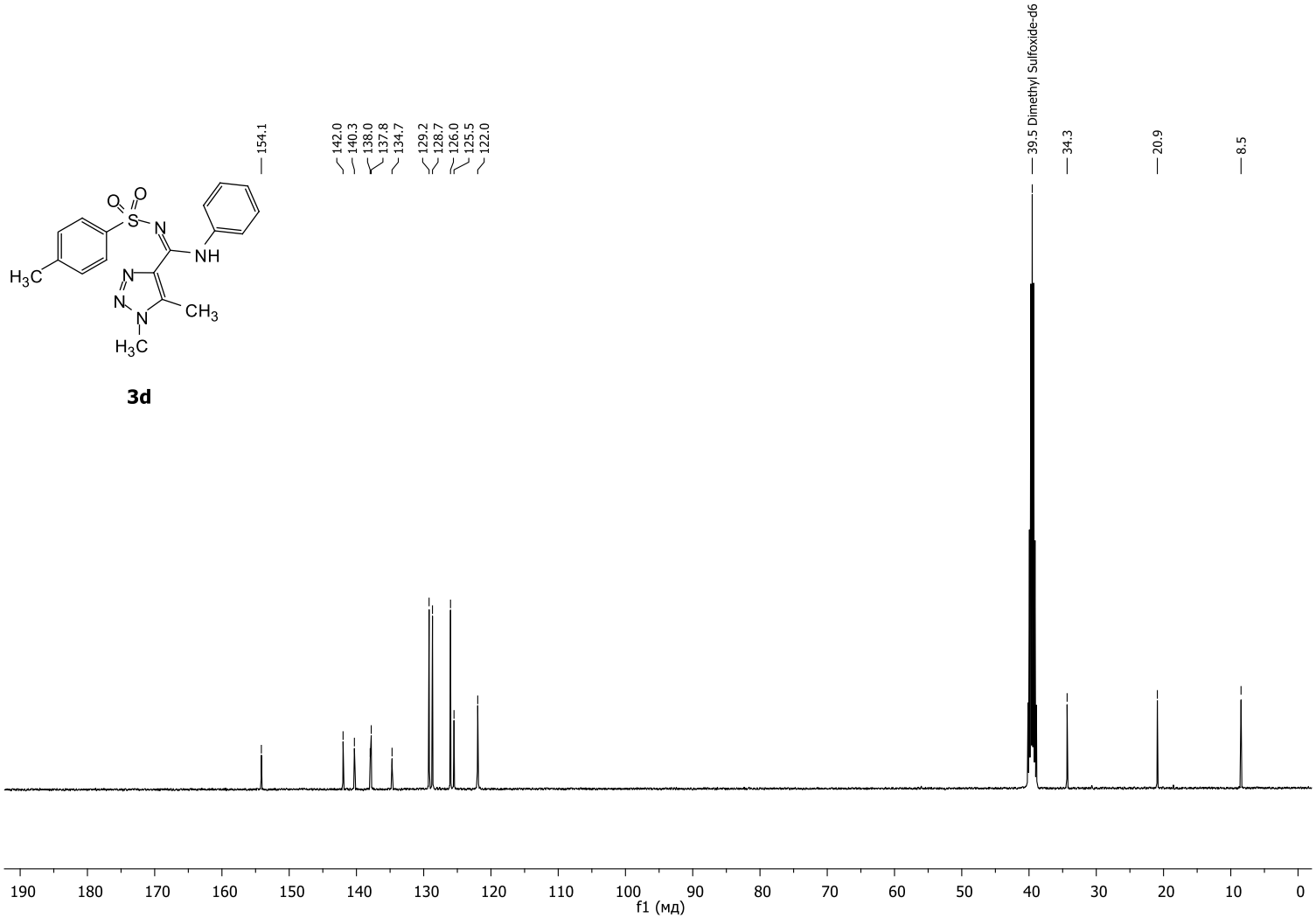


The ^{13}C NMR (100 MHz, DMSO-d_6) spectrum of compound **3c**.

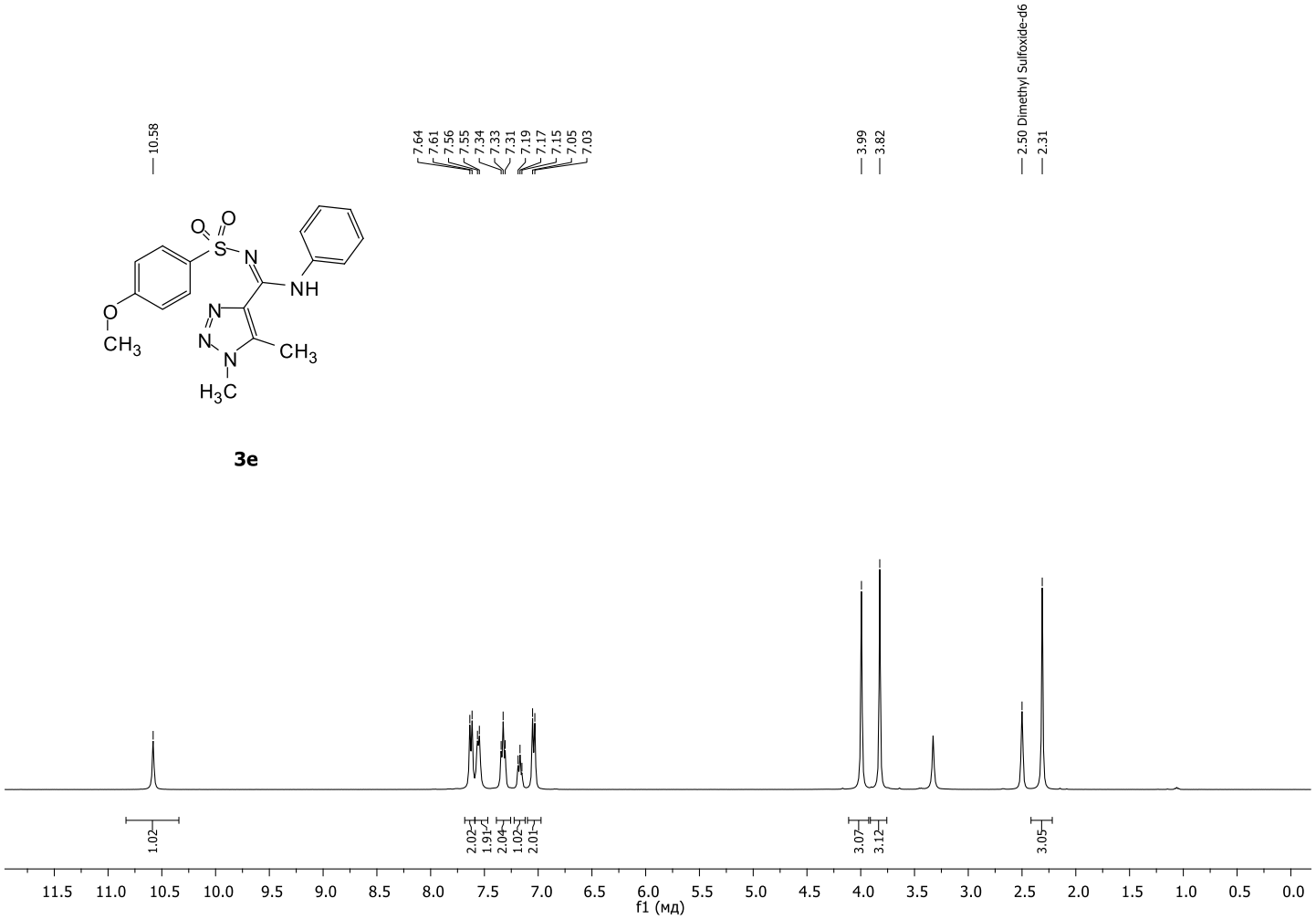


3d

The ^{1}H NMR (400 MHz, DMSO-d_6) spectrum of compound **3d**.

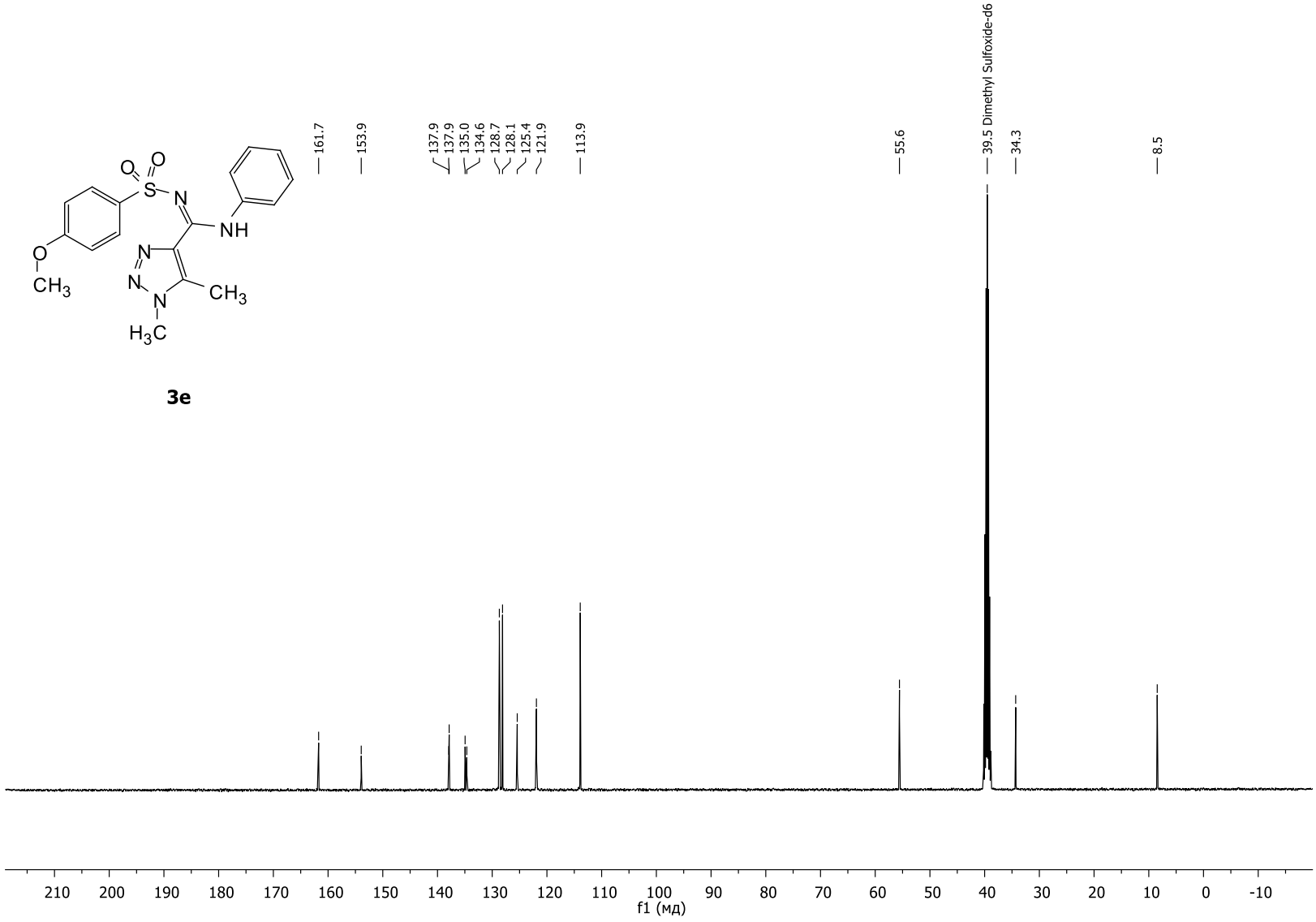


The ^{13}C NMR (100 MHz, DMSO-d_6) spectrum of compound **3d**.

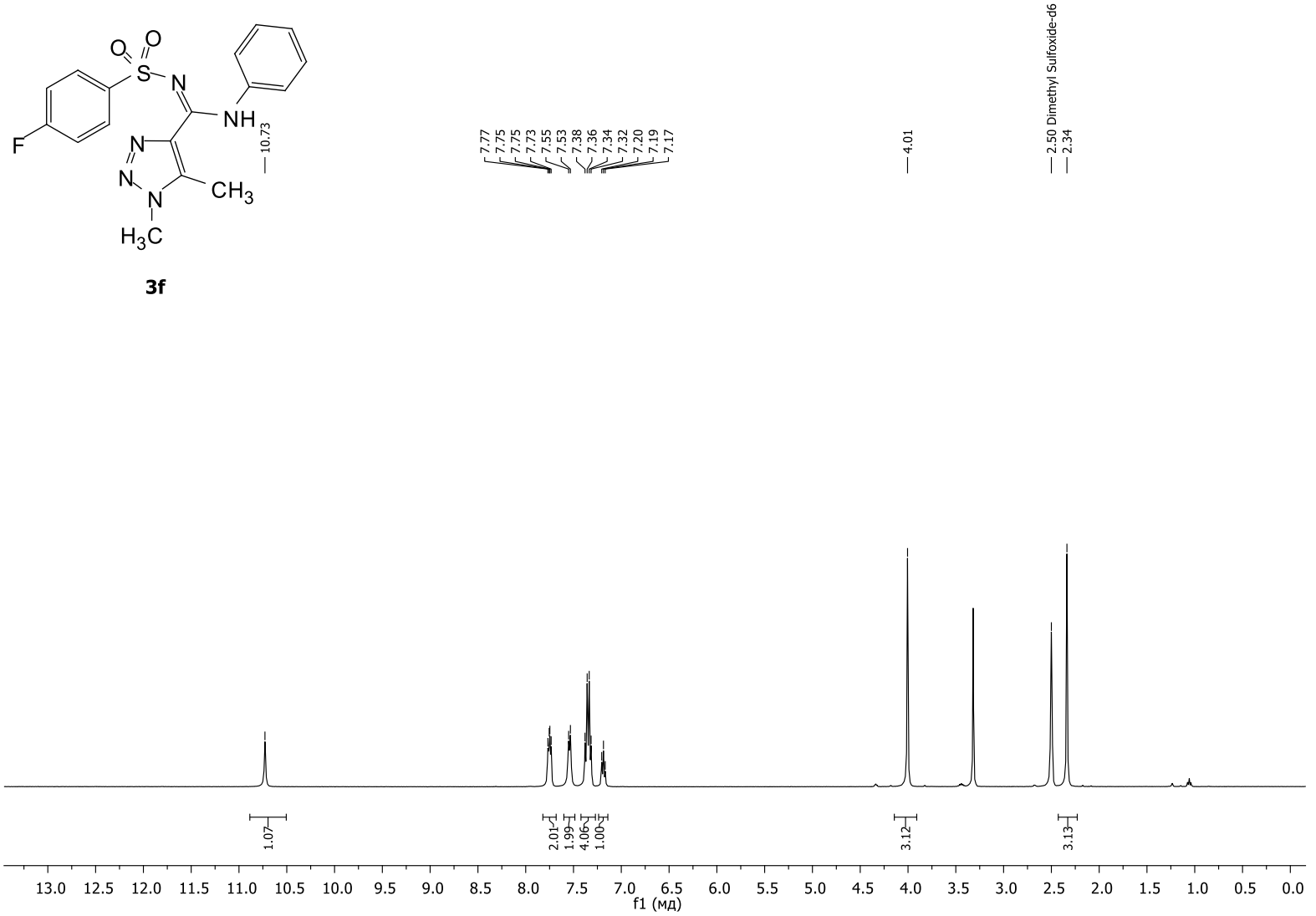


3e

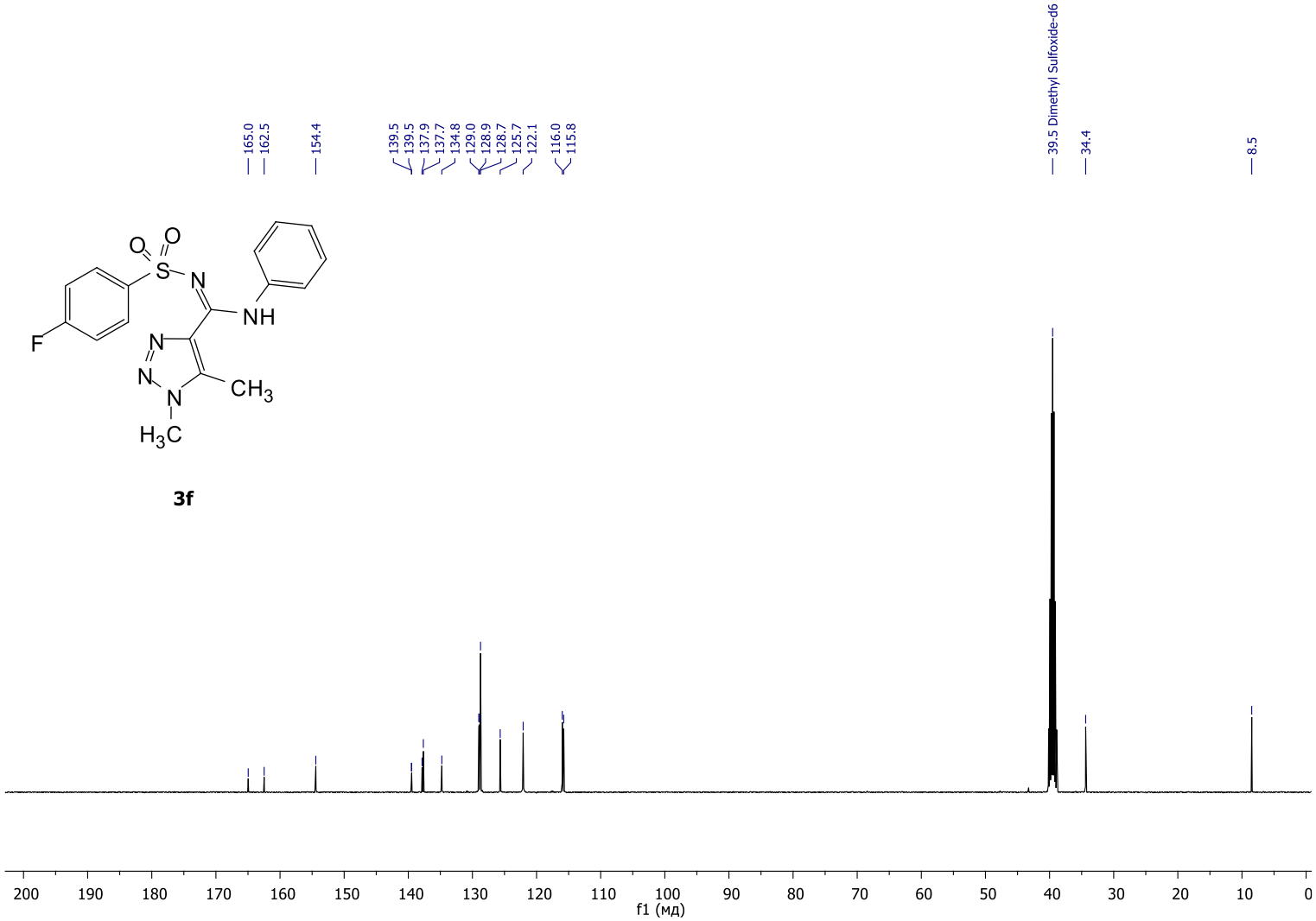
The ^{1}H NMR (400 MHz, DMSO-d_6) spectrum of compound **3e**.



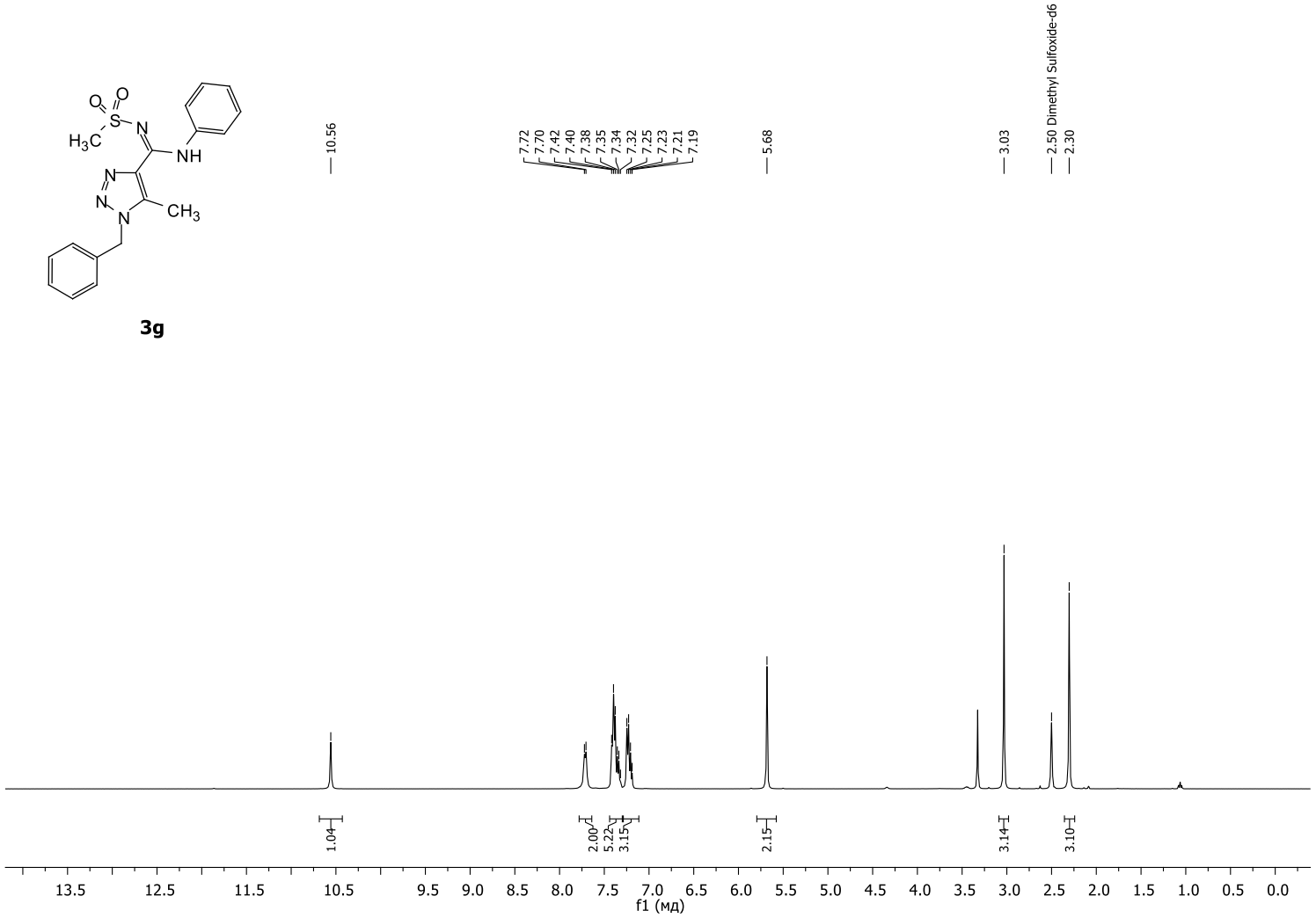
The ^{13}C NMR (100 MHz, DMSO-d_6) spectrum of compound **3e**.



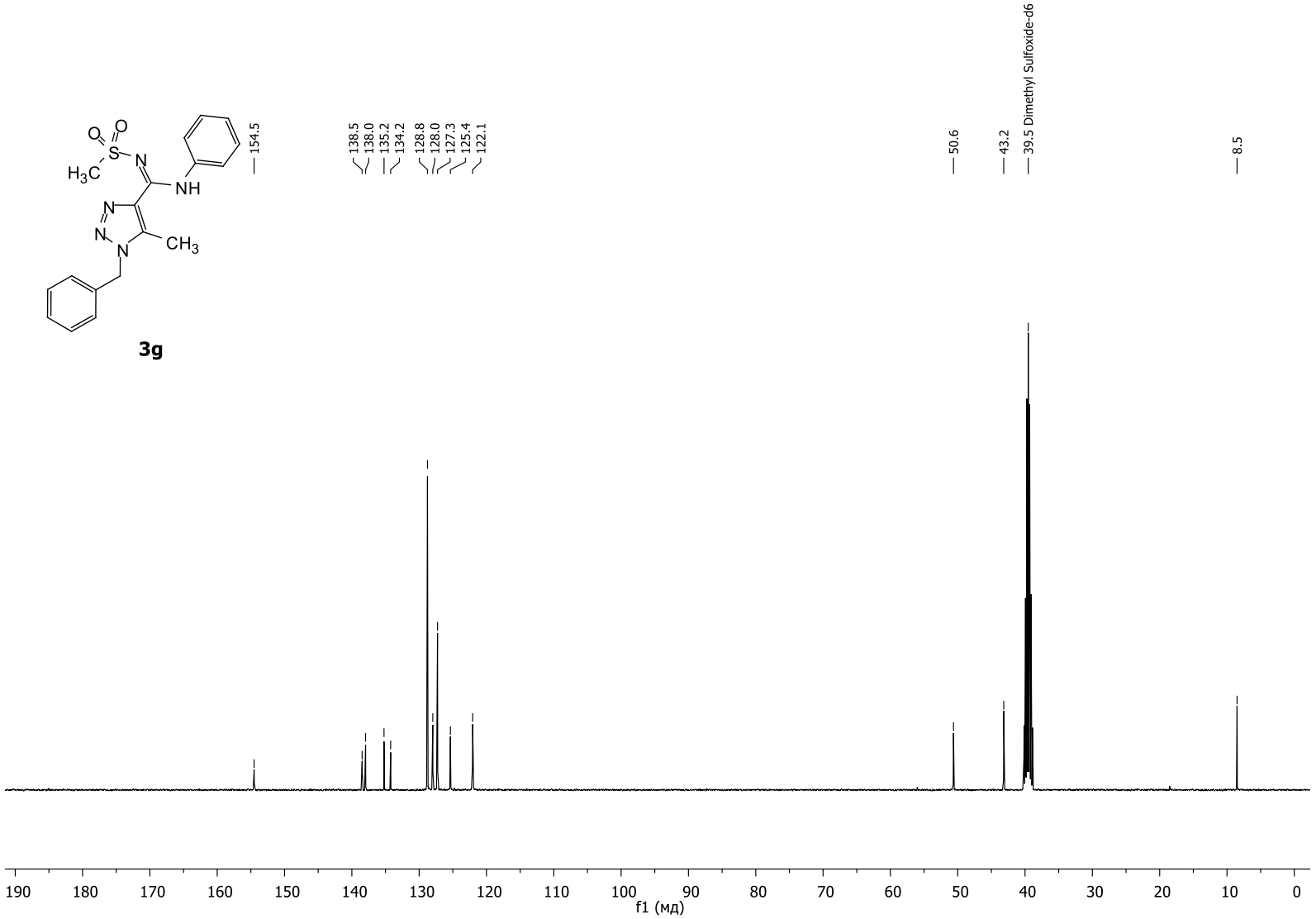
The ^{1}H NMR (400 MHz, DMSO-d_6) spectrum of compound **3f**.



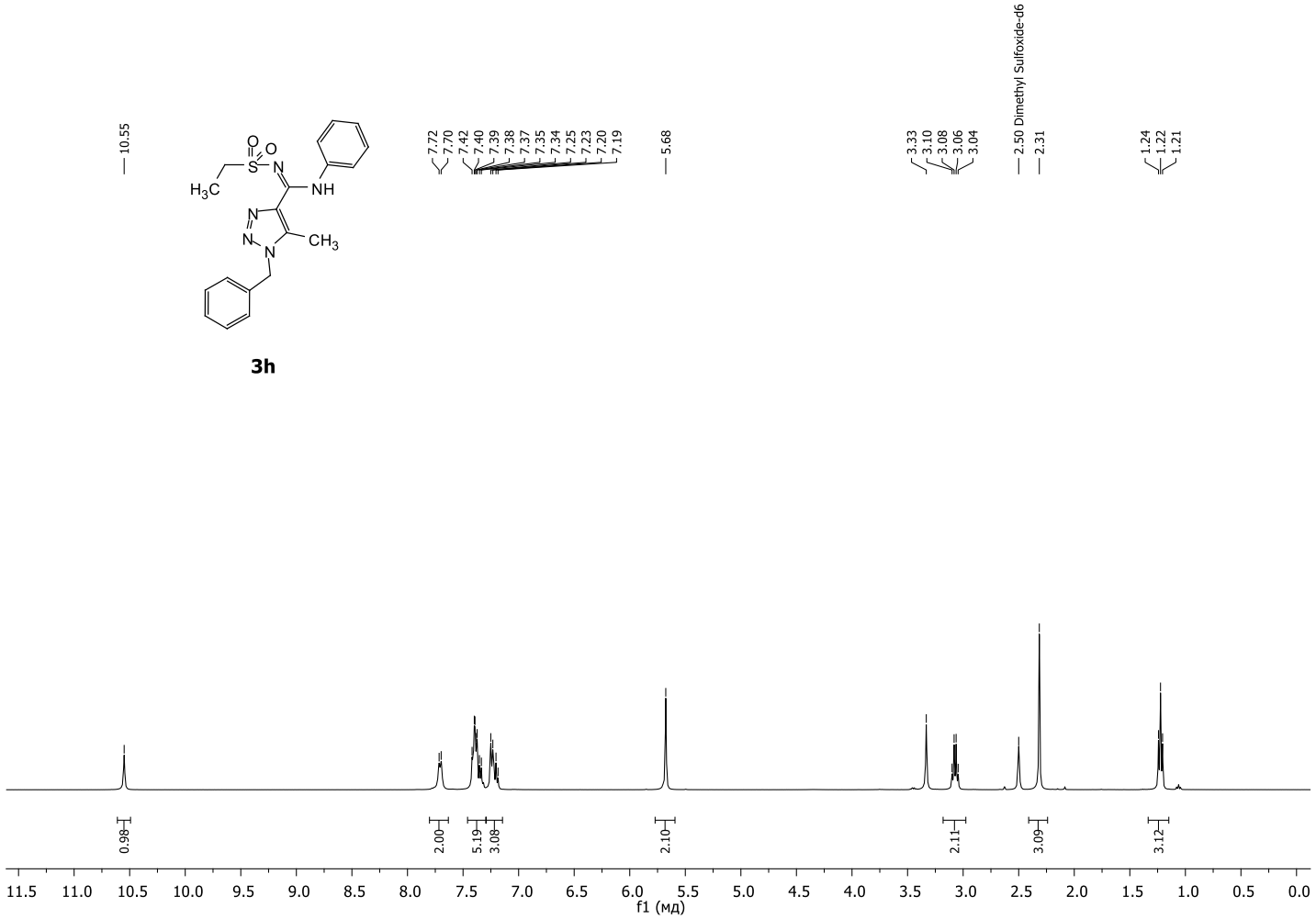
The ^{13}C NMR (100 MHz, DMSO-d_6) spectrum of compound **3f**.



The ^{1}H NMR (400 MHz, DMSO-d_6) spectrum of compound **3g**.

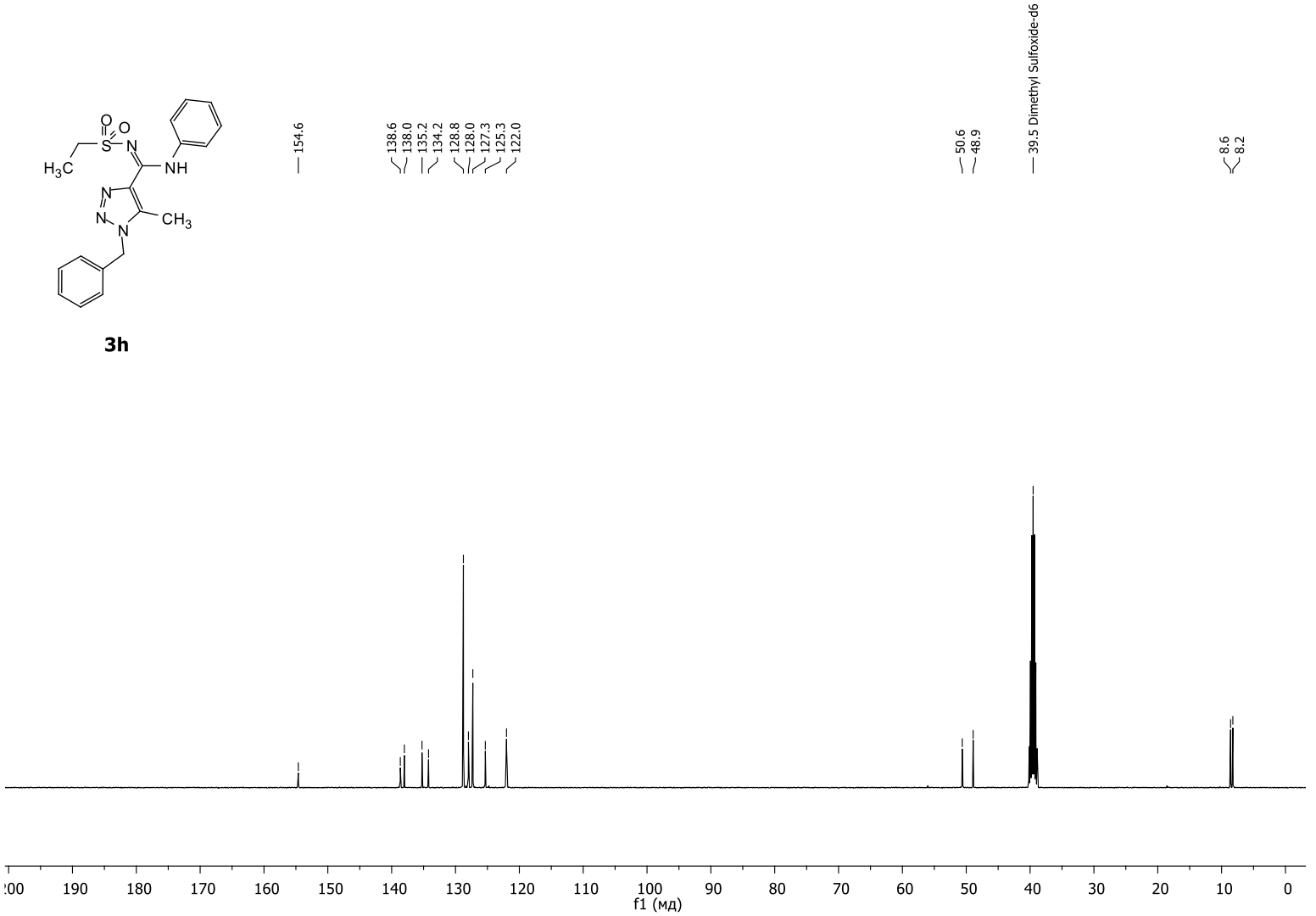


The ^{13}C NMR (100 MHz, DMSO-d_6) spectrum of compound **3g**.

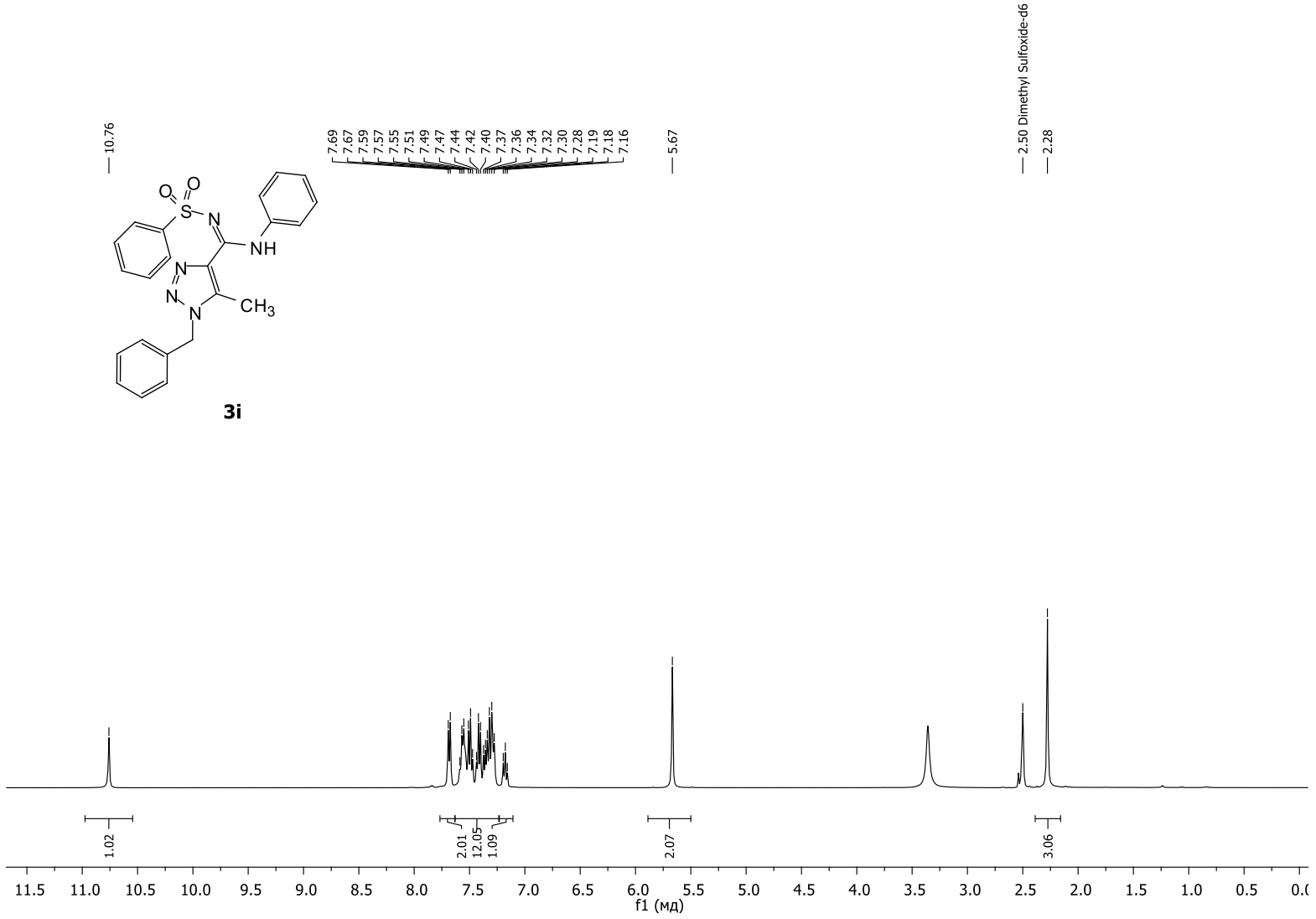


3h

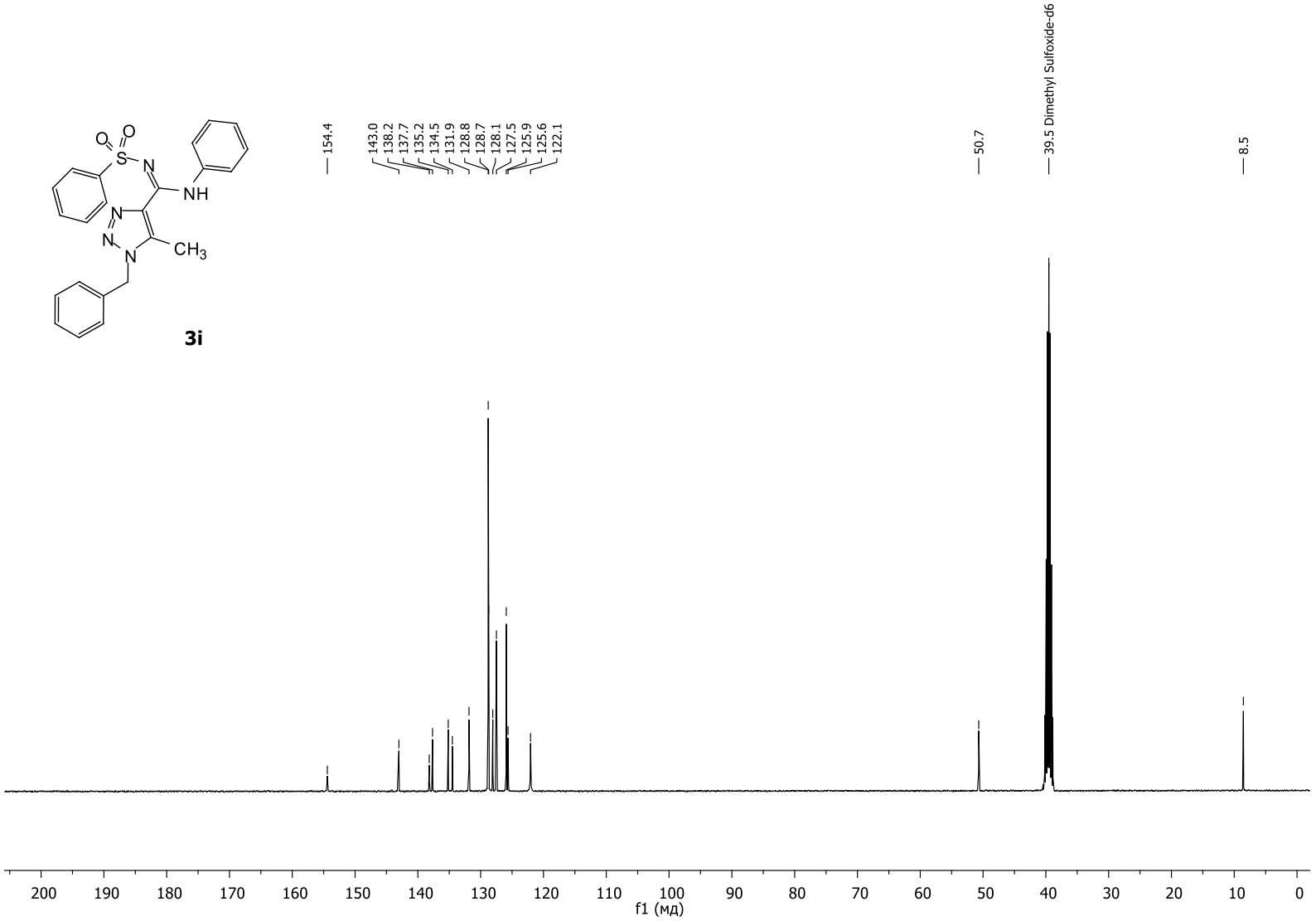
The ^{1}H NMR (400 MHz, DMSO-d_6) spectrum of compound **3h**.



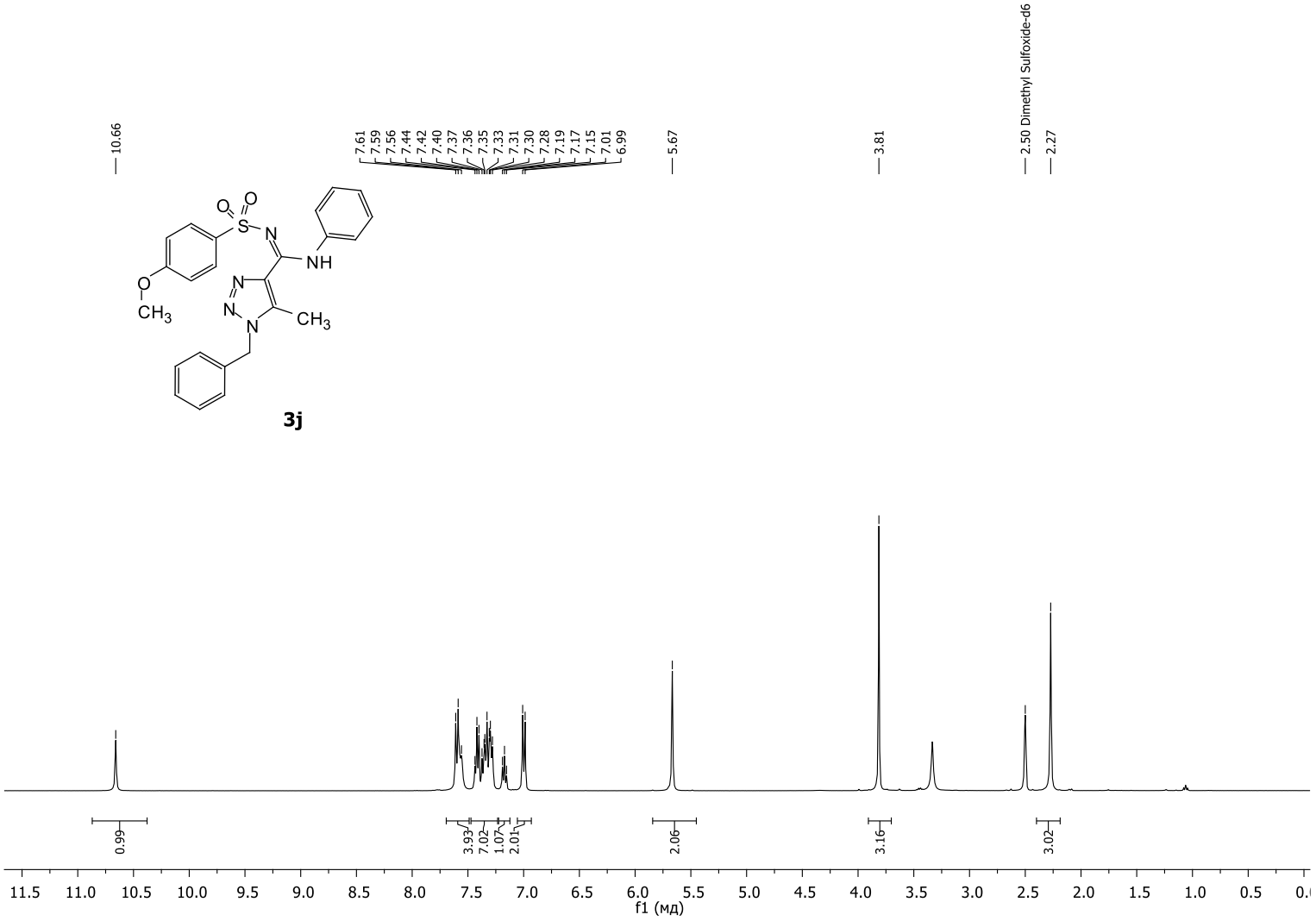
The ^{13}C NMR (100 MHz, DMSO-d_6) spectrum of compound **3h**.



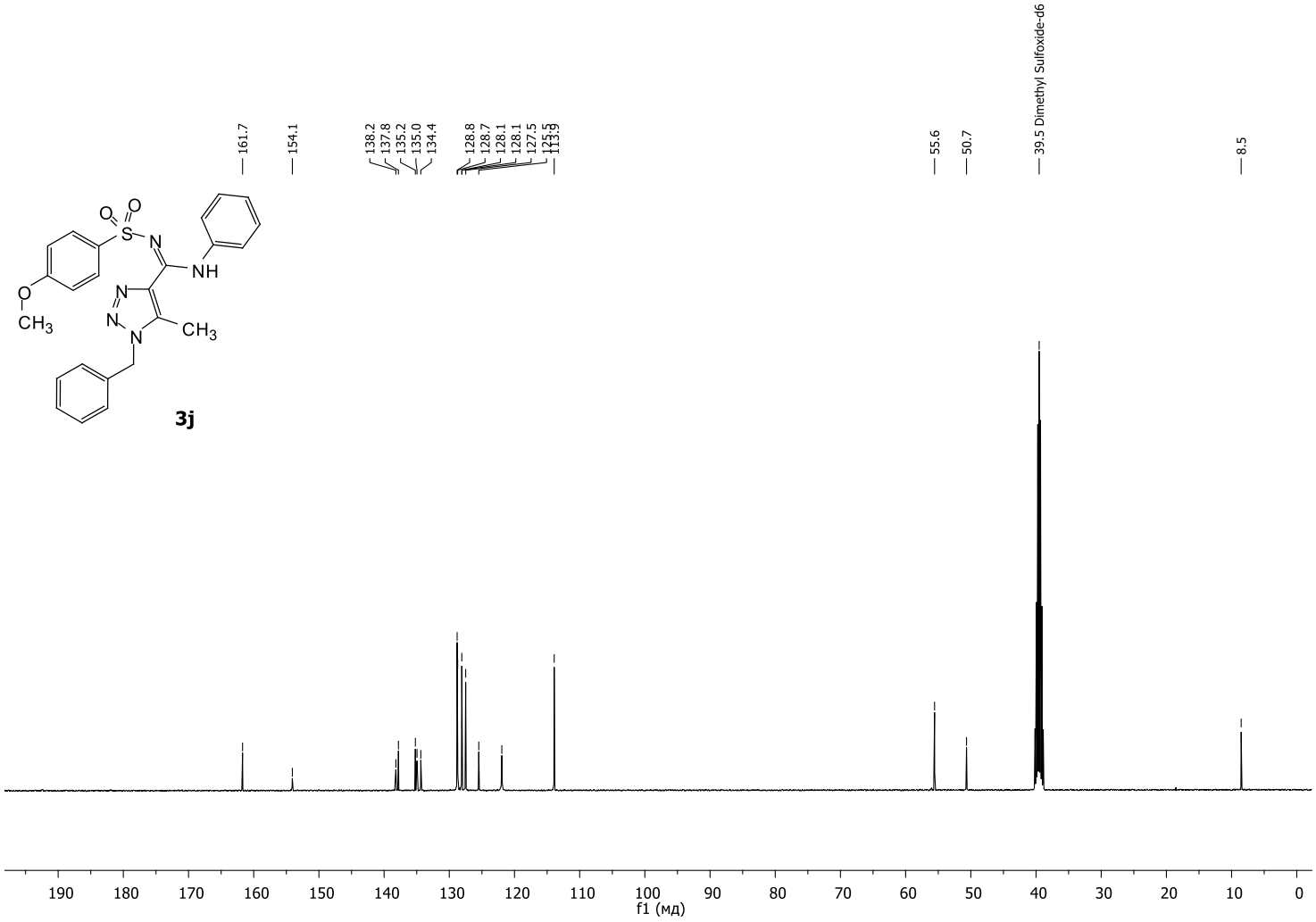
The ^{1}H NMR (400 MHz, DMSO-d_6) spectrum of compound **3i**.



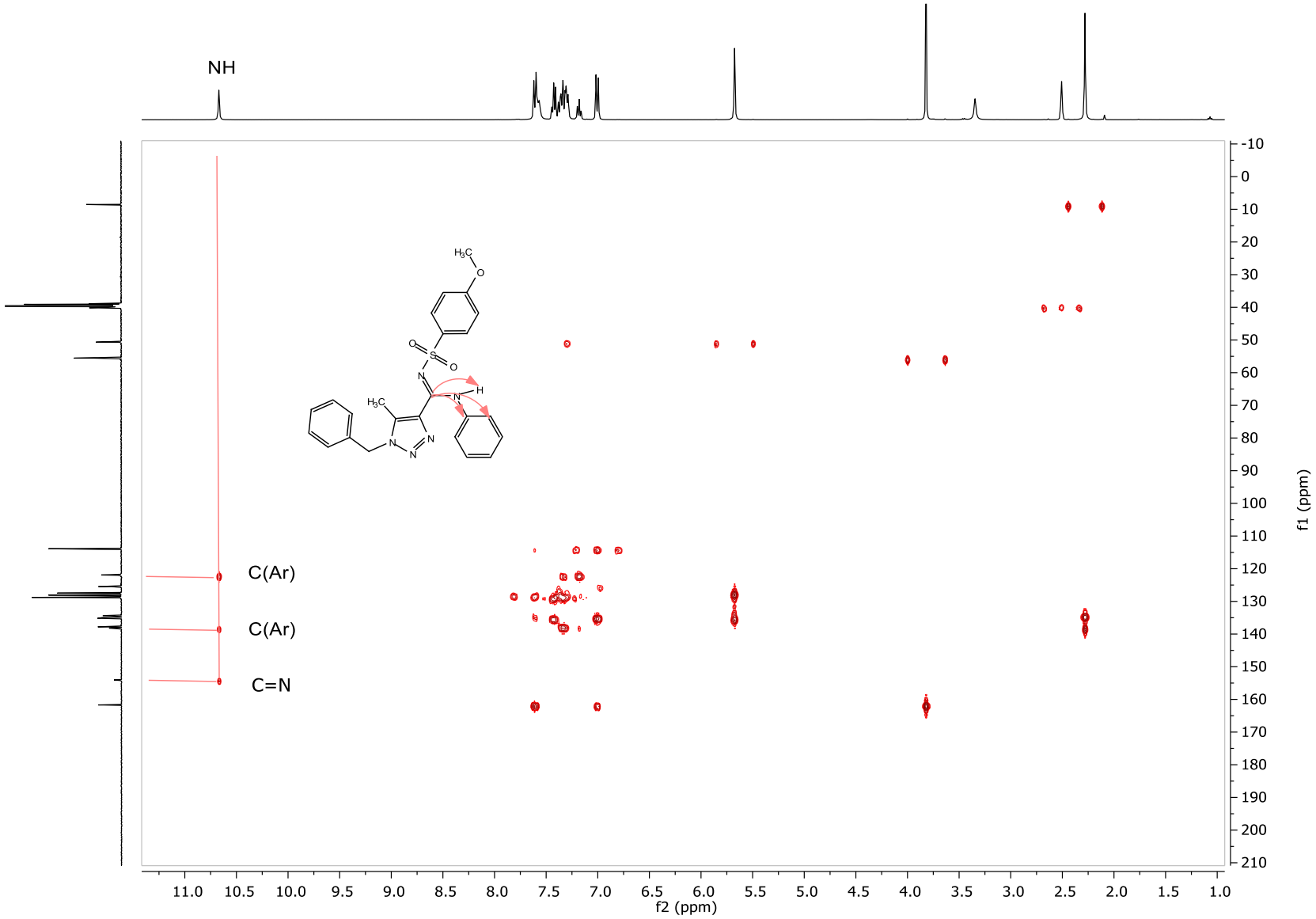
The ^{13}C NMR (100 MHz, DMSO-d_6) spectrum of compound **3i**.



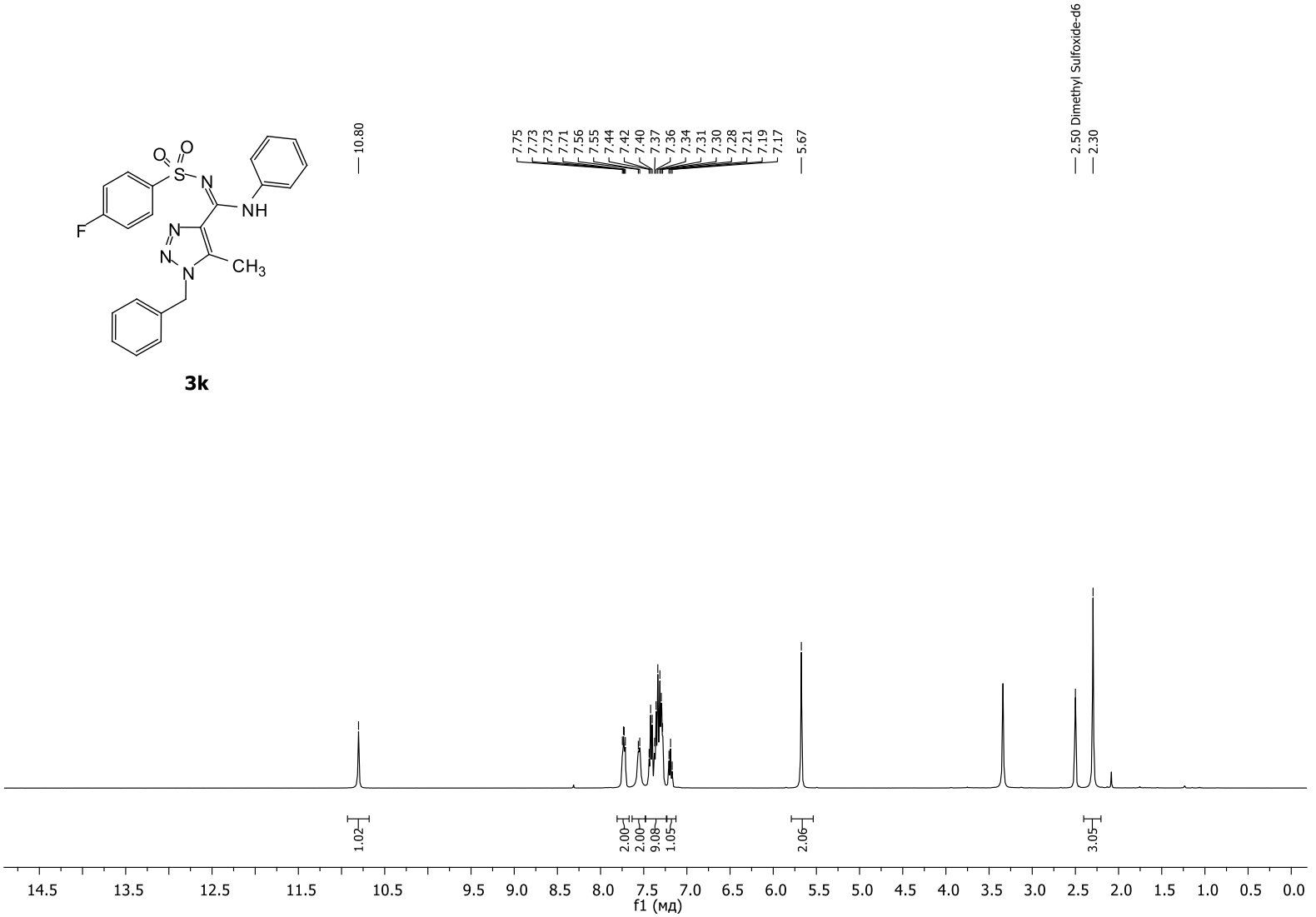
The ^{1}H NMR (400 MHz, DMSO-d_6) spectrum of compound **3j**.



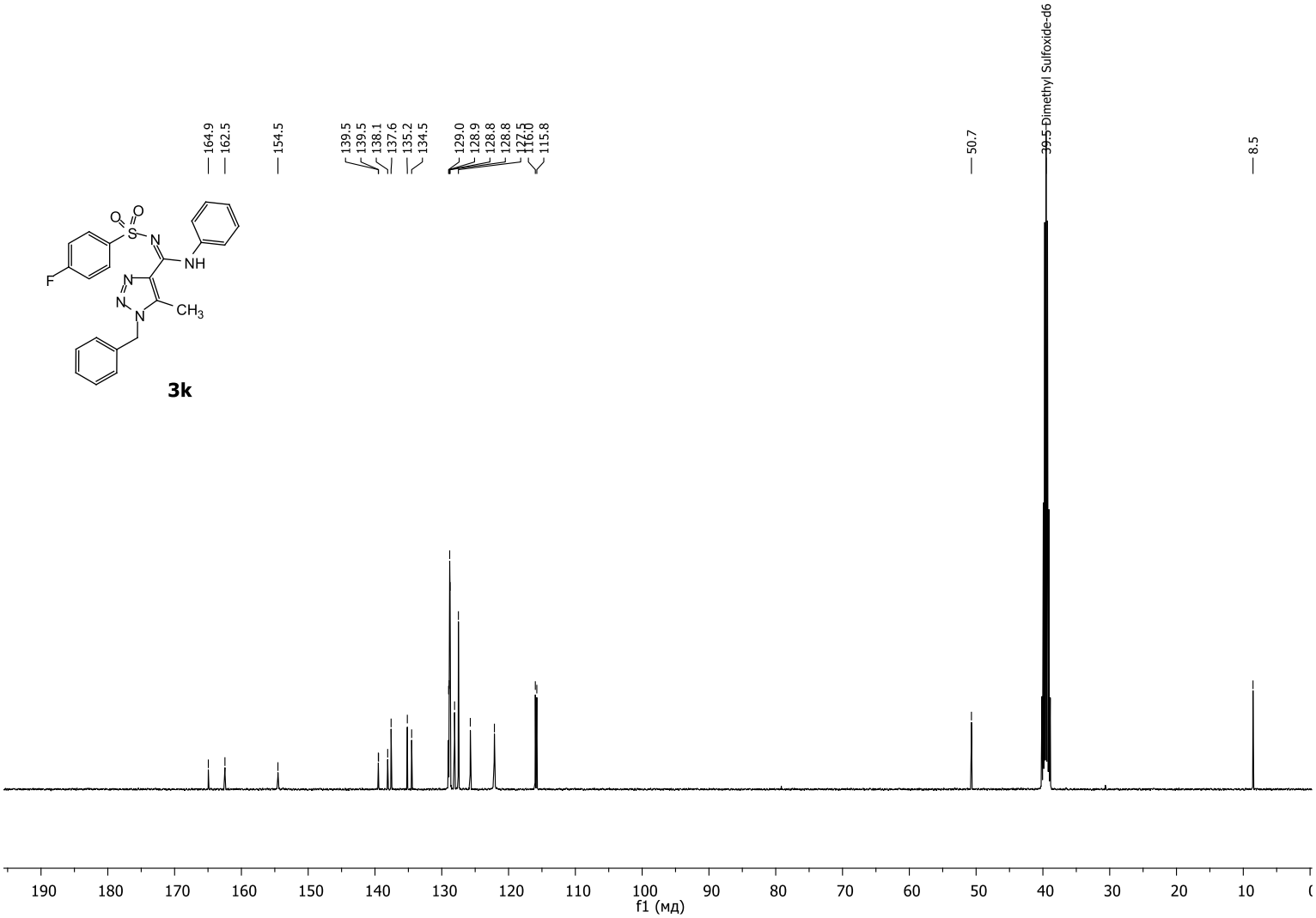
The ^{13}C NMR (100 MHz, DMSO-d_6) spectrum of compound **3j**.



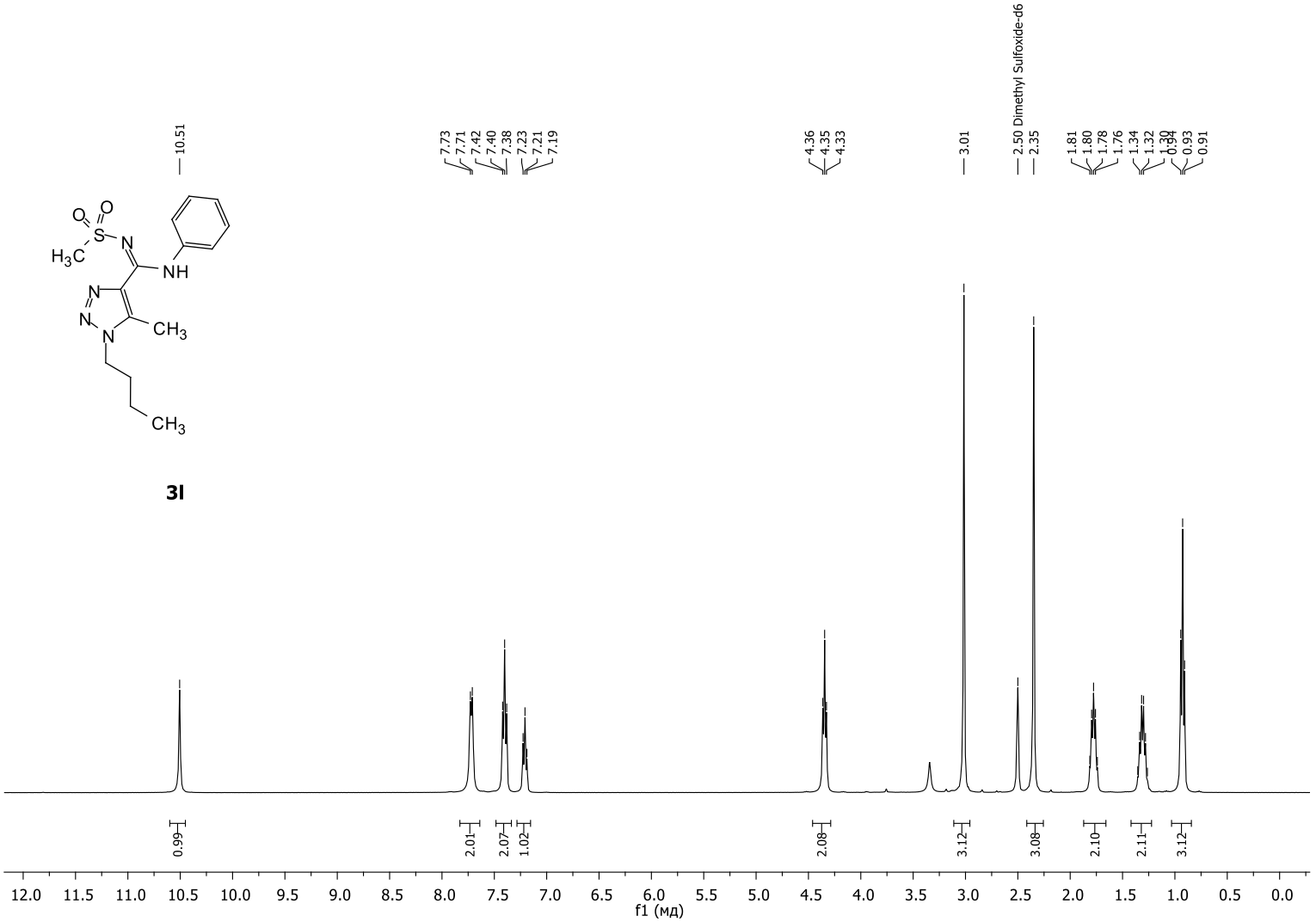
The HMBC NMR spectrum of compound **3j**.



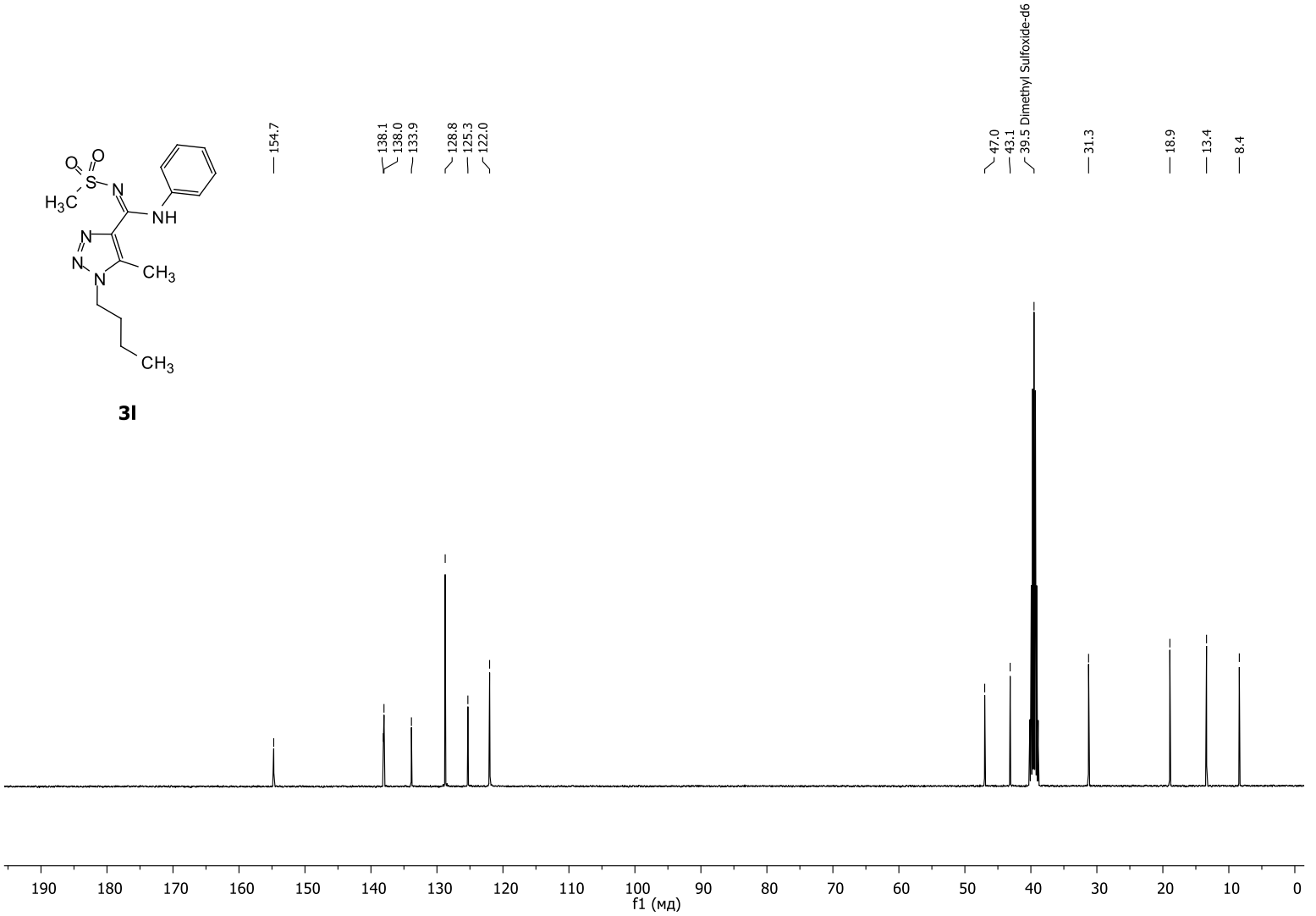
The ^{1}H NMR (400 MHz, DMSO-d_6) spectrum of compound **3k**.



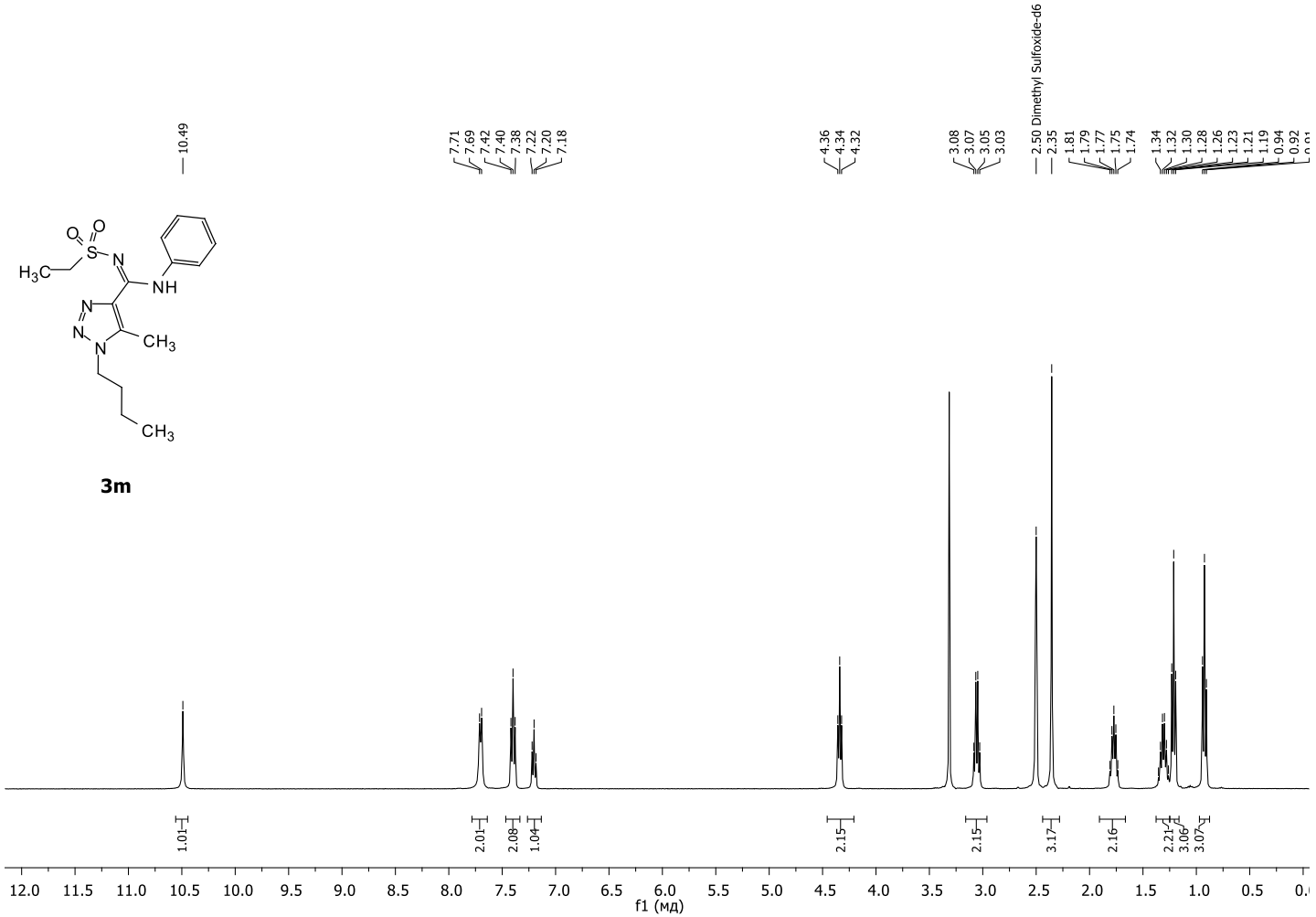
The ^{13}C NMR (100 MHz, DMSO-d_6) spectrum of compound **3k**.



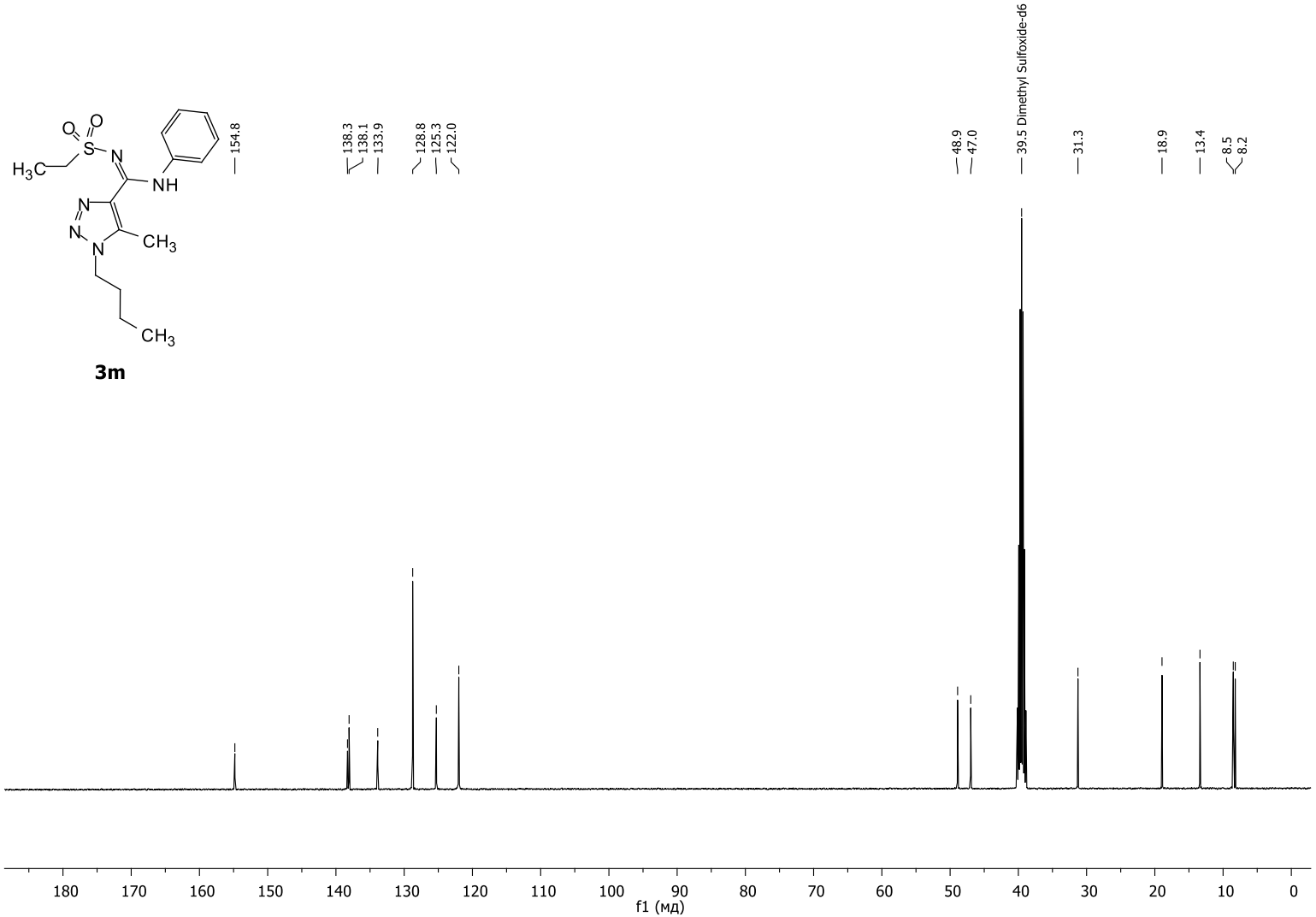
The ^{1}H NMR (400 MHz, DMSO-d_6) spectrum of compound **3l**.



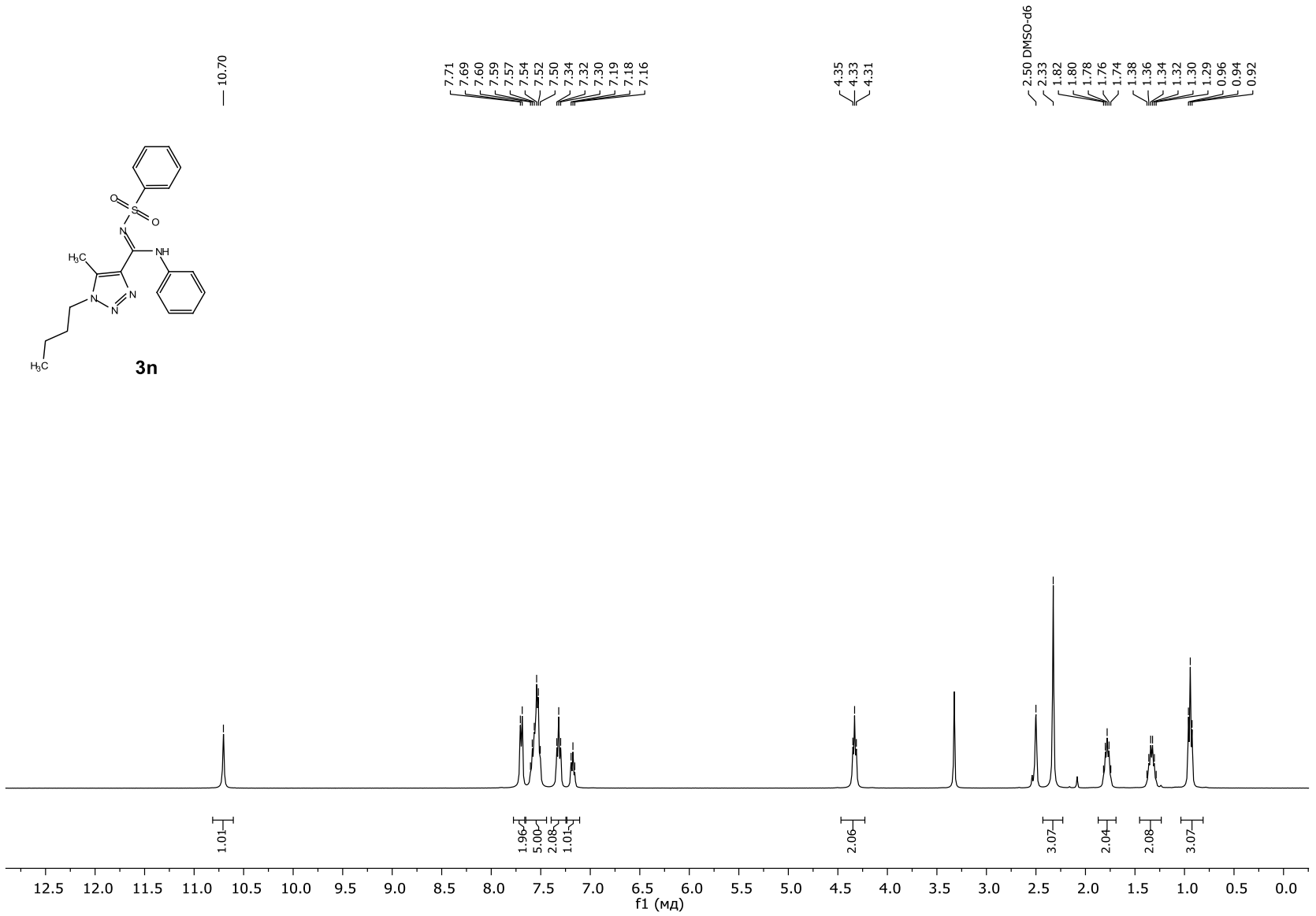
The ^{13}C NMR (100 MHz, DMSO-d_6) spectrum of compound **3l**.



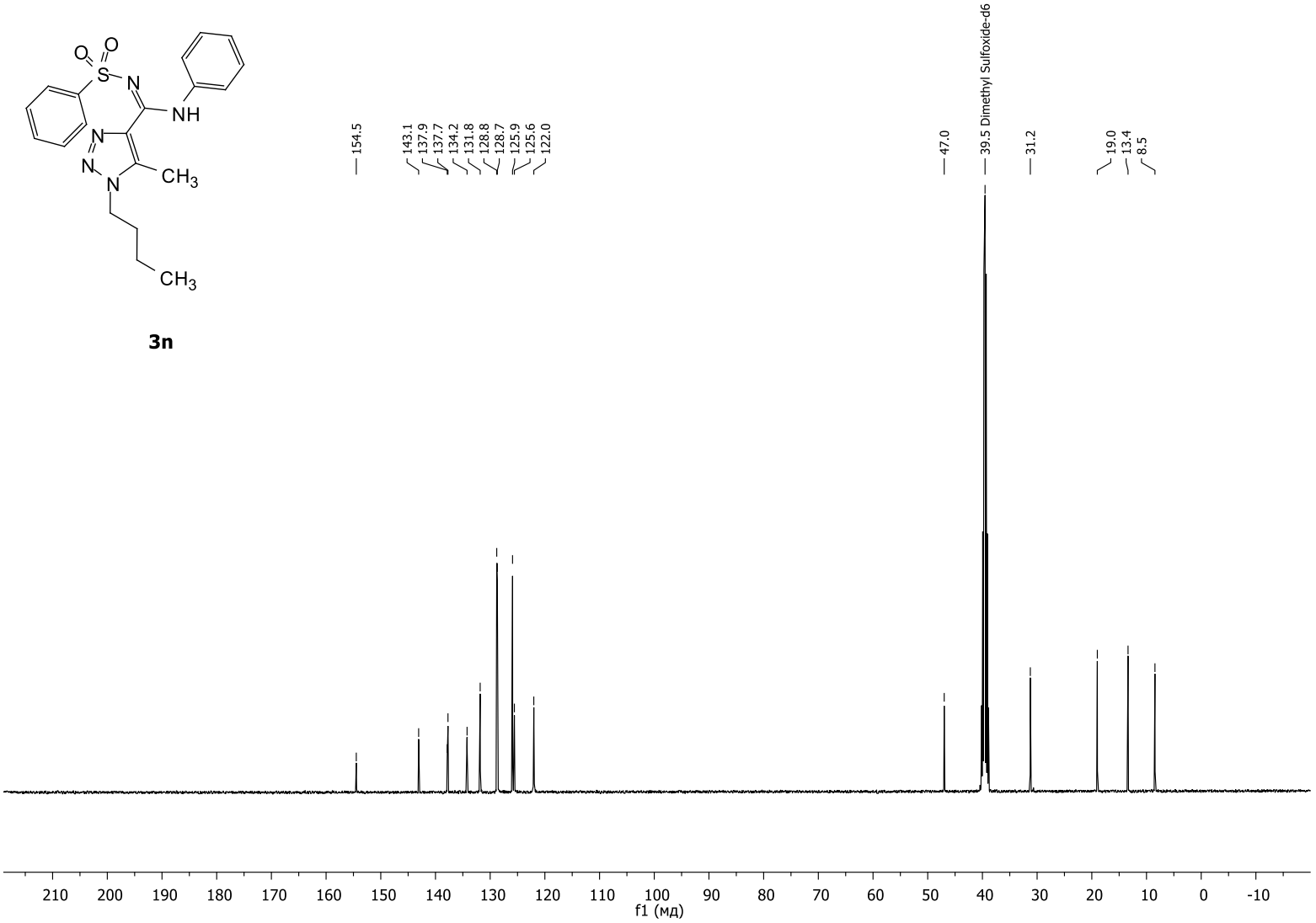
The ^{1}H NMR (400 MHz, DMSO-d_6) spectrum of compound **3m**.



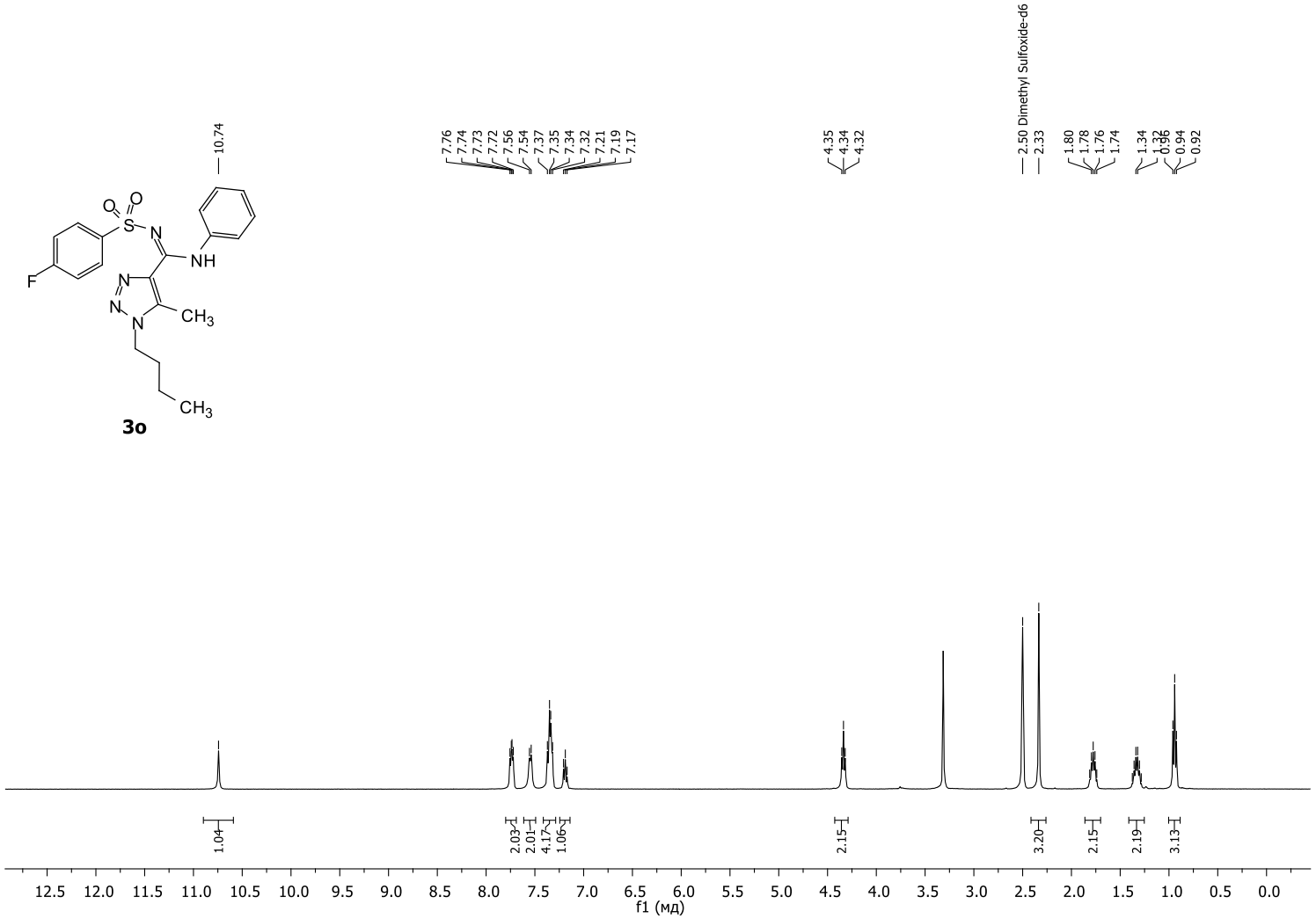
The ^{13}C NMR (100 MHz, DMSO-d_6) spectrum of compound **3m**.



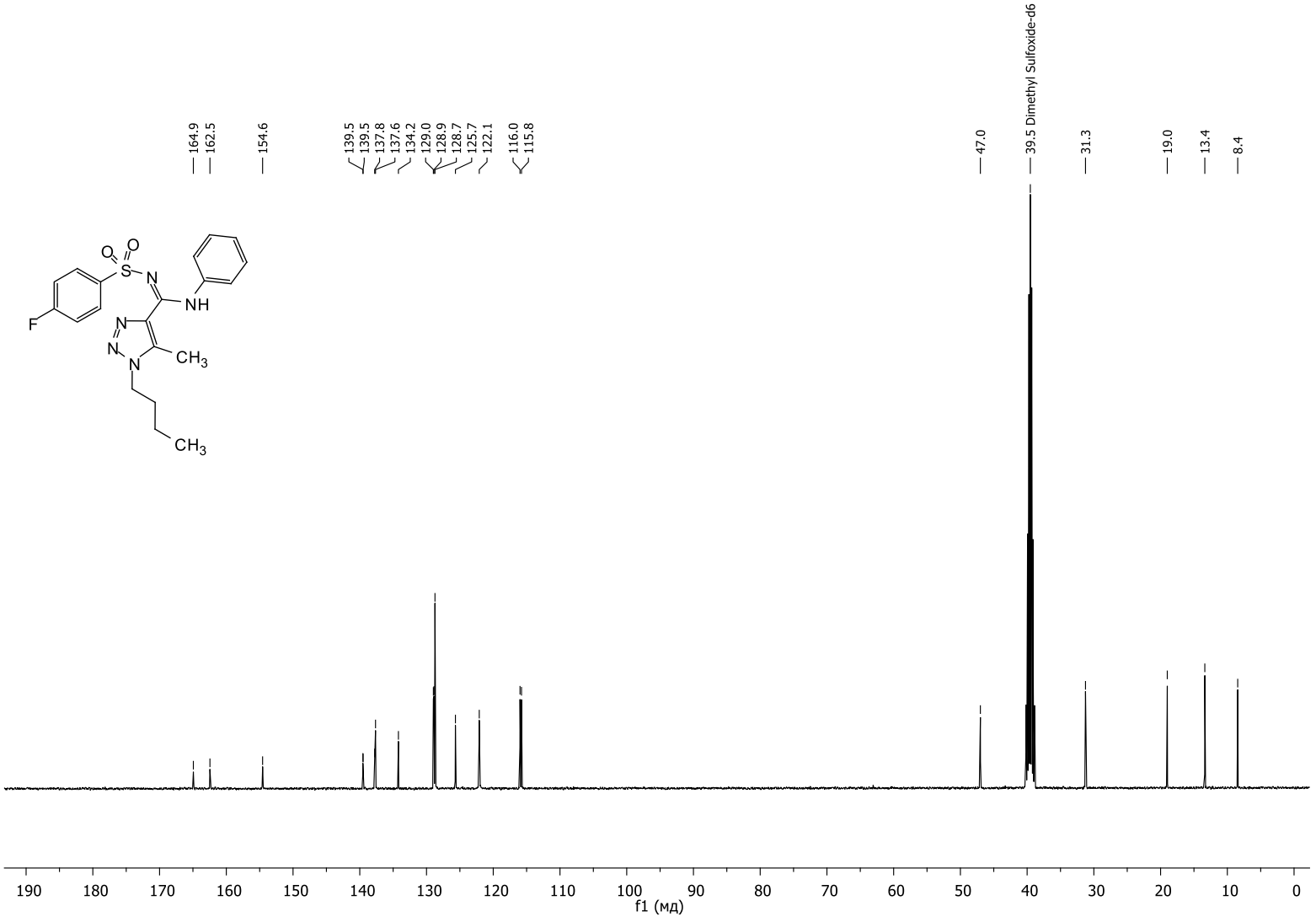
The ^{1}H NMR (400 MHz, DMSO-d_6) spectrum of compound **3n**.



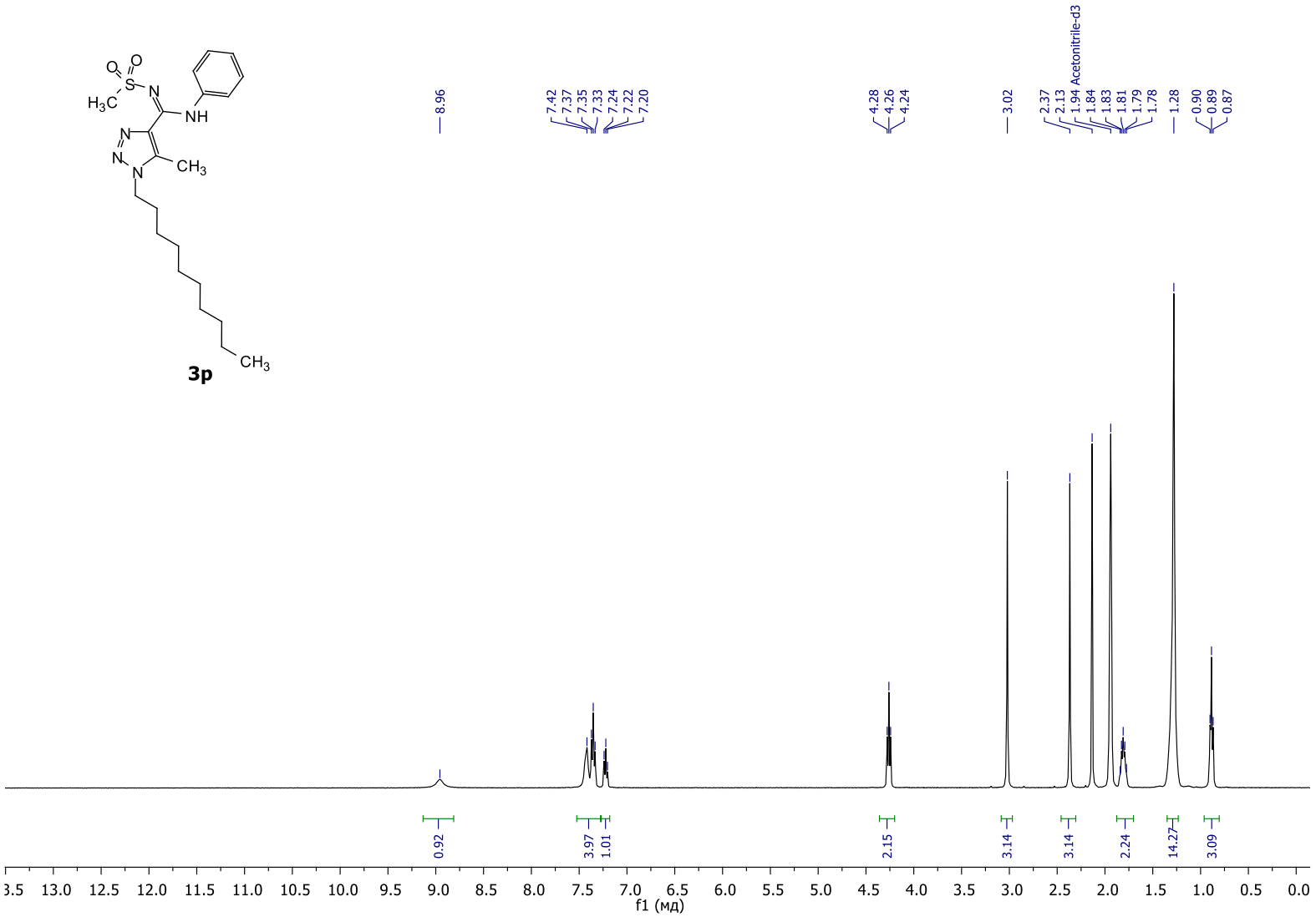
The ^{13}C NMR (100 MHz, DMSO-d_6) spectrum of compound **3n**.



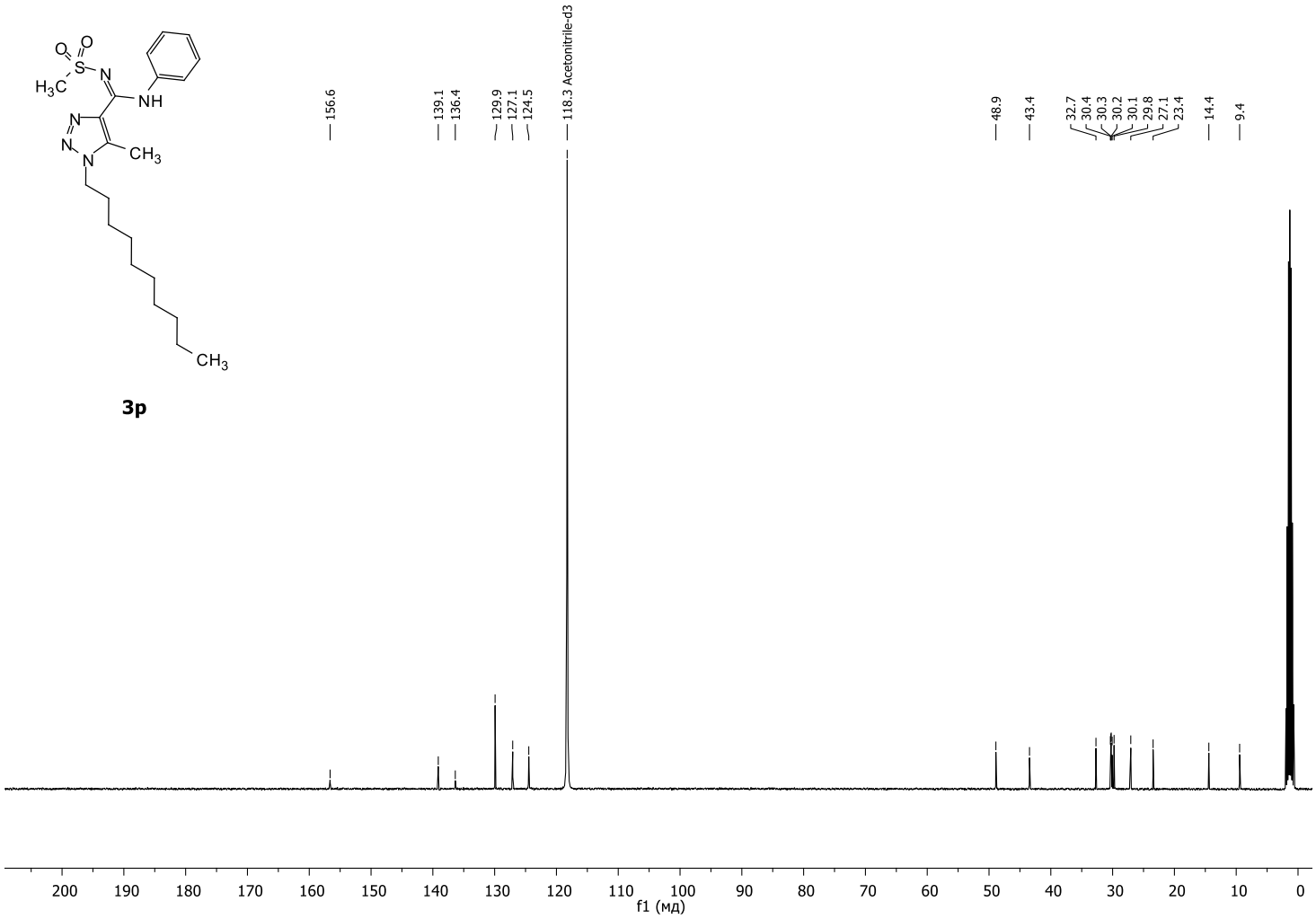
The ^{1}H NMR (400 MHz, DMSO-d_6) spectrum of compound **3o**.



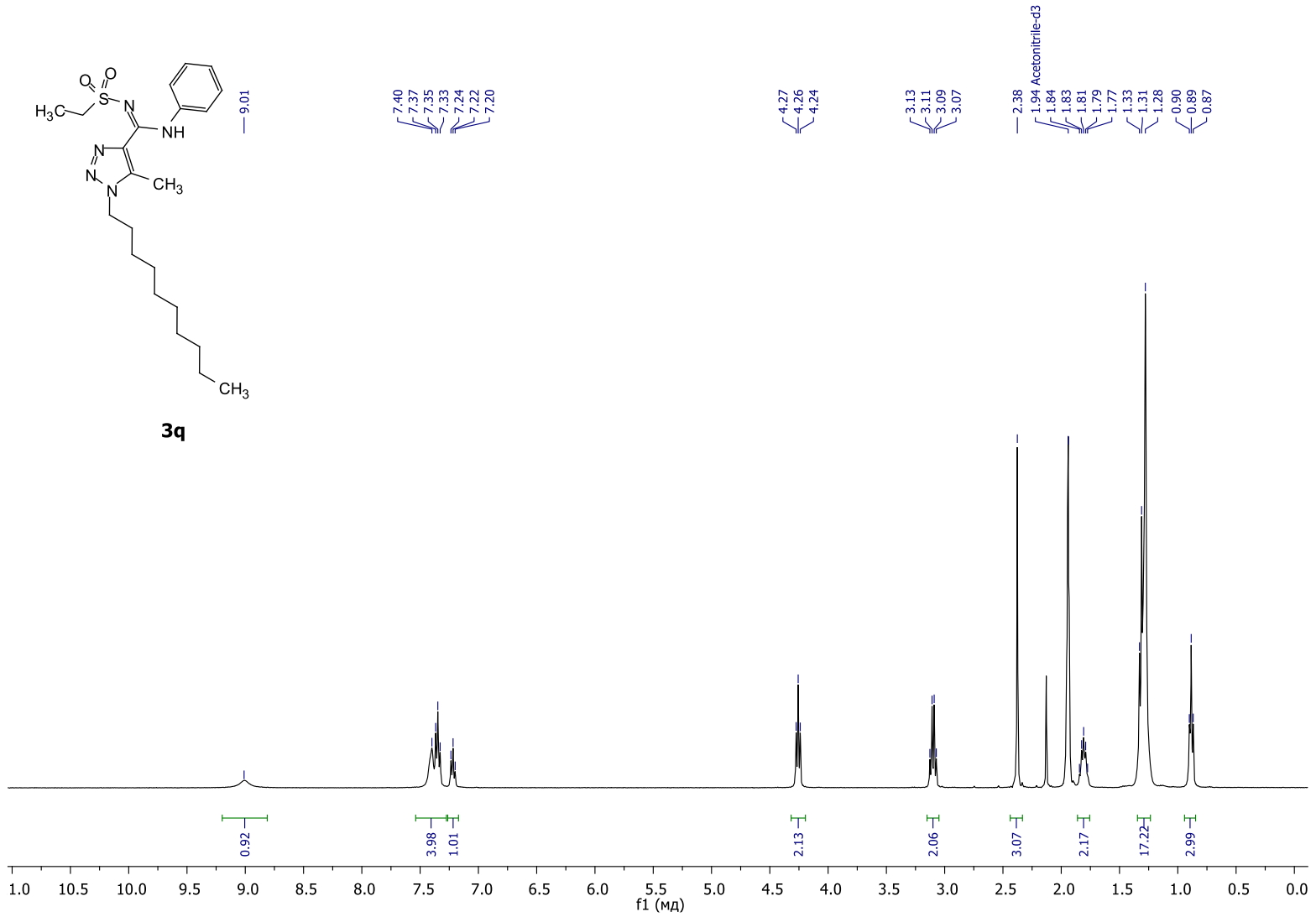
The ^{13}C NMR (100 MHz, DMSO-d_6) spectrum of compound **3o**.



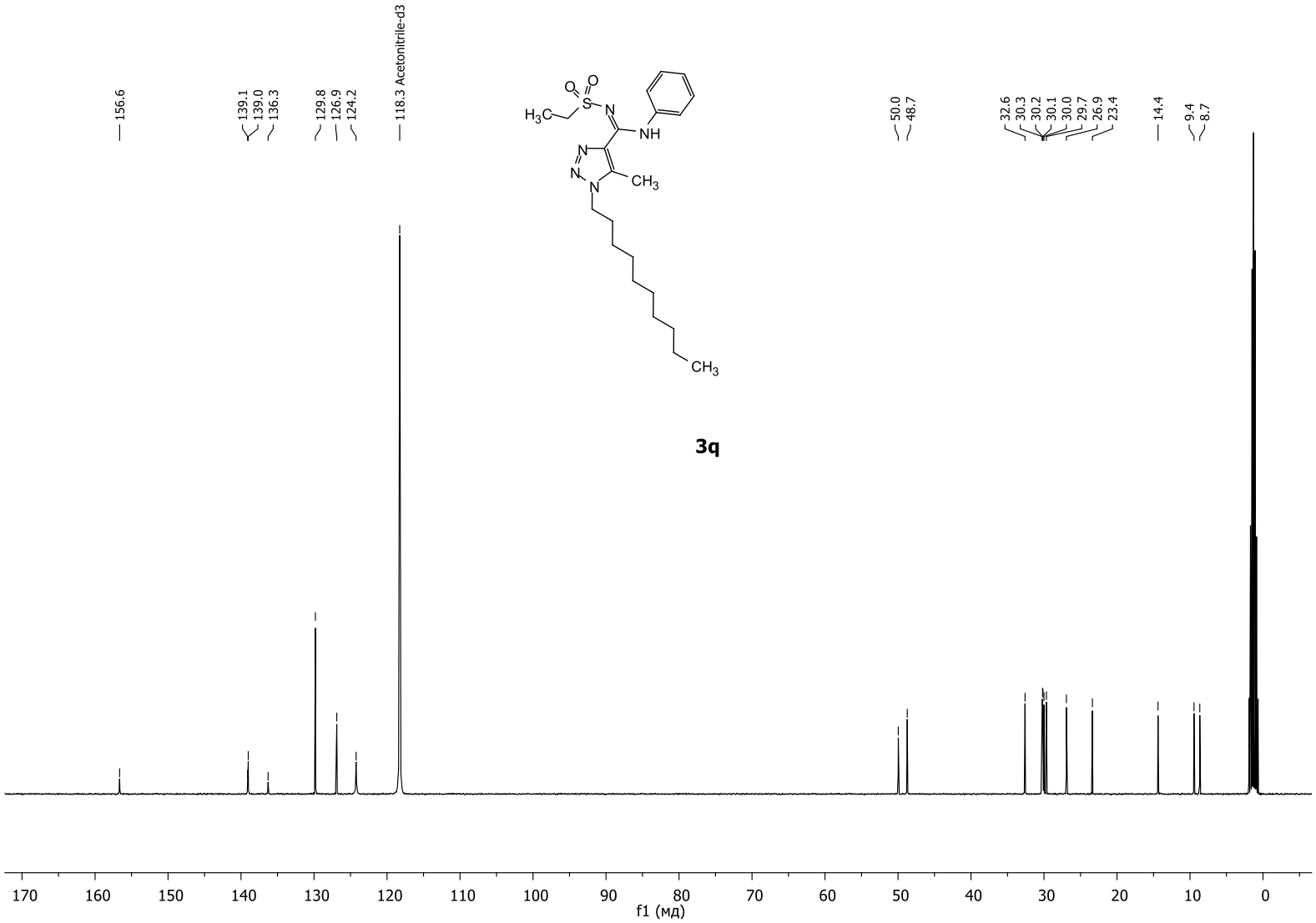
The ^{1}H NMR (400 MHz, CD_3CN, 40 °C) spectrum of compound **3p**.



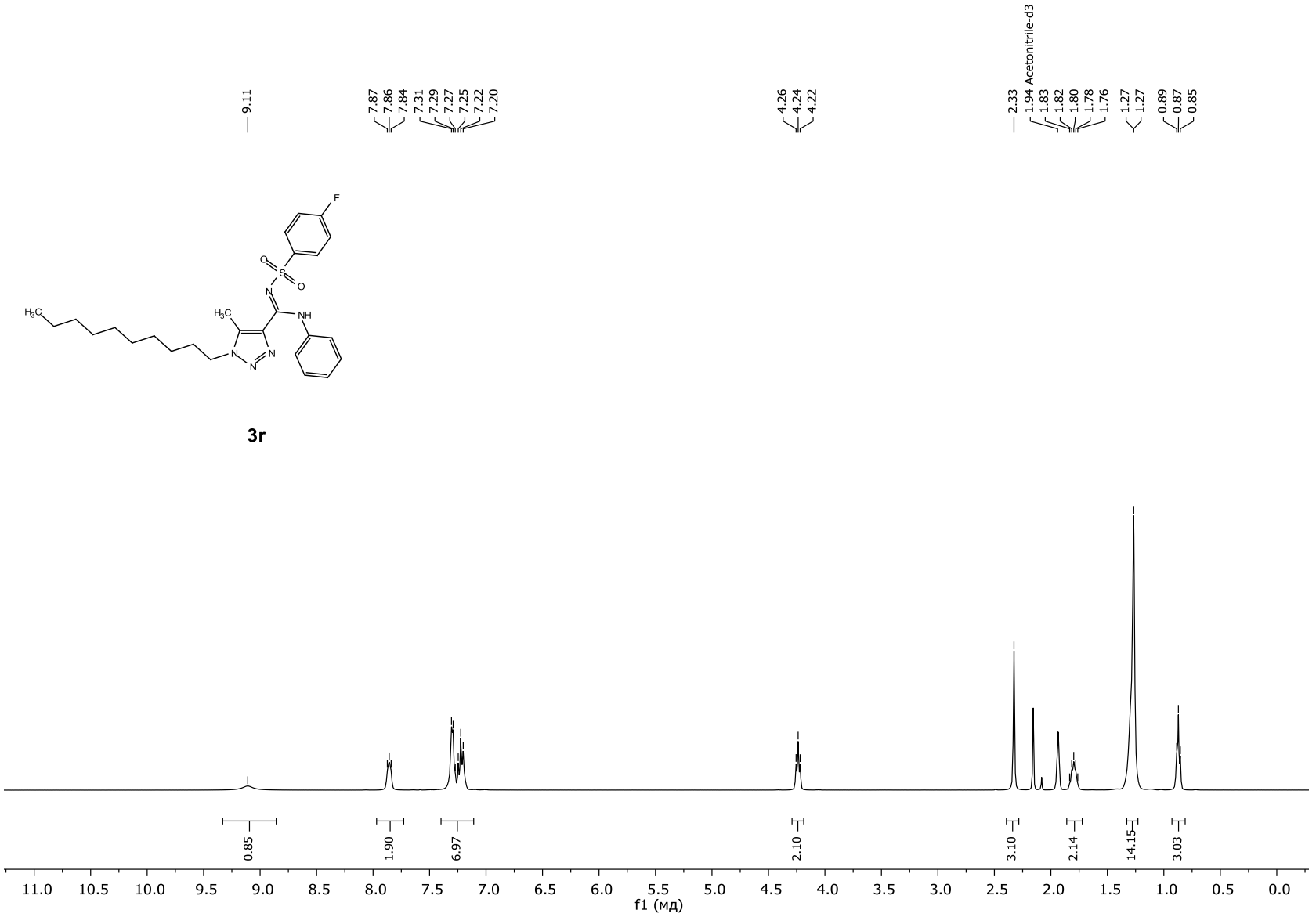
The ^{13}C NMR (100 MHz, CD_3CN, 40 $^{\circ}C$) spectrum of compound **3p**.



The ^{1}H NMR (400 MHz, CD_3CN) spectrum of compound **3q**.

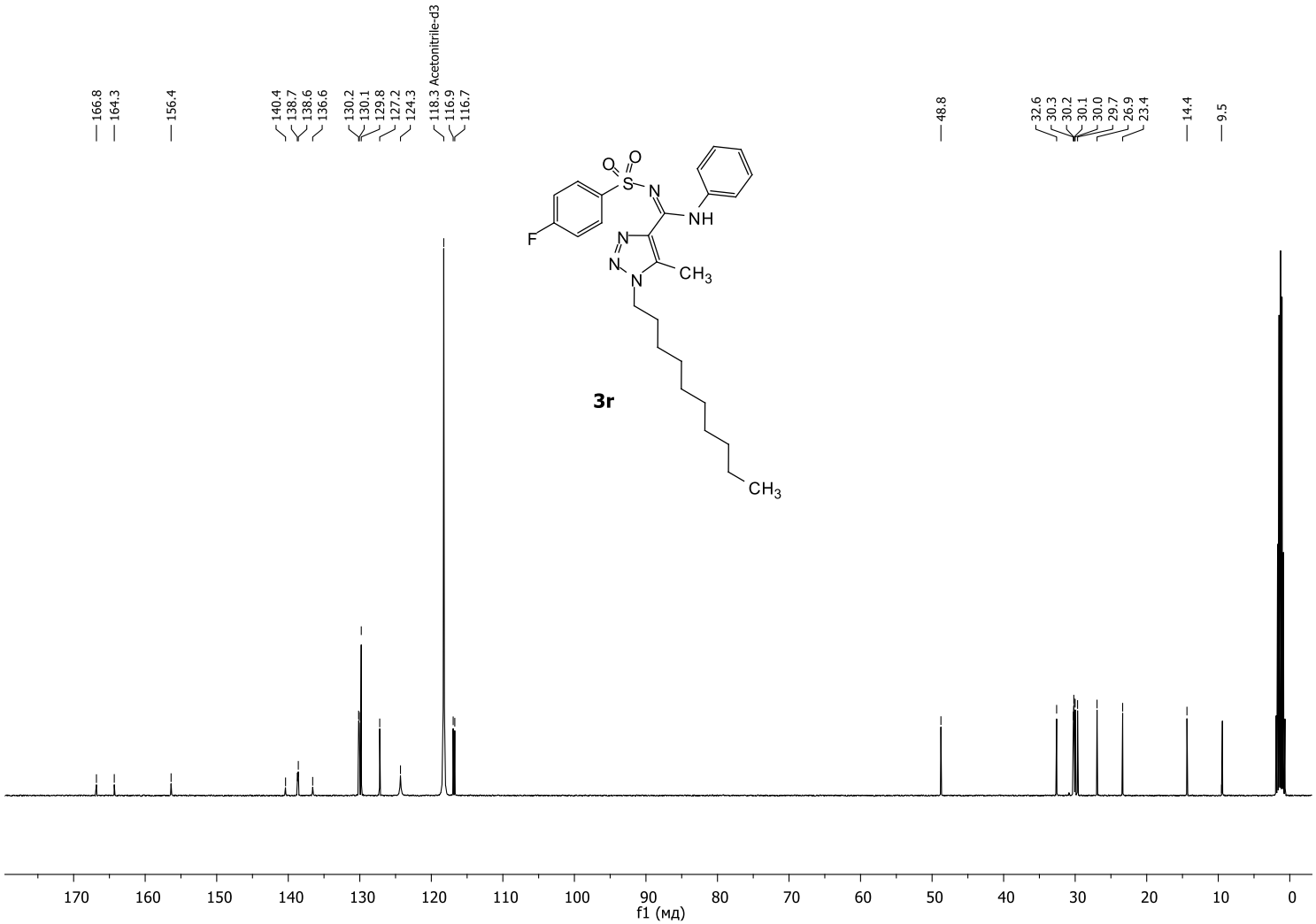


The ^{13}C NMR (100 MHz, CD_3CN) spectrum of compound **3q**.

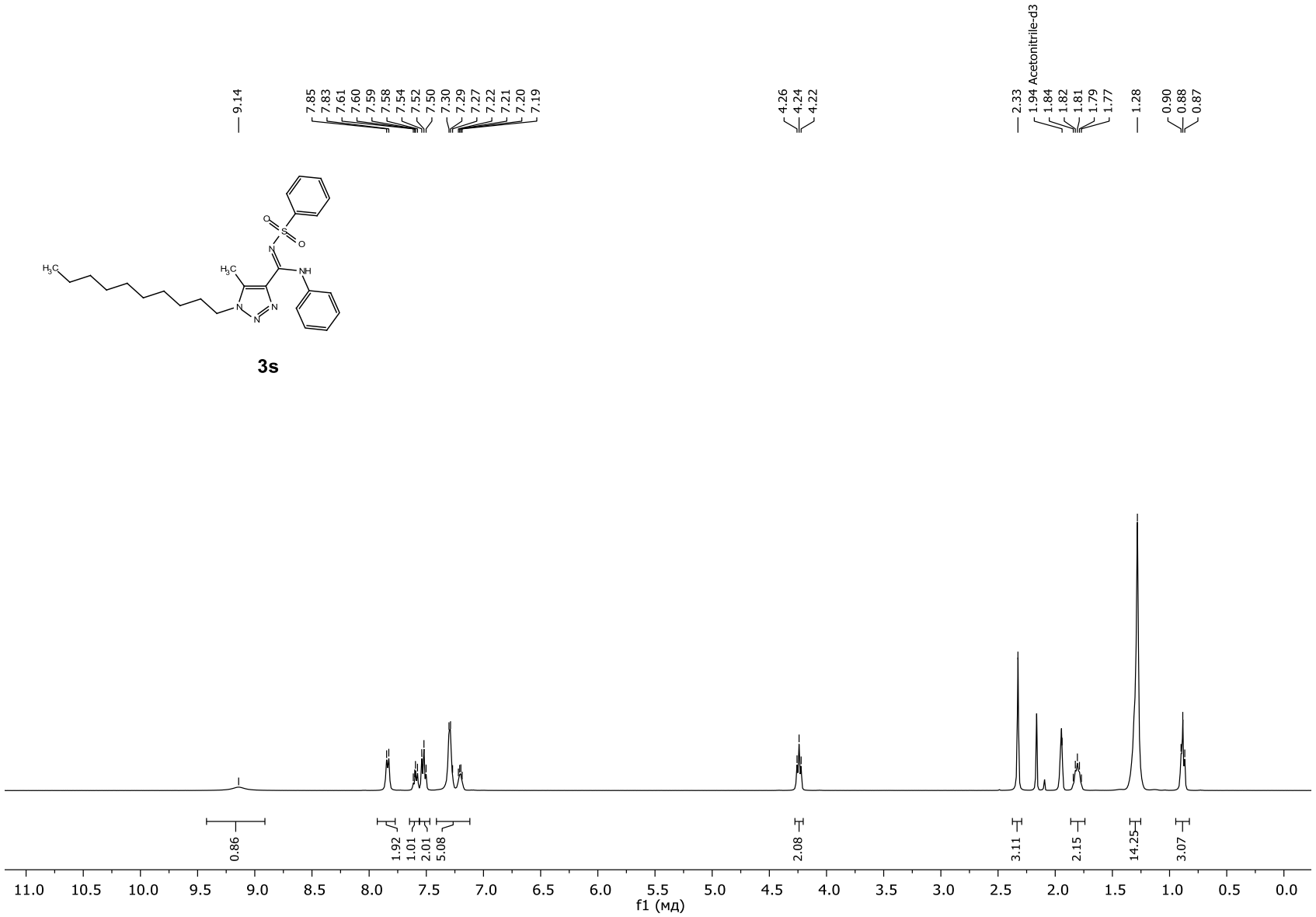


3r

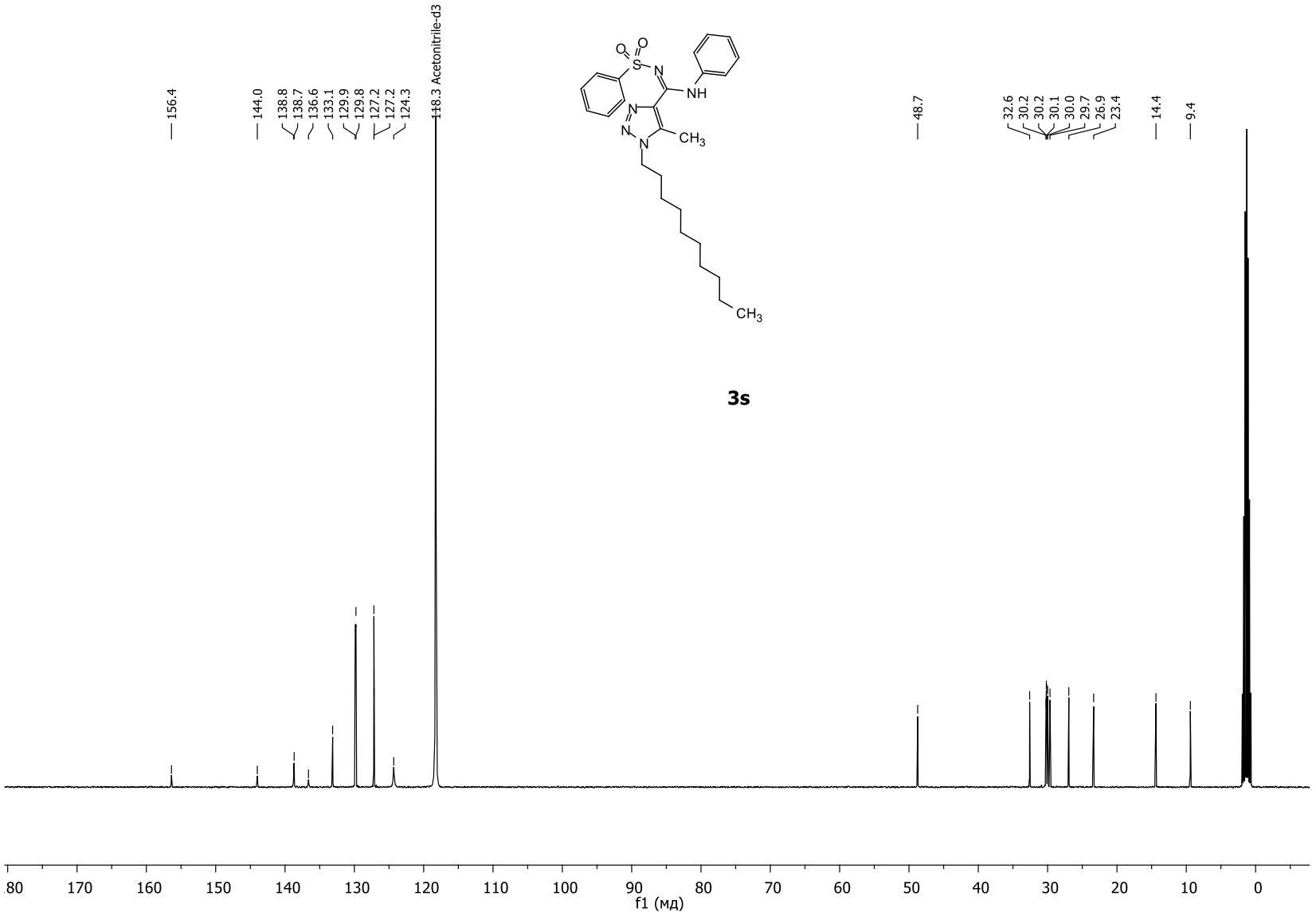
The ^{1}H NMR (400 MHz, CD_3CN) spectrum of compound **3r**.



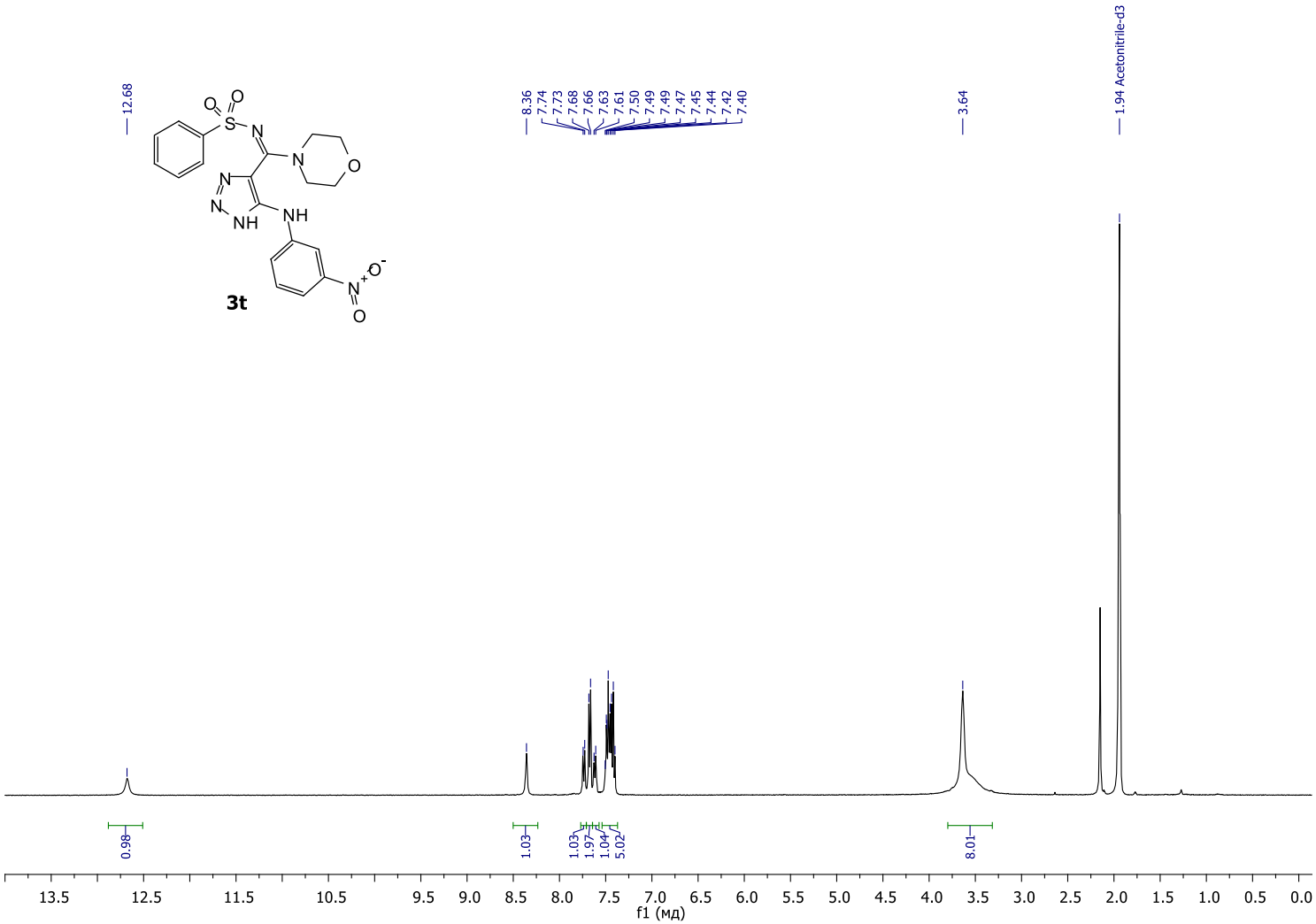
The ^{13}C NMR (100 MHz, CD_3CN) spectrum of compound **3r**.



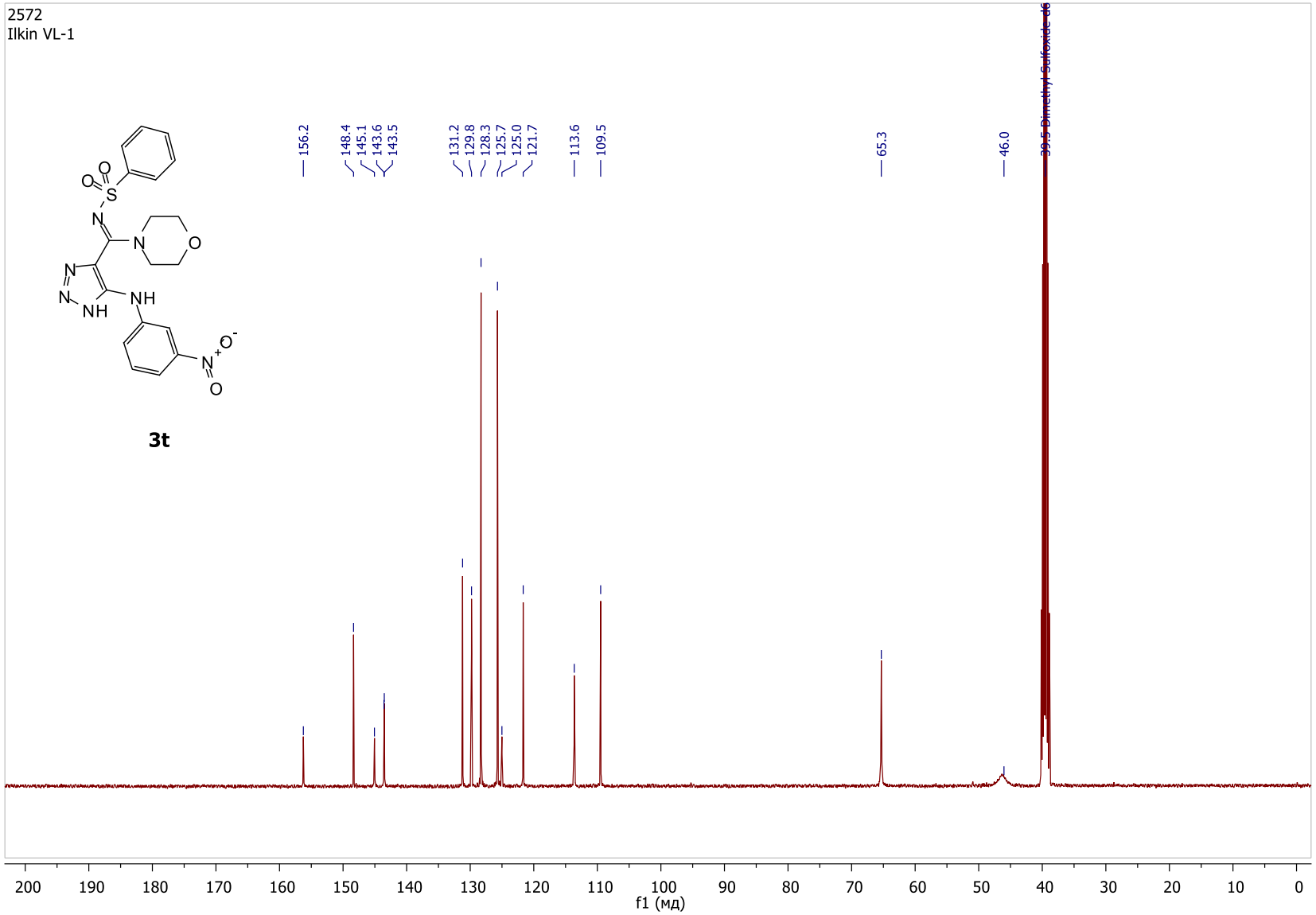
The ^{1}H NMR (400 MHz, CD_3CN) spectrum of compound **3s**.



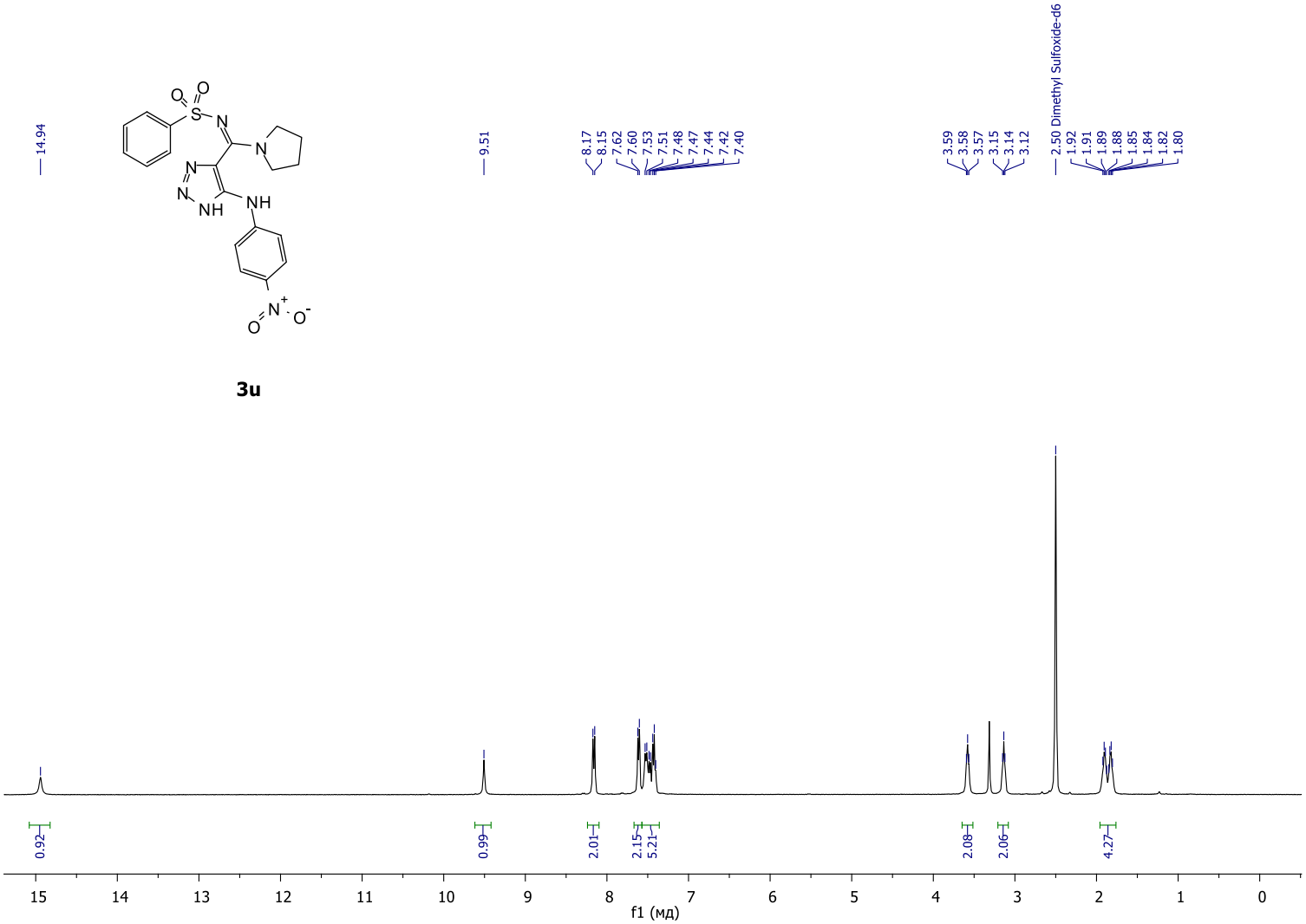
The ^{13}C NMR (100 MHz, CD_3CN) spectrum of compound **3s**.



The ^{1}H NMR (400 MHz, CD_3CN) spectrum of compound **3t**.

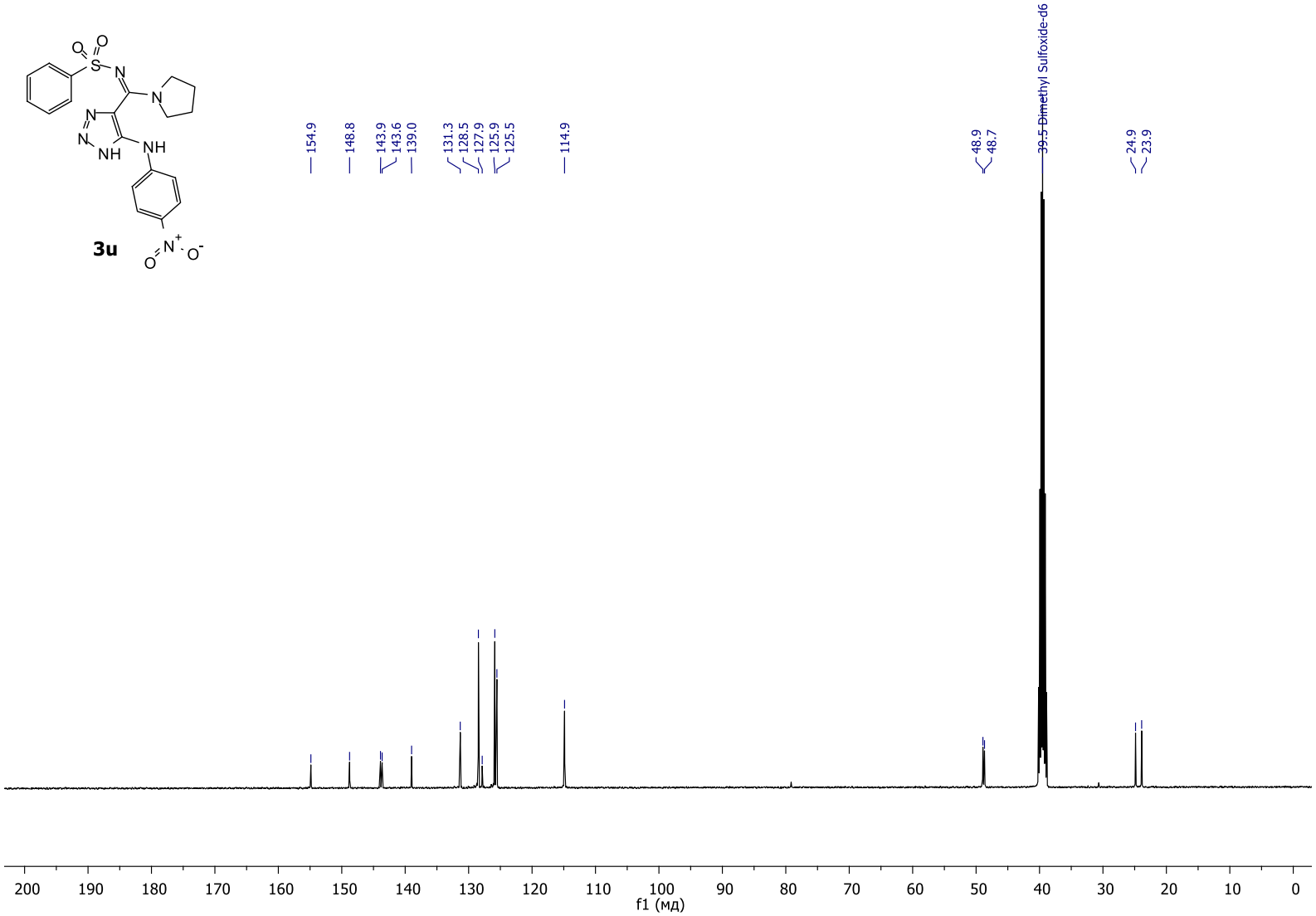


The ^{13}C NMR (100 MHz, DMSO-d_6, 50 $^{\circ}$C) spectrum of compound **3t**.

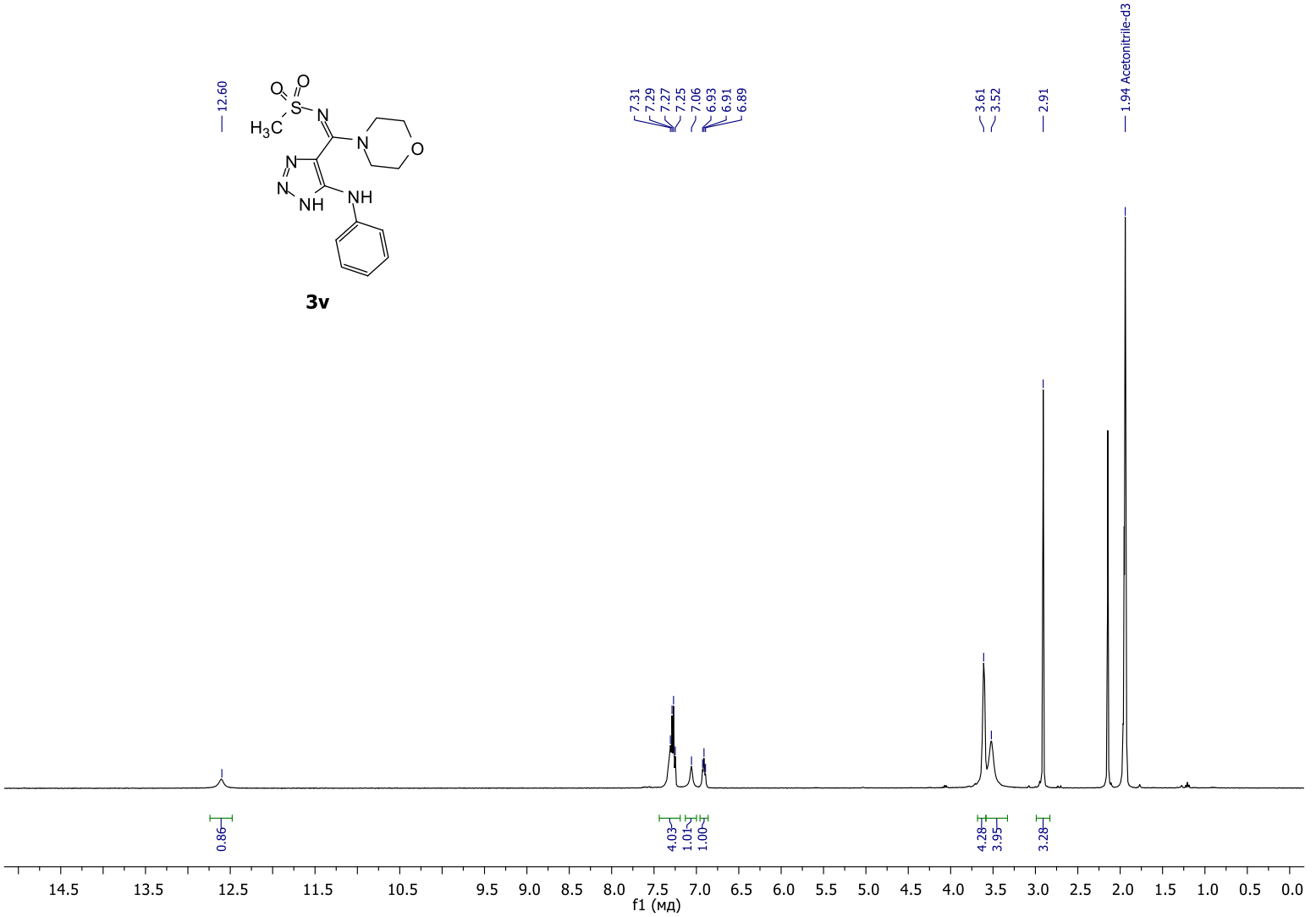


3u

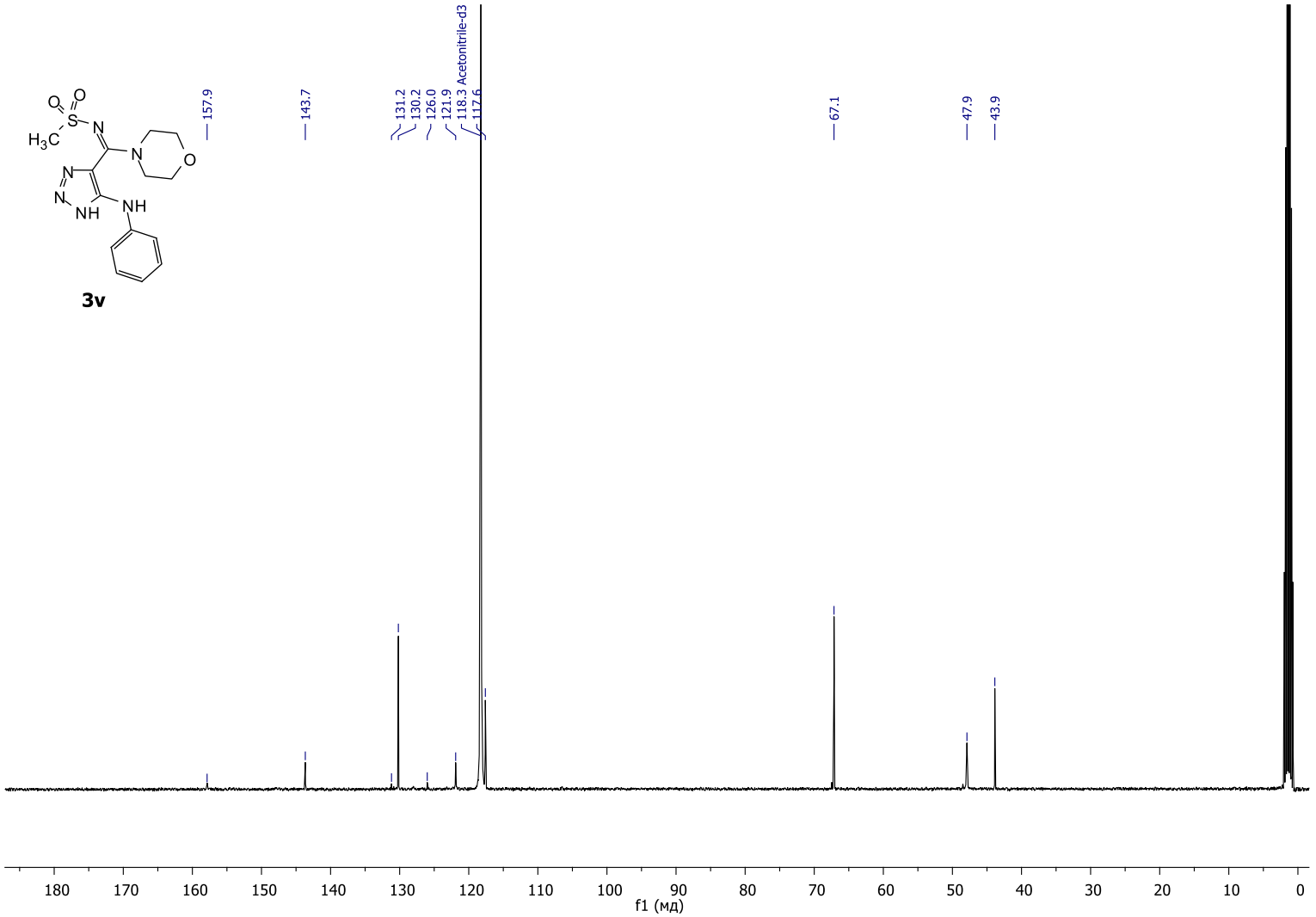
The ^{1}H NMR (400 MHz, DMSO-d_6) spectrum of compound **3u**.



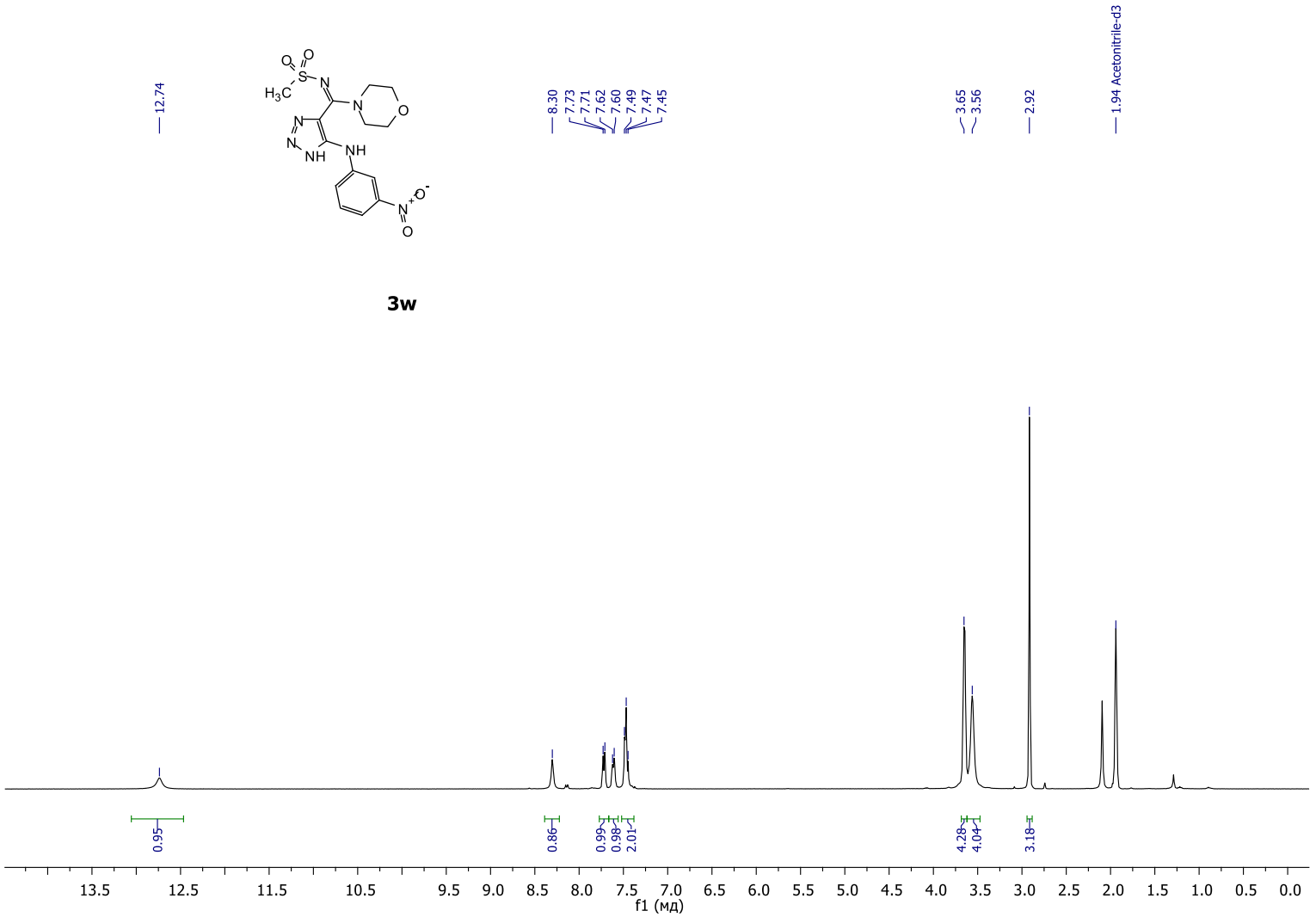
The ^{13}C NMR (100 MHz, DMSO-d_6) spectrum of compound **3u**.



The ^{1}H NMR (400 MHz, CD_3CN) spectrum of compound **3v**.

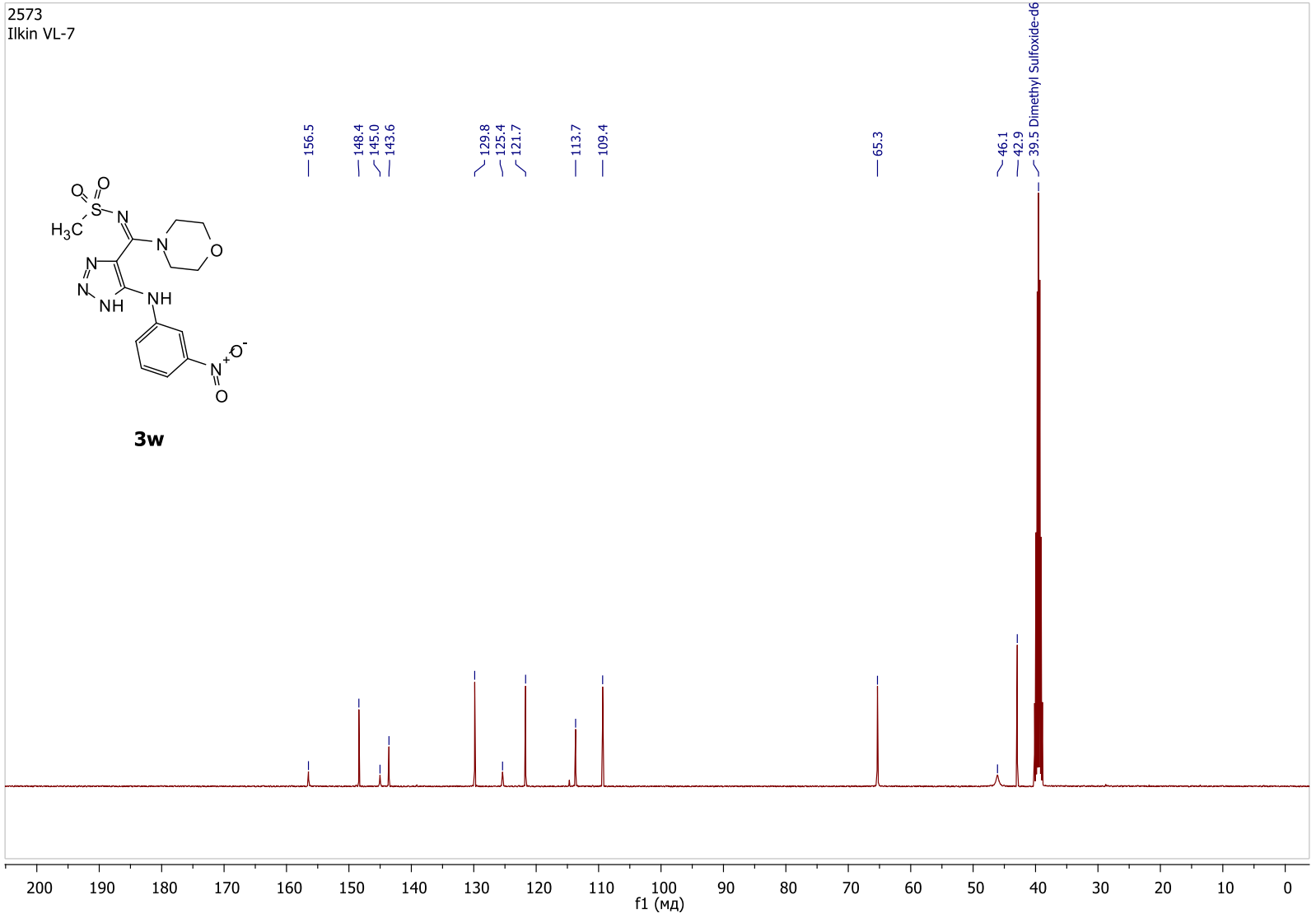


The ^{13}C NMR (100 MHz, CD_3CN, 50 °C) spectrum of compound **3v**.

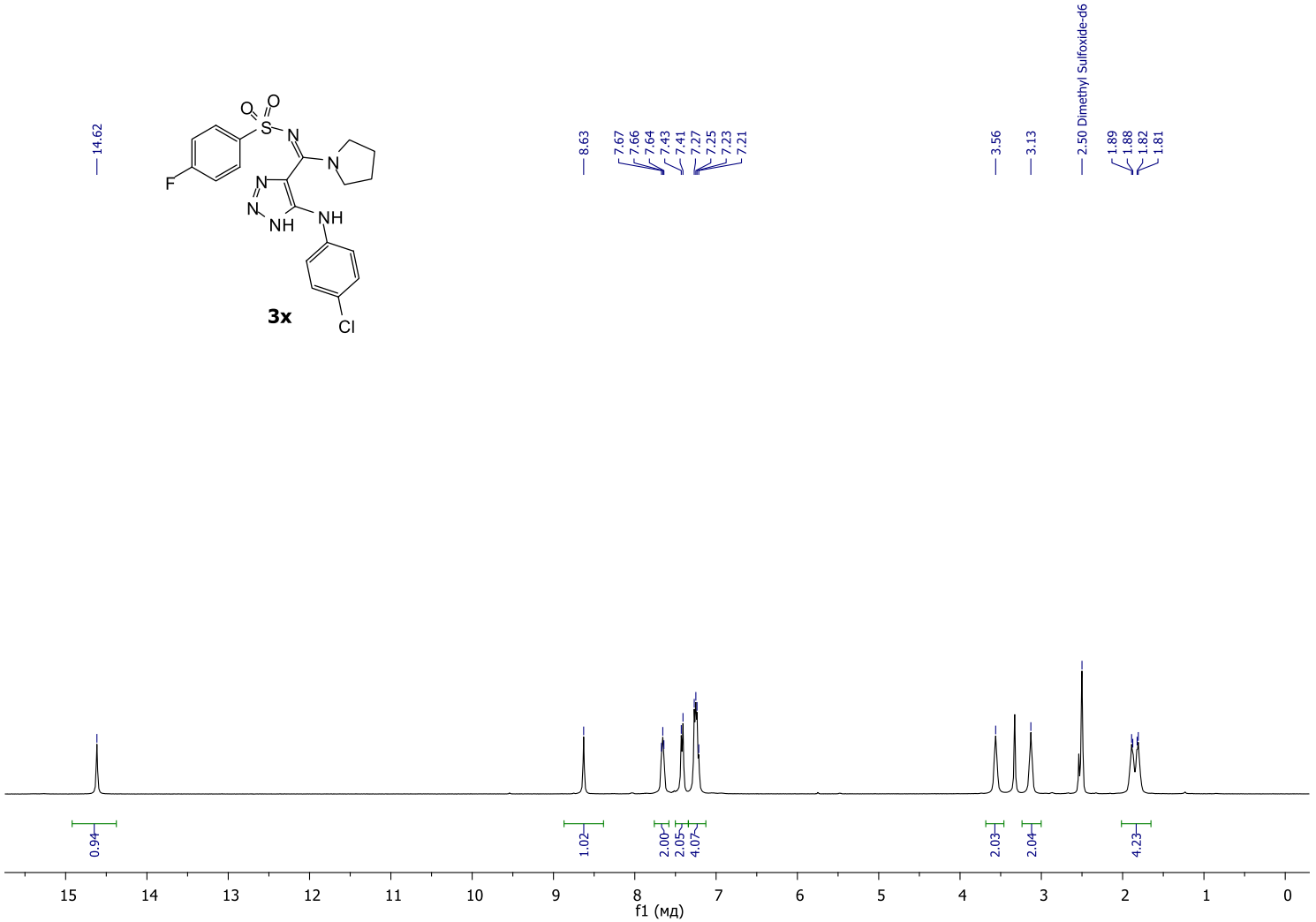


3w

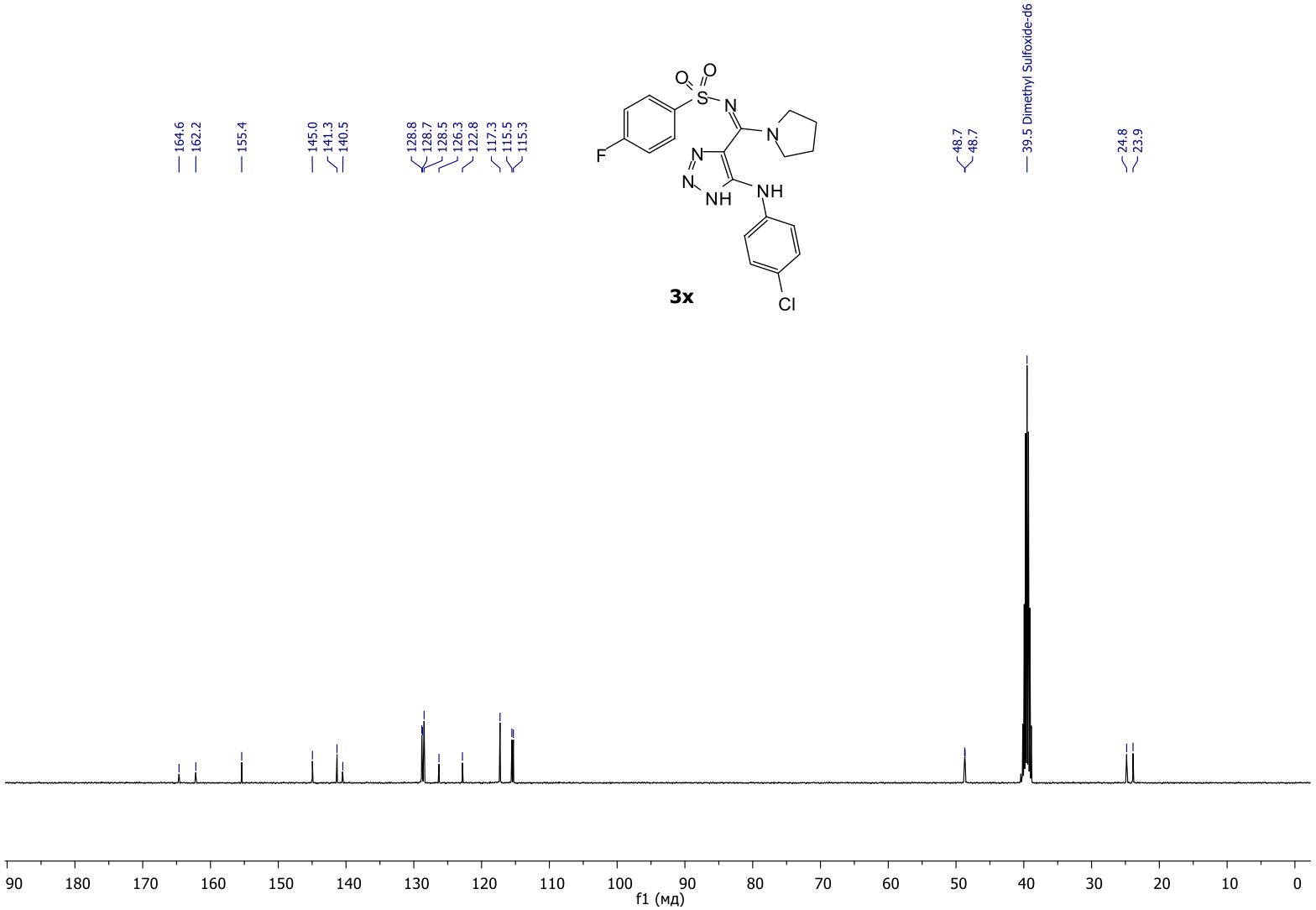
The ^{1}H NMR (400 MHz, CD_3CN) spectrum of compound **3w**.



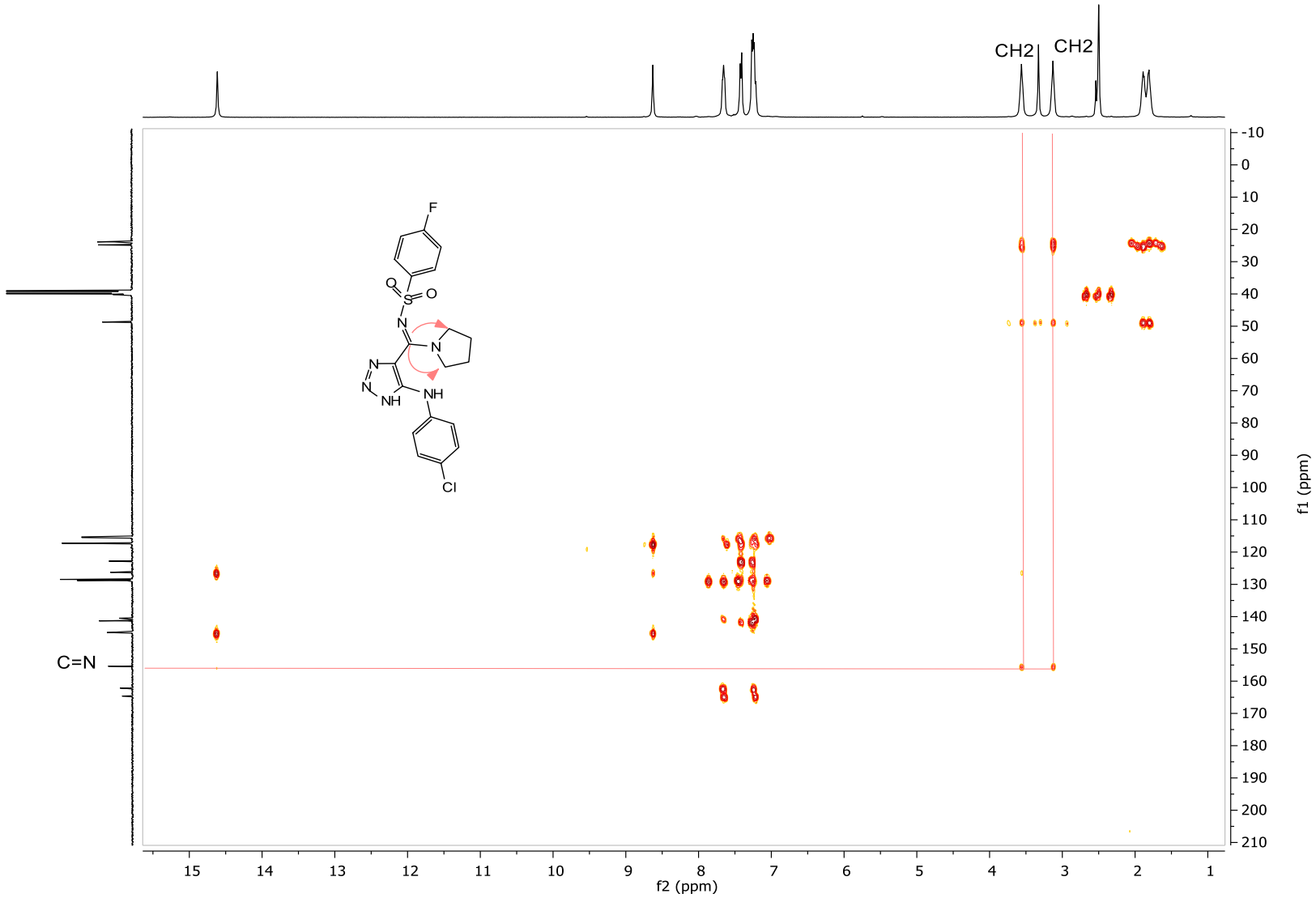
The ^{13}C NMR (100 MHz, DMSO-d_6, 50 $^{\circ}$C) spectrum of compound **3w**.



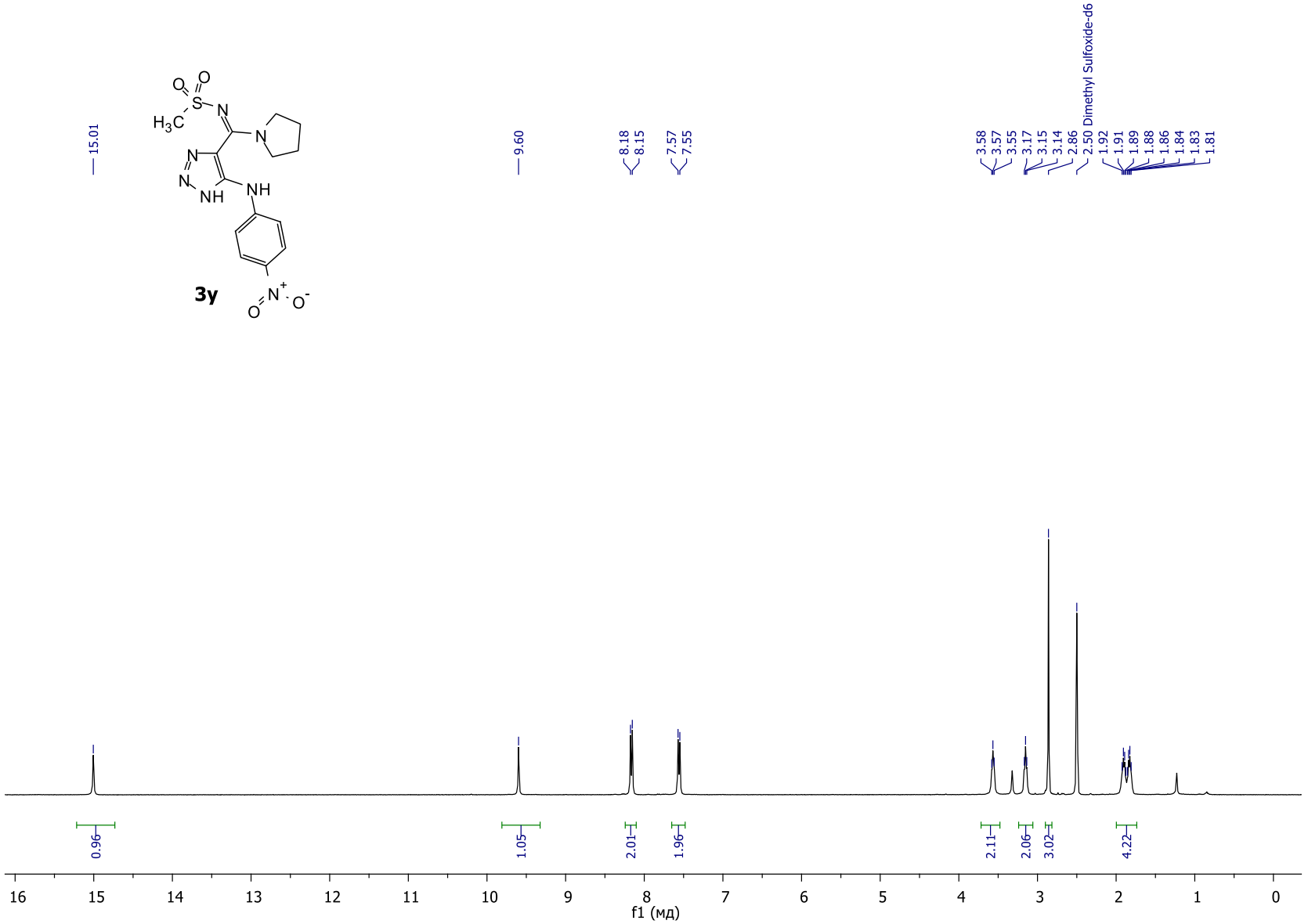
The ^{1}H NMR (400 MHz, DMSO-d_6) spectrum of compound **3x**.



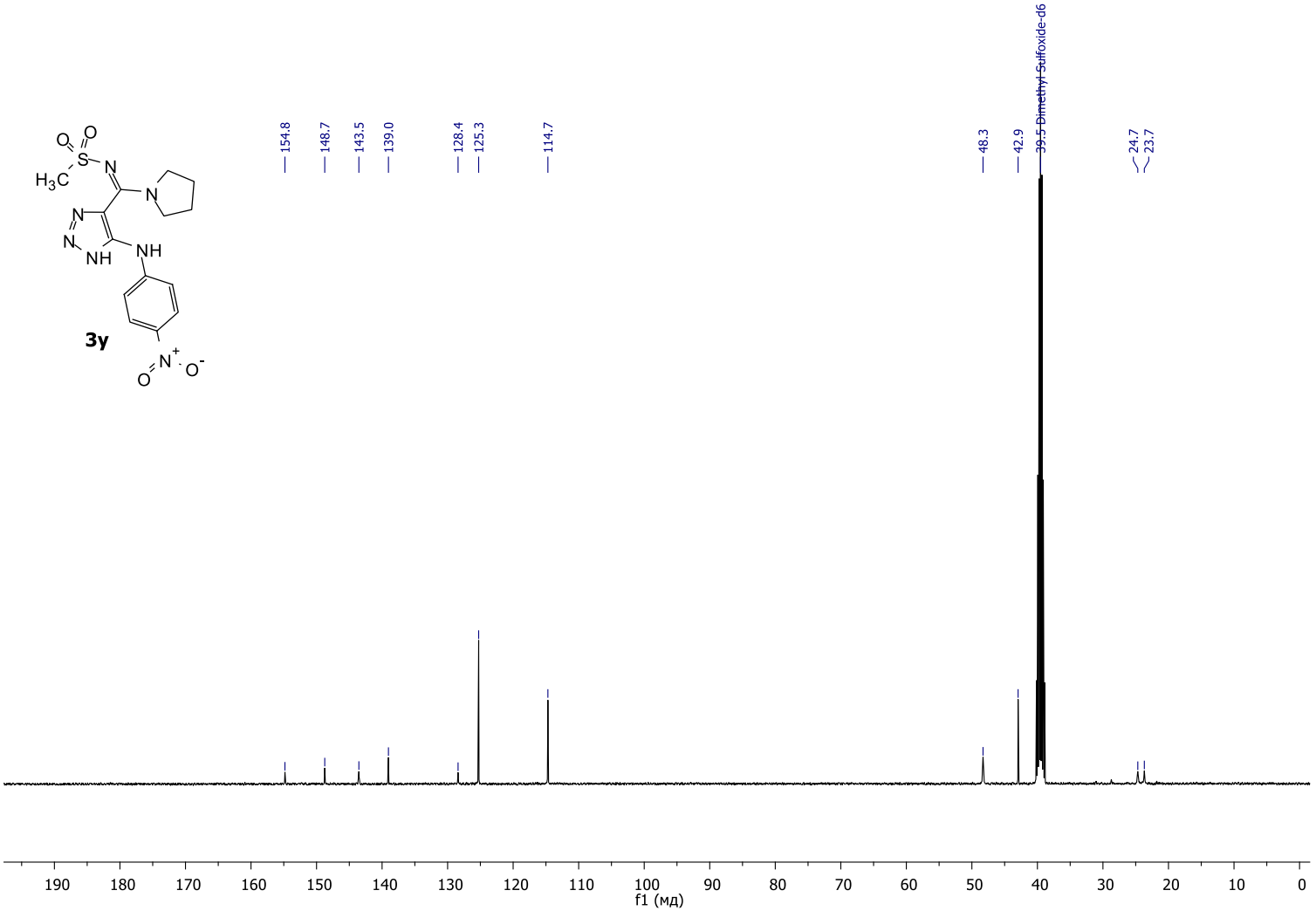
The ^{13}C NMR (100 MHz, DMSO-d_6) spectrum of compound **3x**.



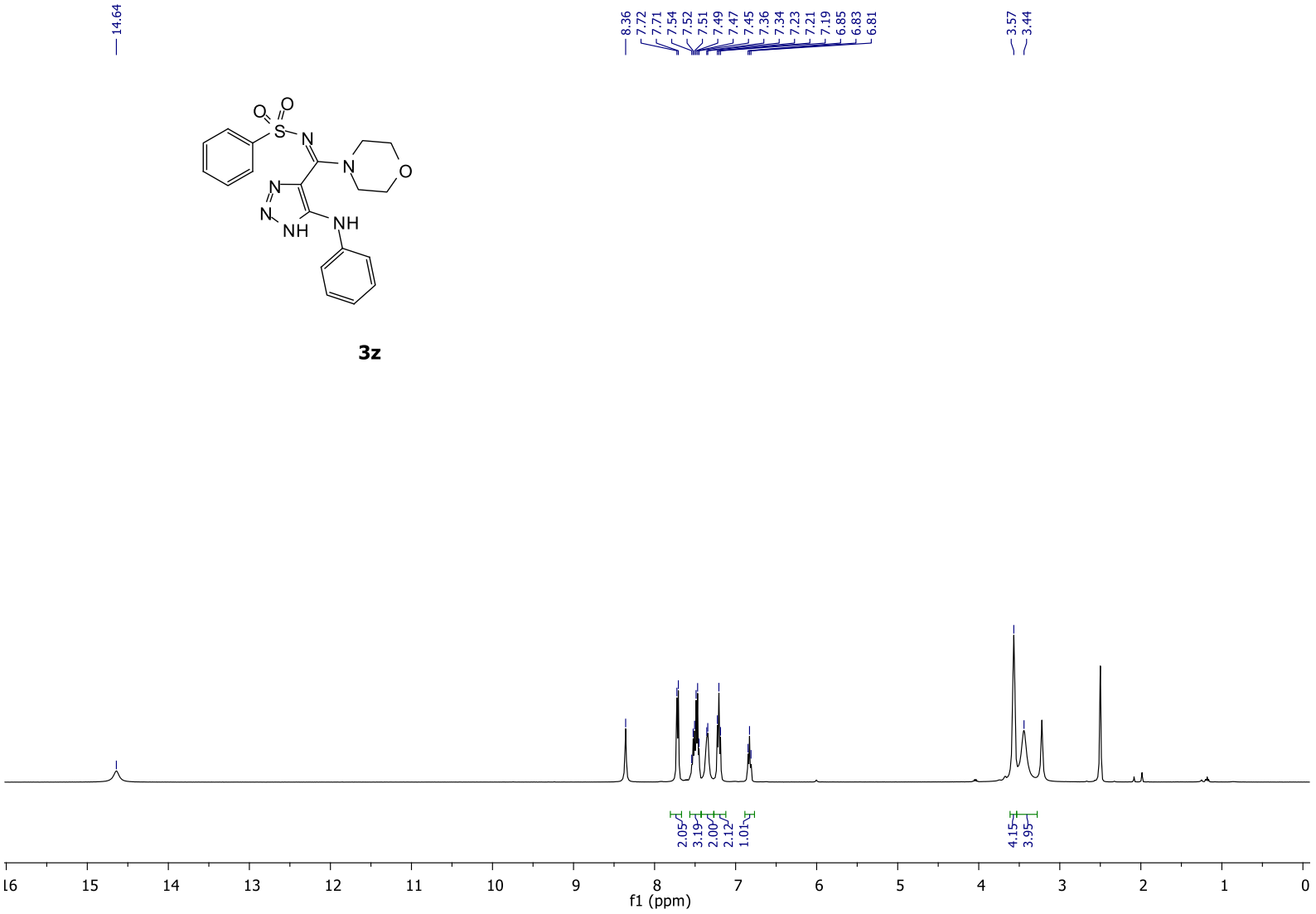
The HMBC NMR spectrum of compound **3x**.



The ^{1}H NMR (400 MHz, DMSO-d_6) spectrum of compound **3y**.

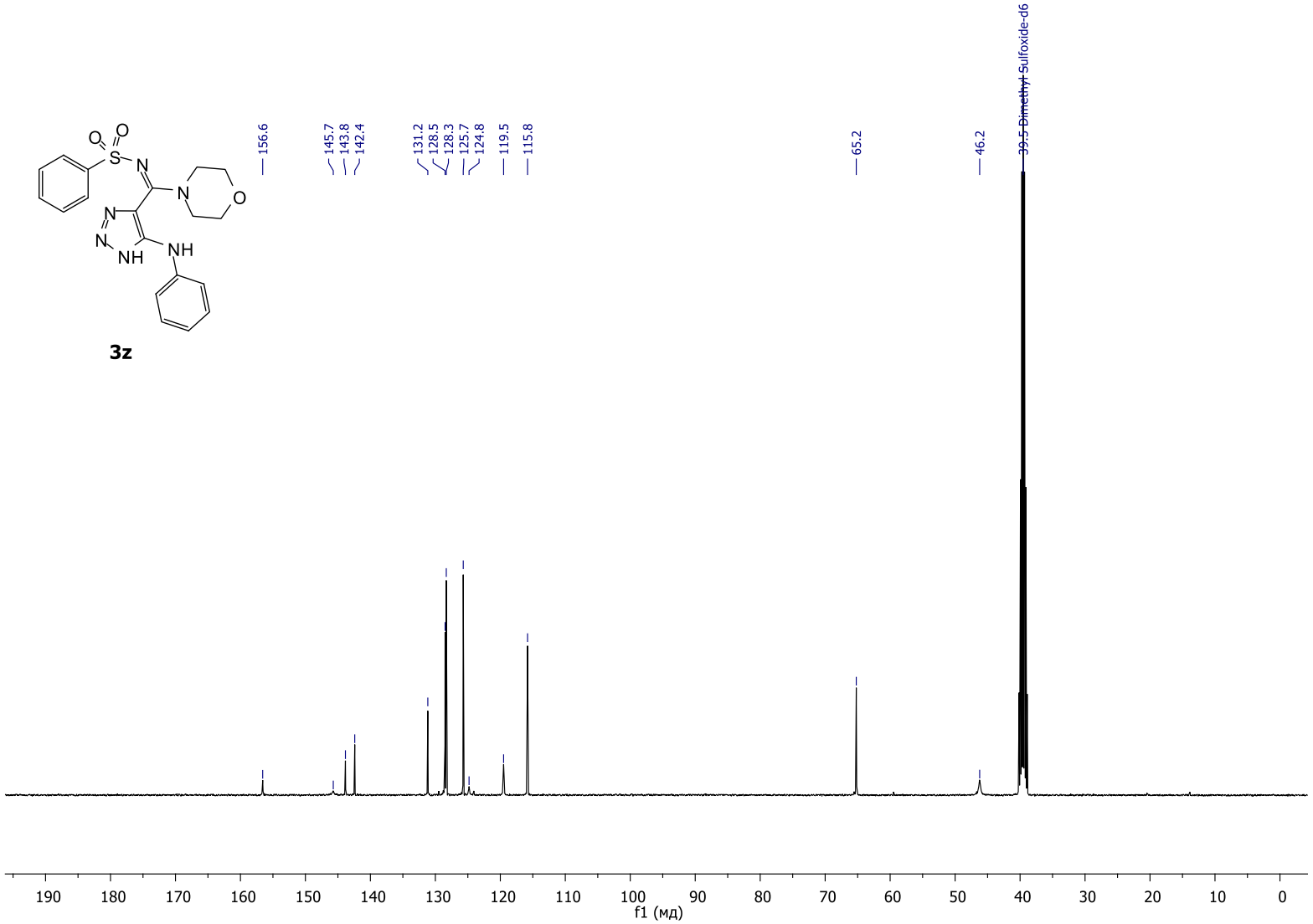


The ^{13}C NMR (100 MHz, DMSO-d_6) spectrum of compound **3y**.

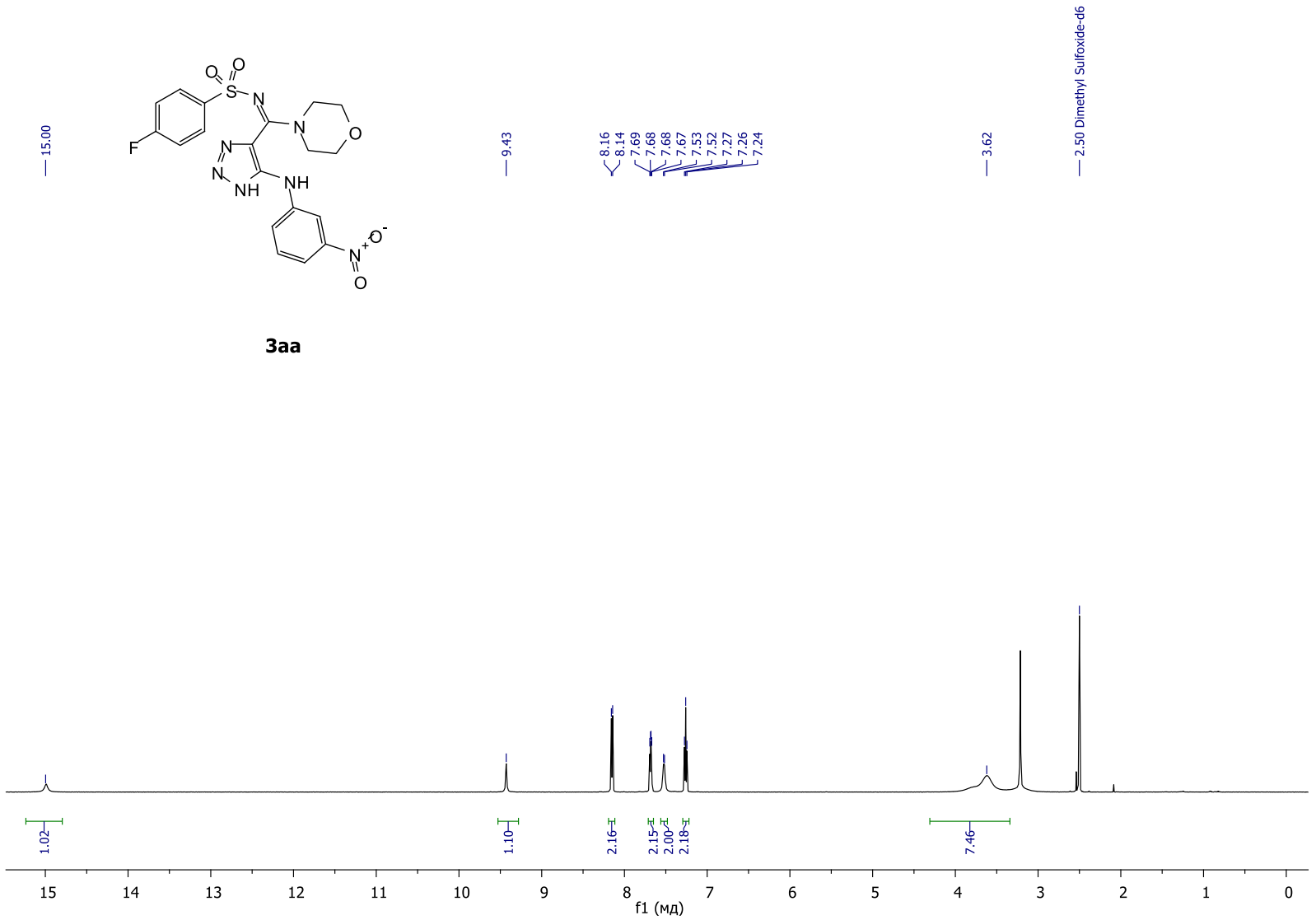


3z

The ^{1}H NMR (400 MHz, DMSO-d_6) spectrum of compound **3z**.

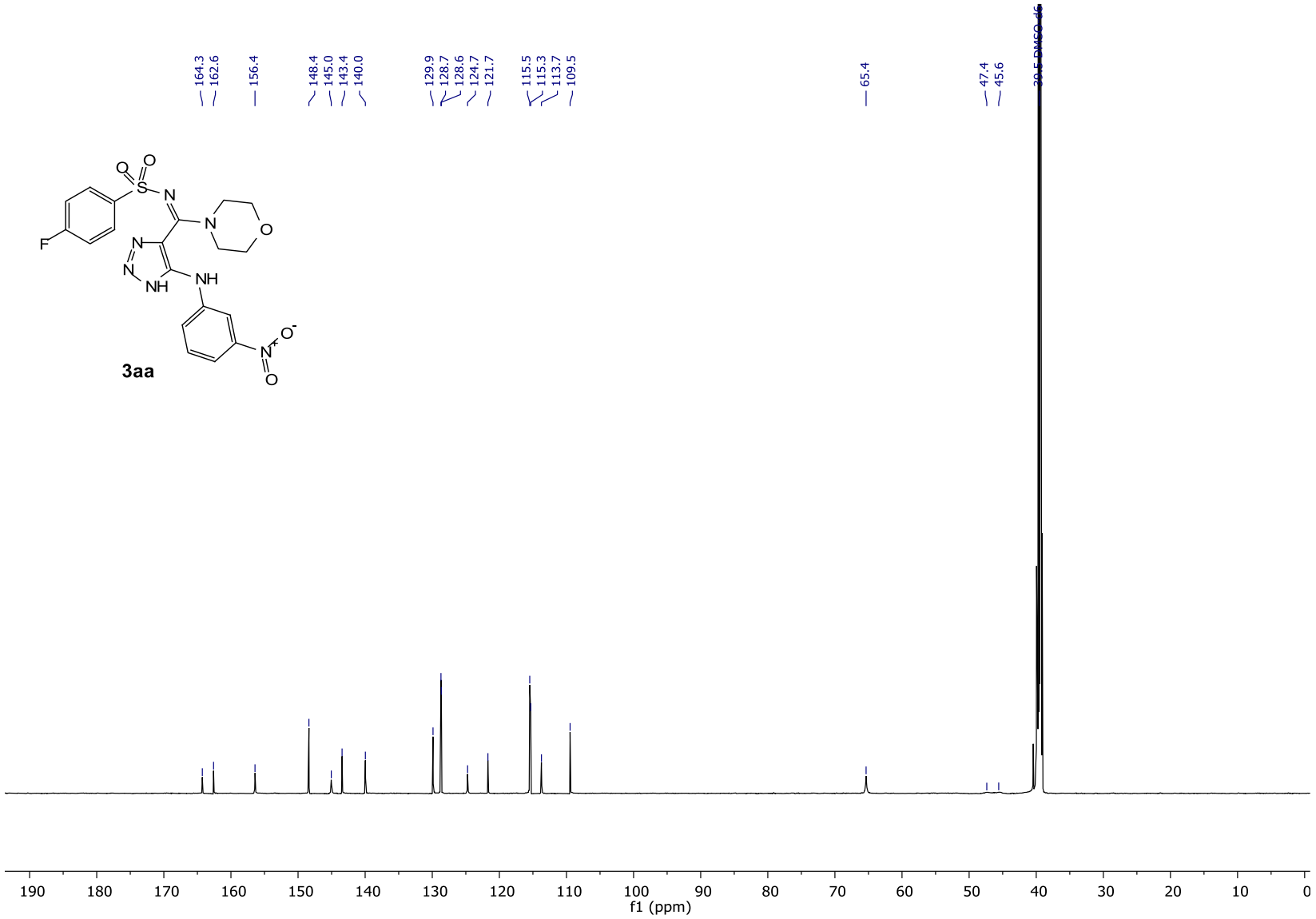


The ^{13}C NMR (100 MHz, DMSO-d_6, 50 °C) spectrum of compound **3z**.

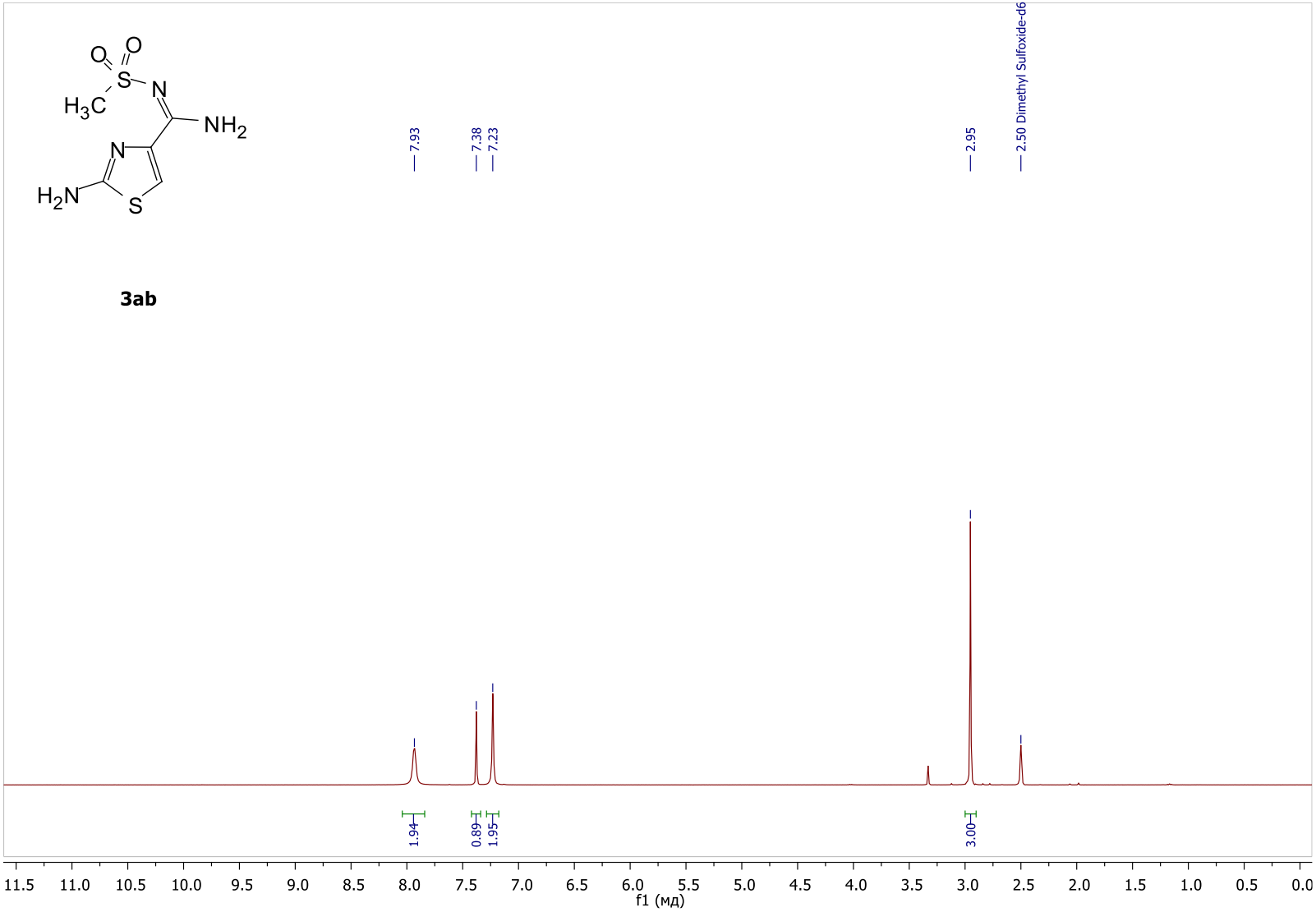


3aa

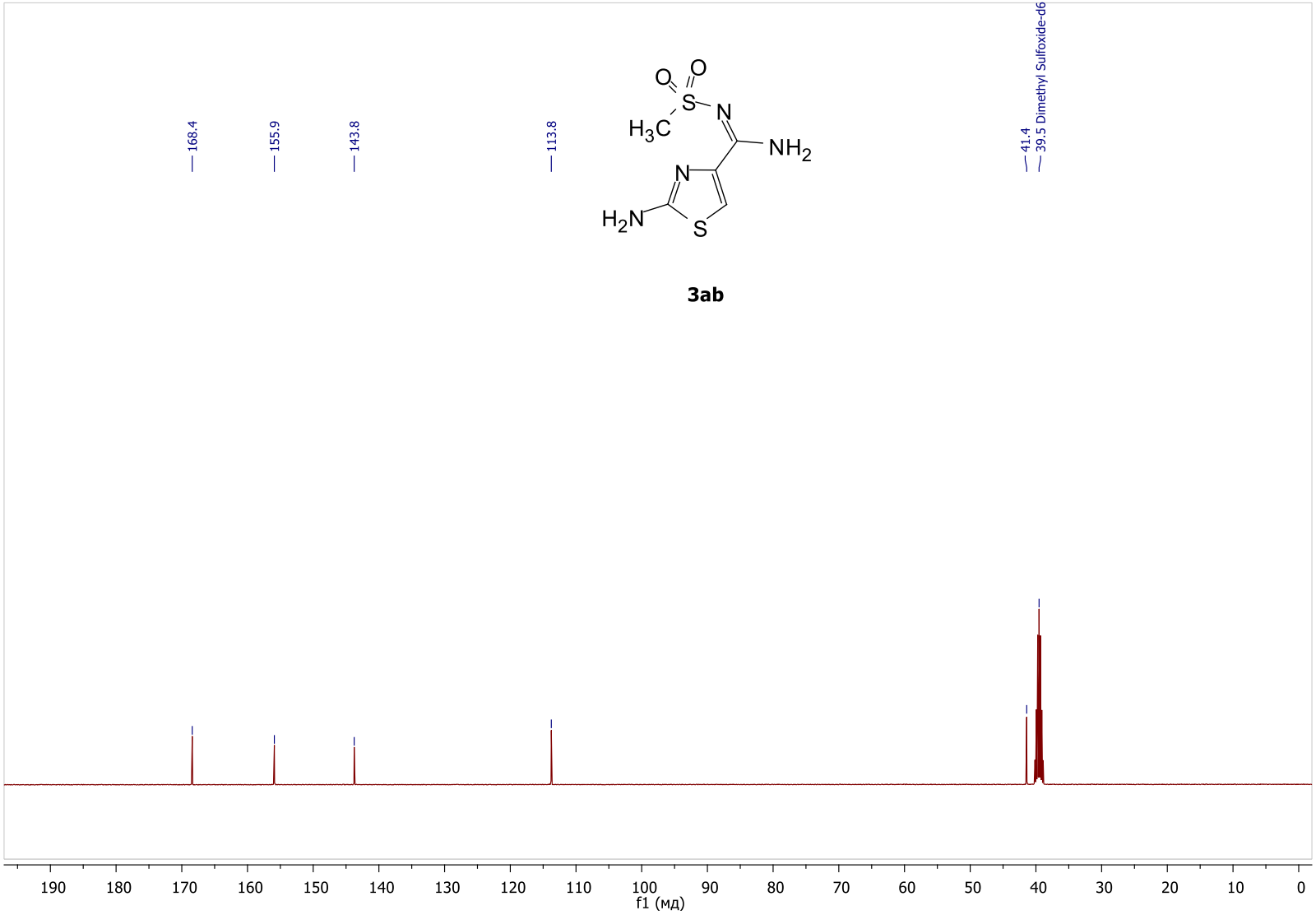
The ^{1}H NMR (400 MHz, DMSO-d_6) spectrum of compound **3aa**.



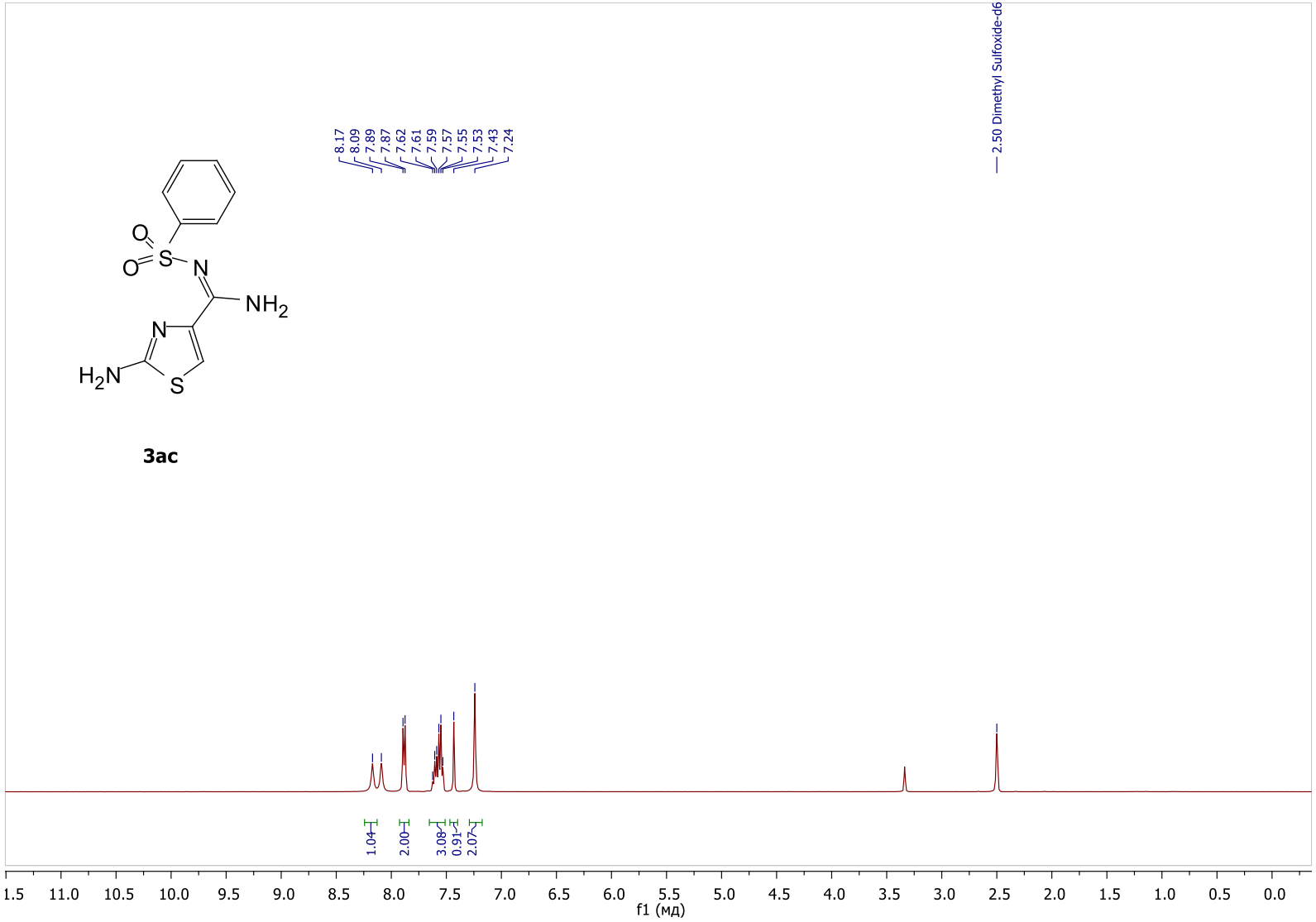
The ^{13}C NMR (150 MHz, DMSO-d_6) spectrum of compound **3aa**.



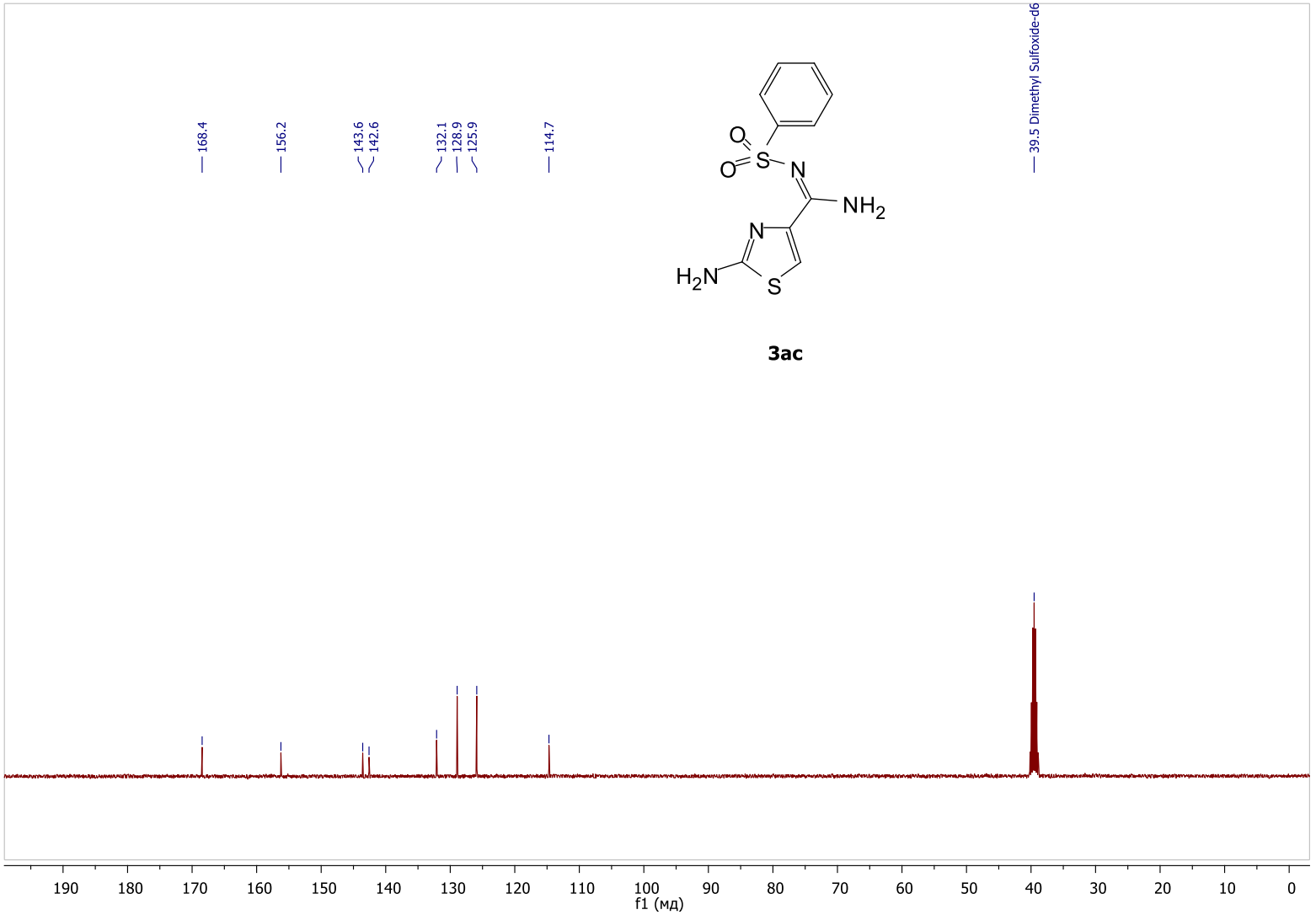
The ^{1}H NMR (400 MHz, DMSO-d_6) spectrum of compound **3ab**.



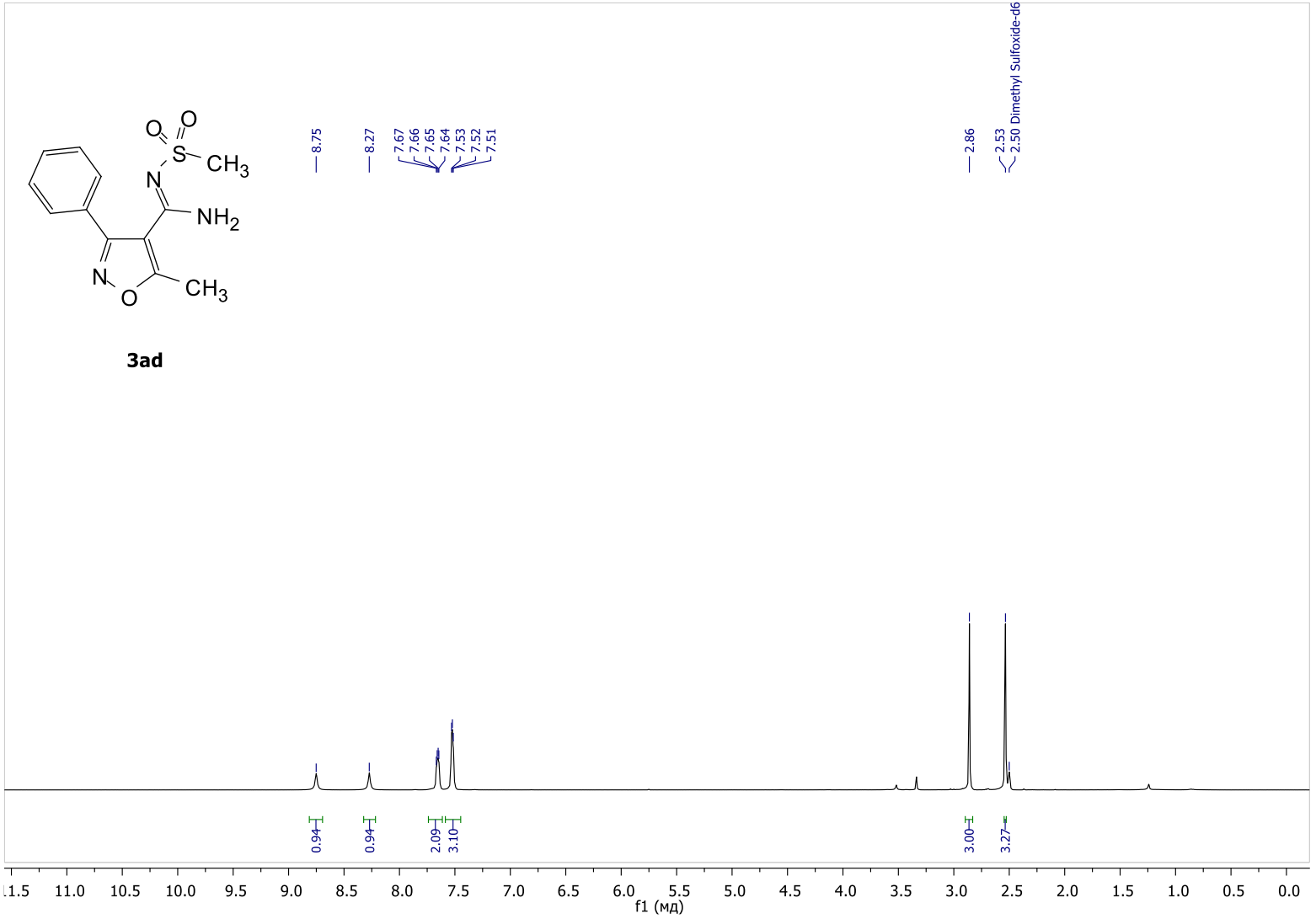
The ^{13}C NMR (100 MHz, DMSO-d_6) spectrum of compound **3ab**.



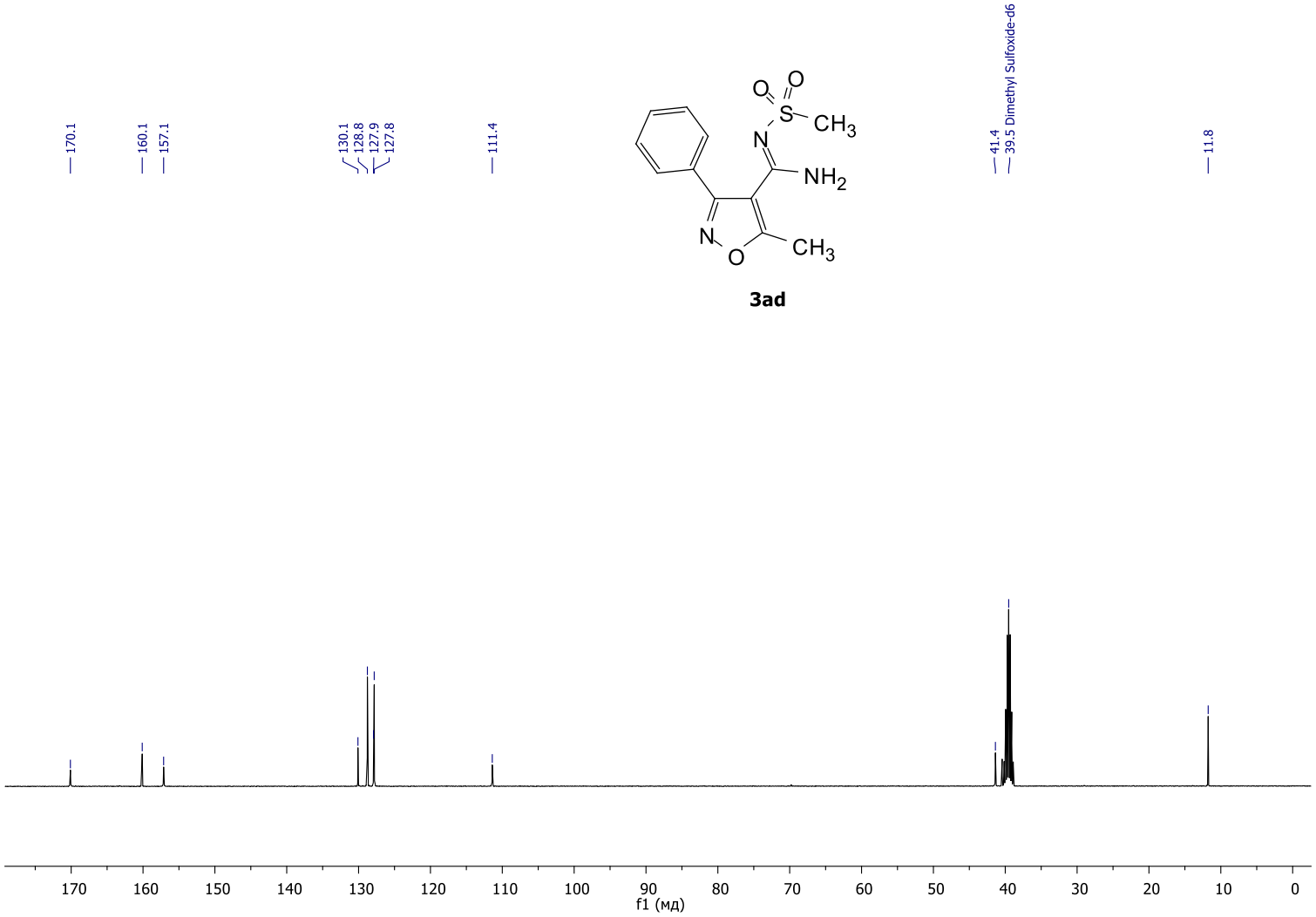
The ^{1}H NMR (400 MHz, DMSO-d_6) spectrum of compound **3ac**.



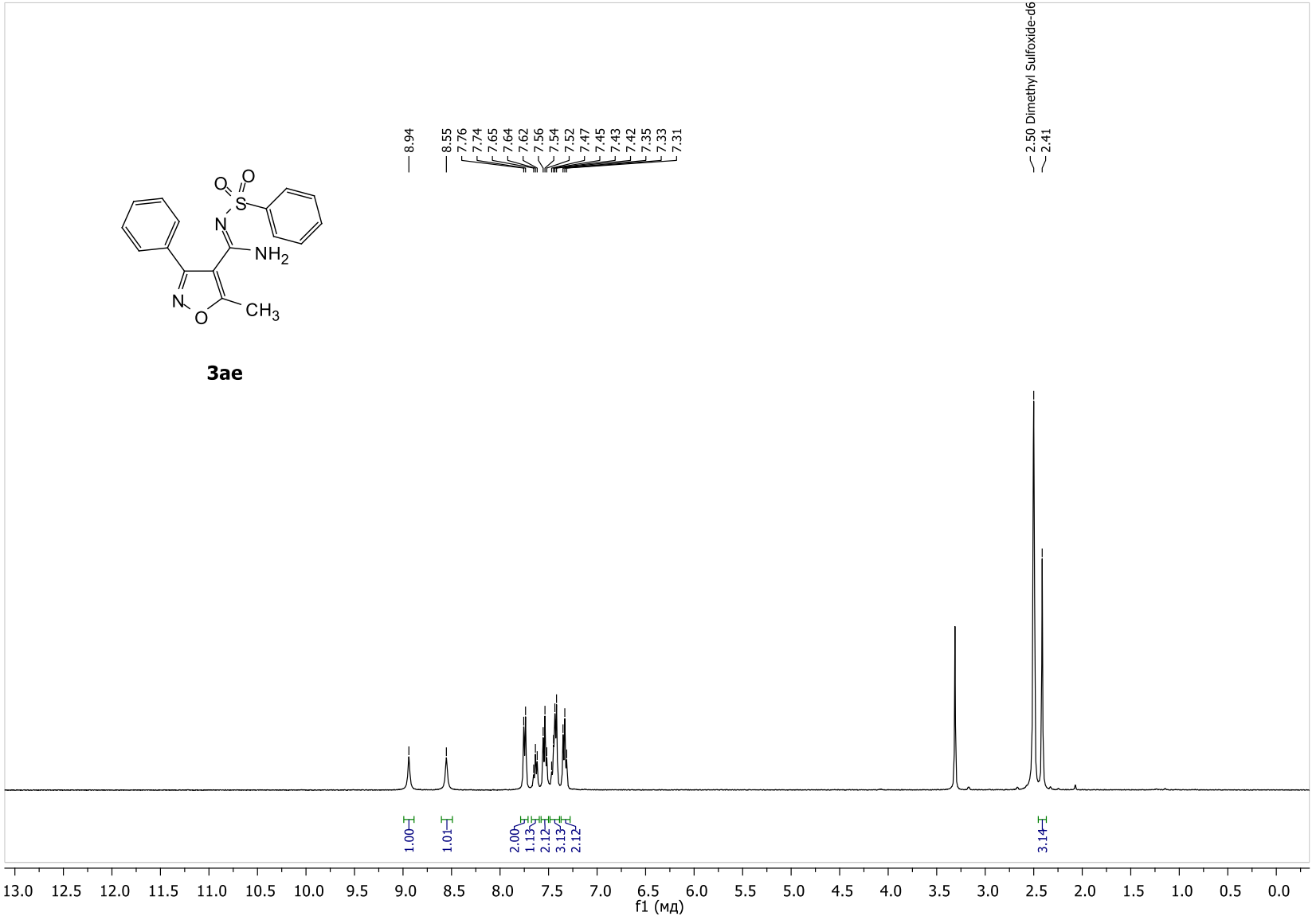
The ^{13}C NMR (100 MHz, DMSO-d_6) spectrum of compound **3ac**.



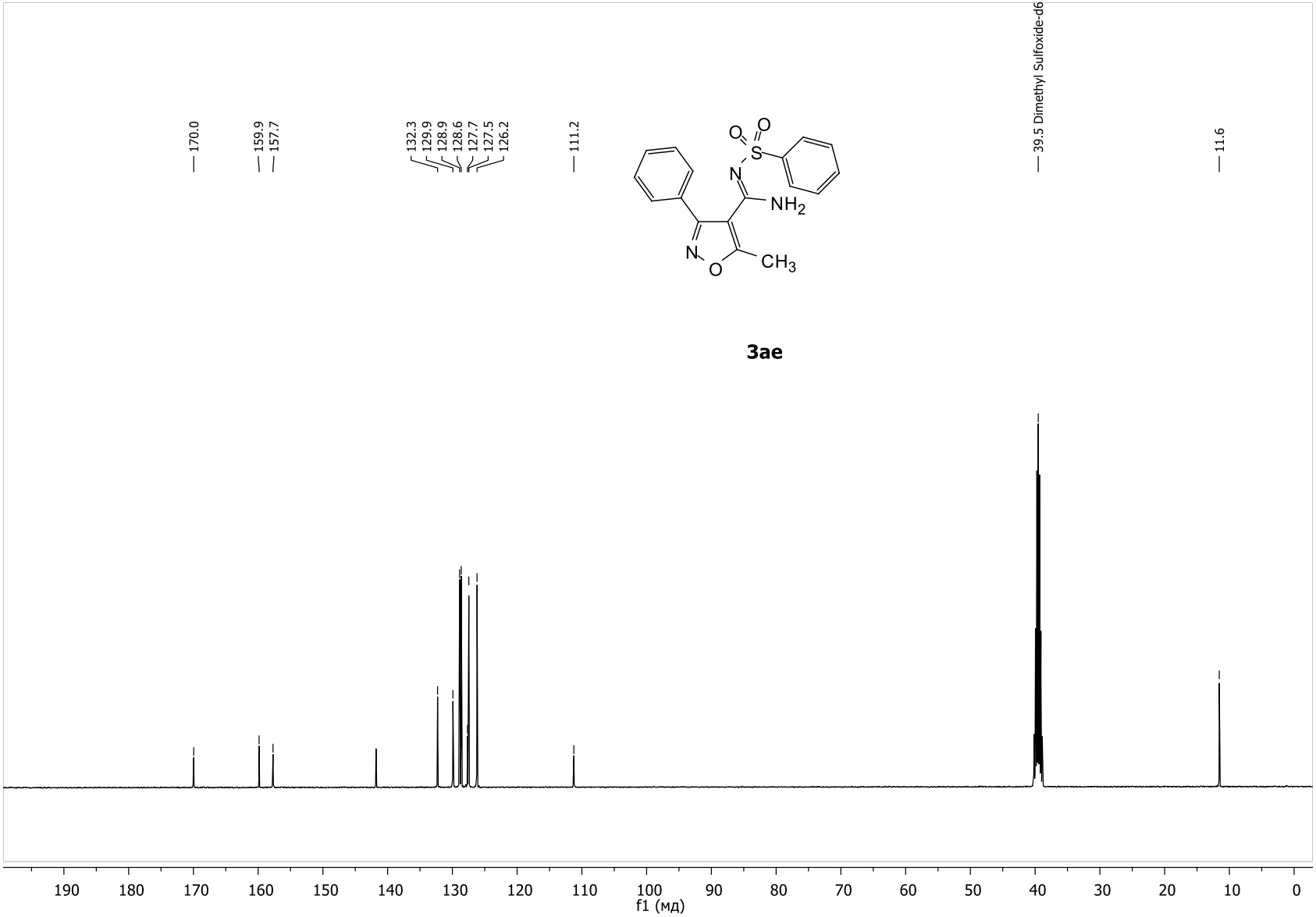
The ^{1}H NMR (400 MHz, DMSO-d_6) spectrum of compound **3ad**.



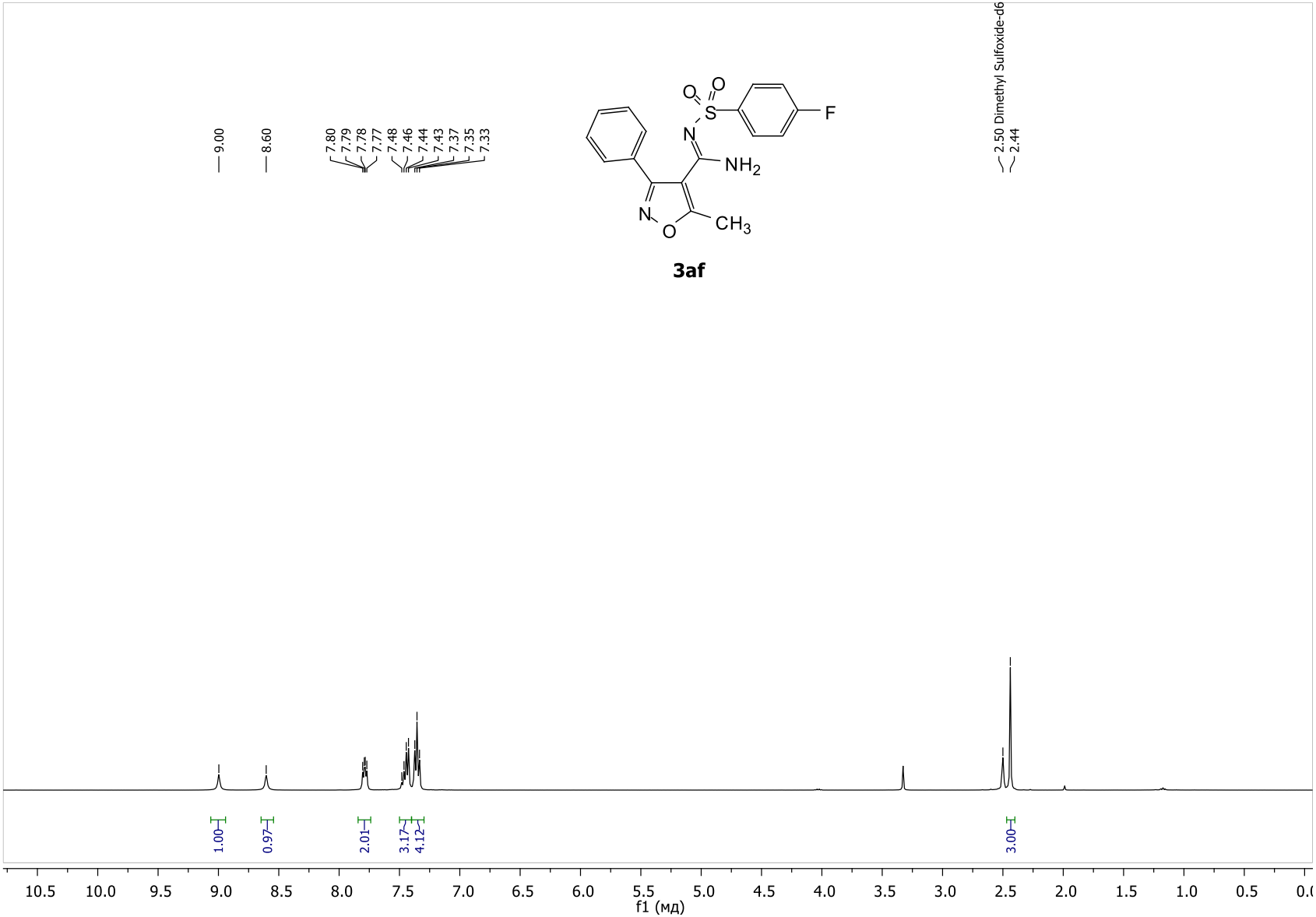
The ^{13}C NMR (100 MHz, DMSO-d_6) spectrum of compound **3ad**.



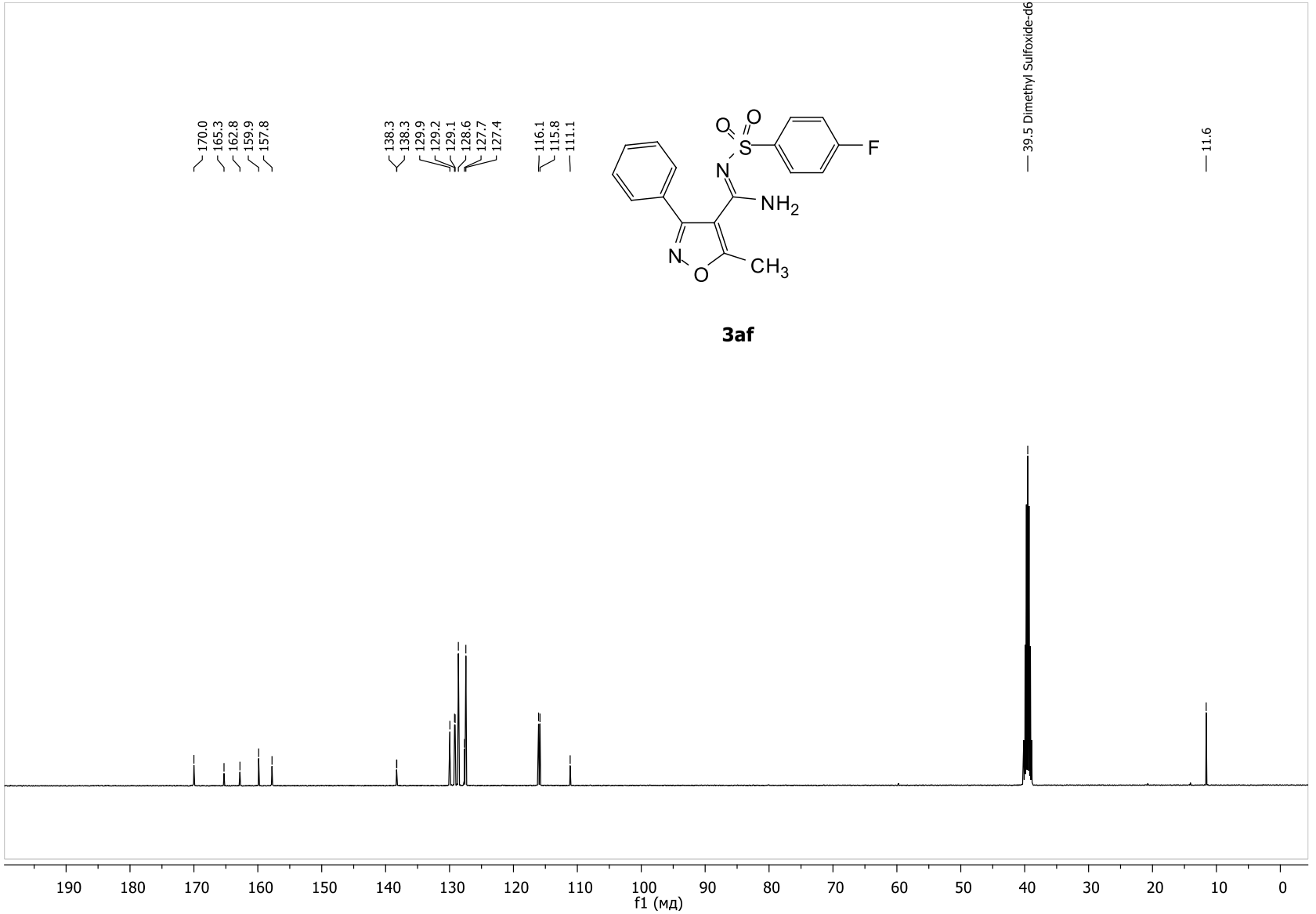
The ^{1}H NMR (400 MHz, DMSO-d_6) spectrum of compound **3ae**.



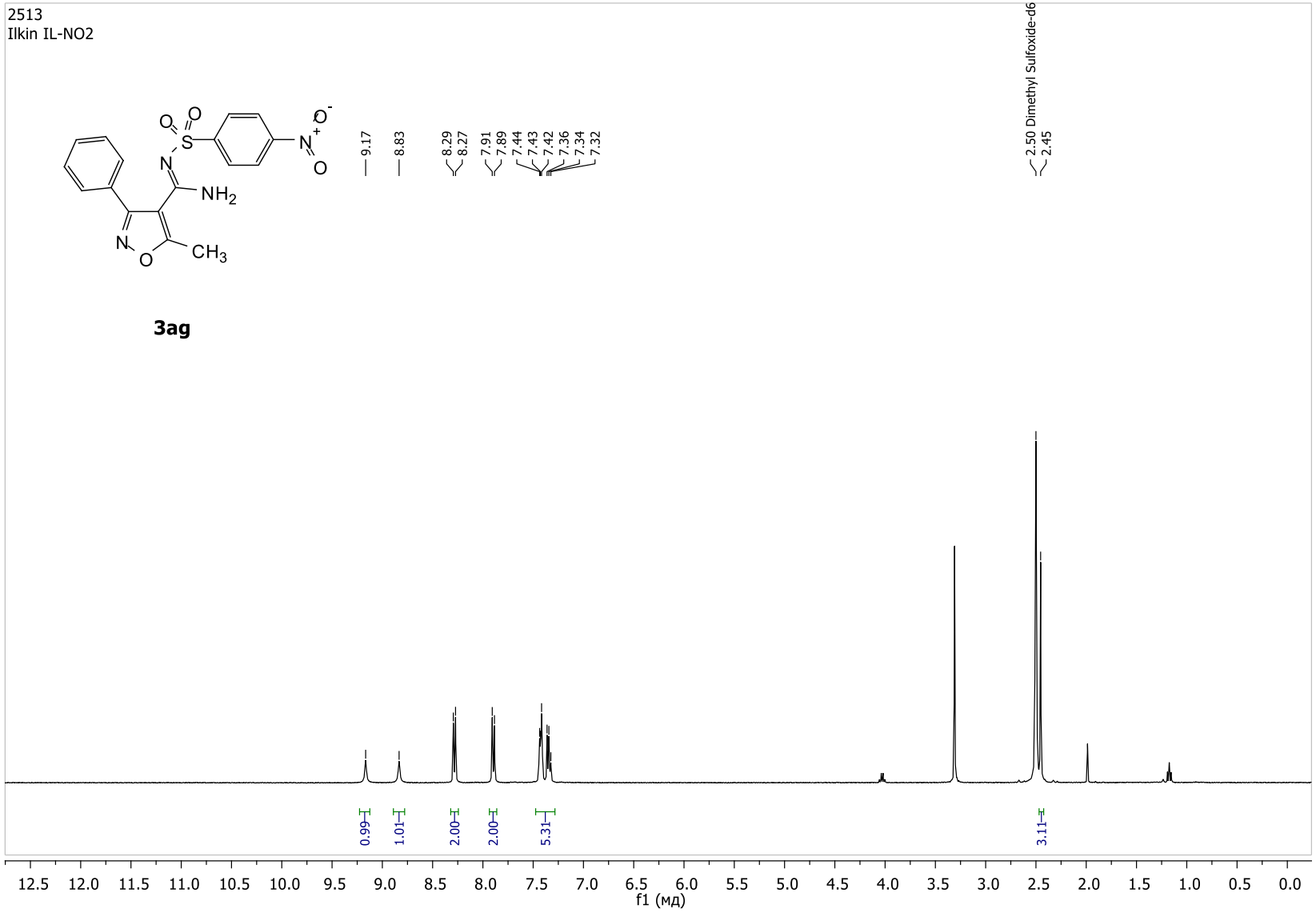
The ^{13}C NMR (100 MHz, DMSO-d_6) spectrum of compound **3ae**.



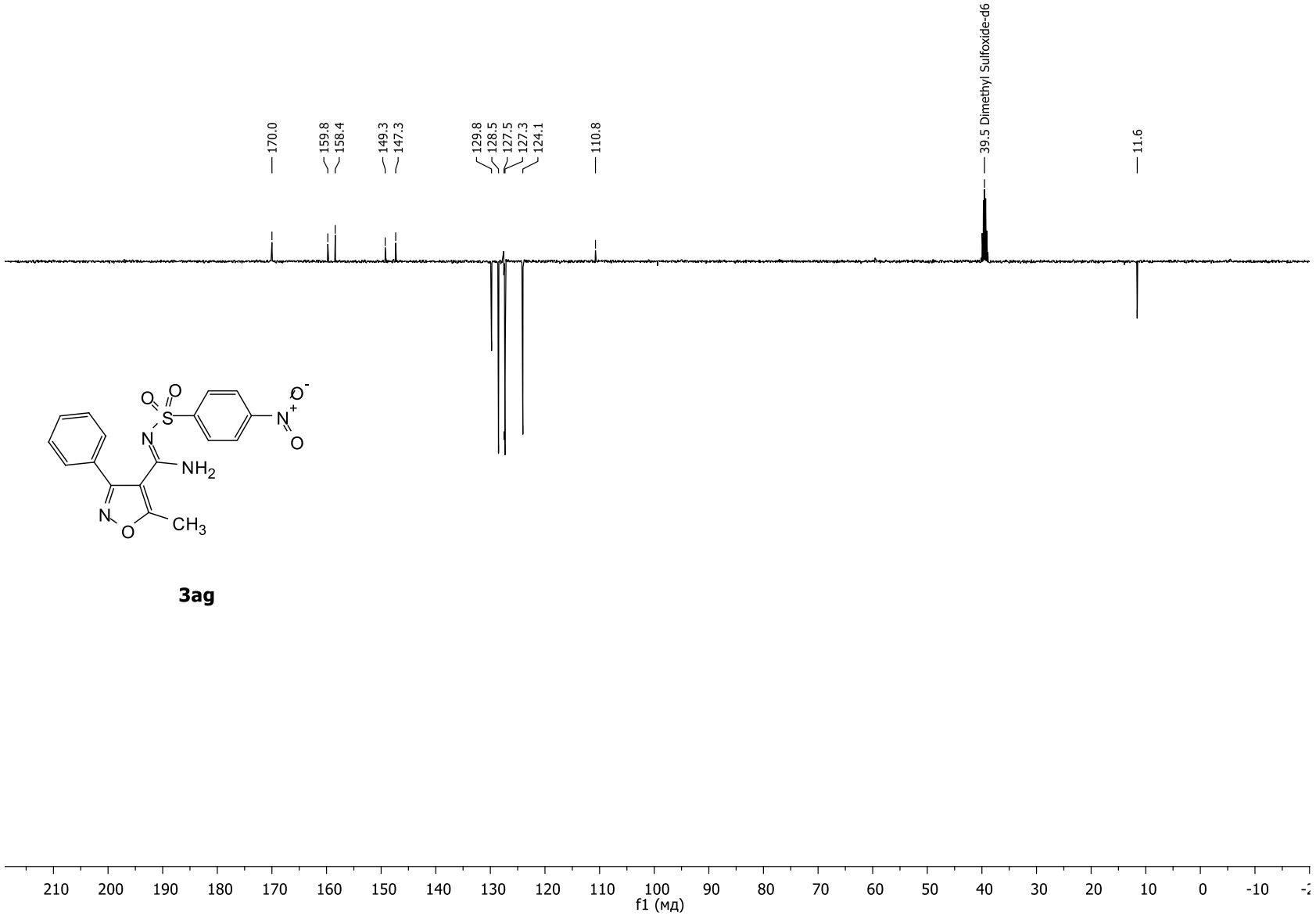
The ^{1}H NMR (400 MHz, DMSO-d_6) spectrum of compound **3af**.



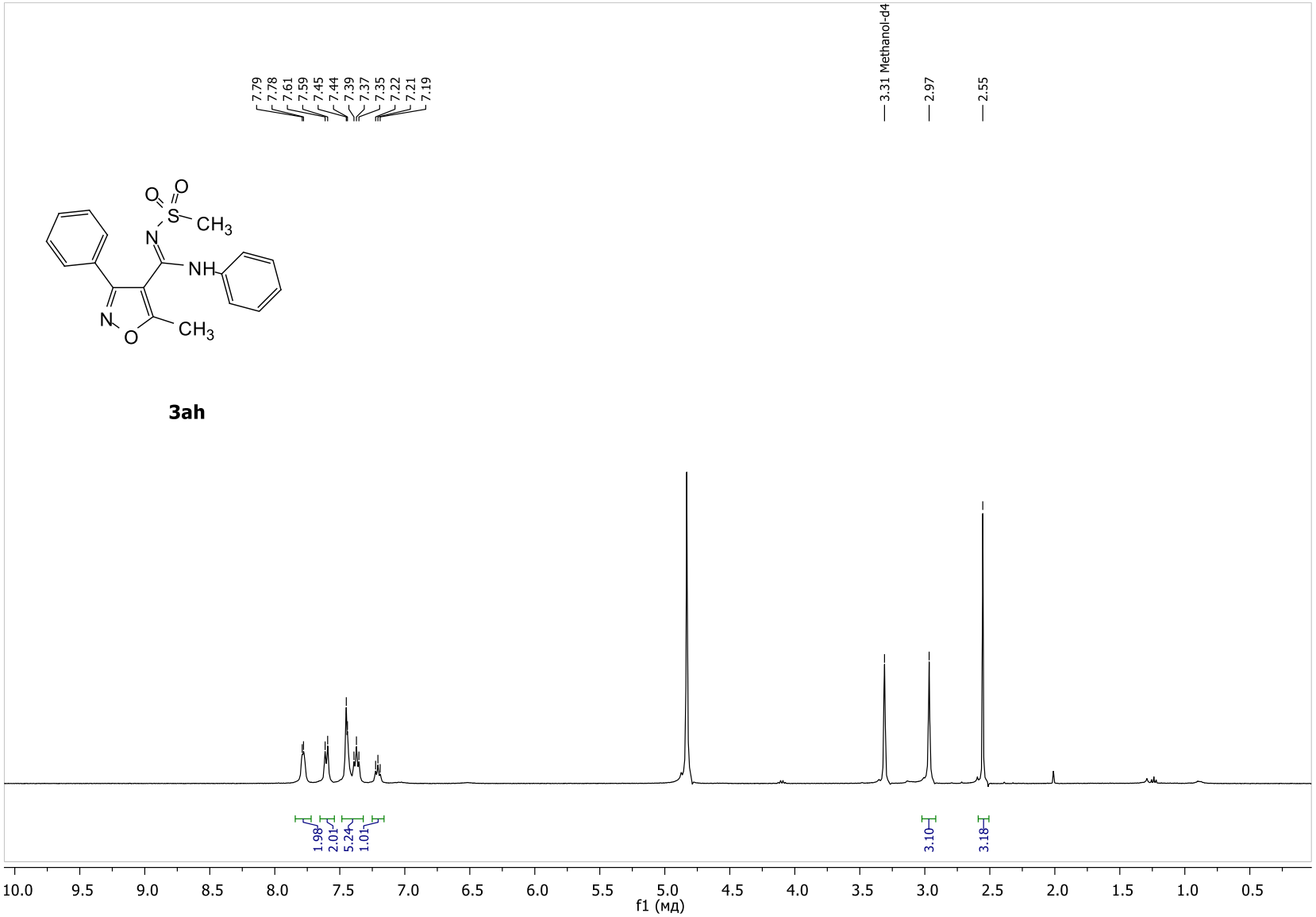
The ^{13}C NMR (100 MHz, DMSO-d_6) spectrum of compound **3af**.



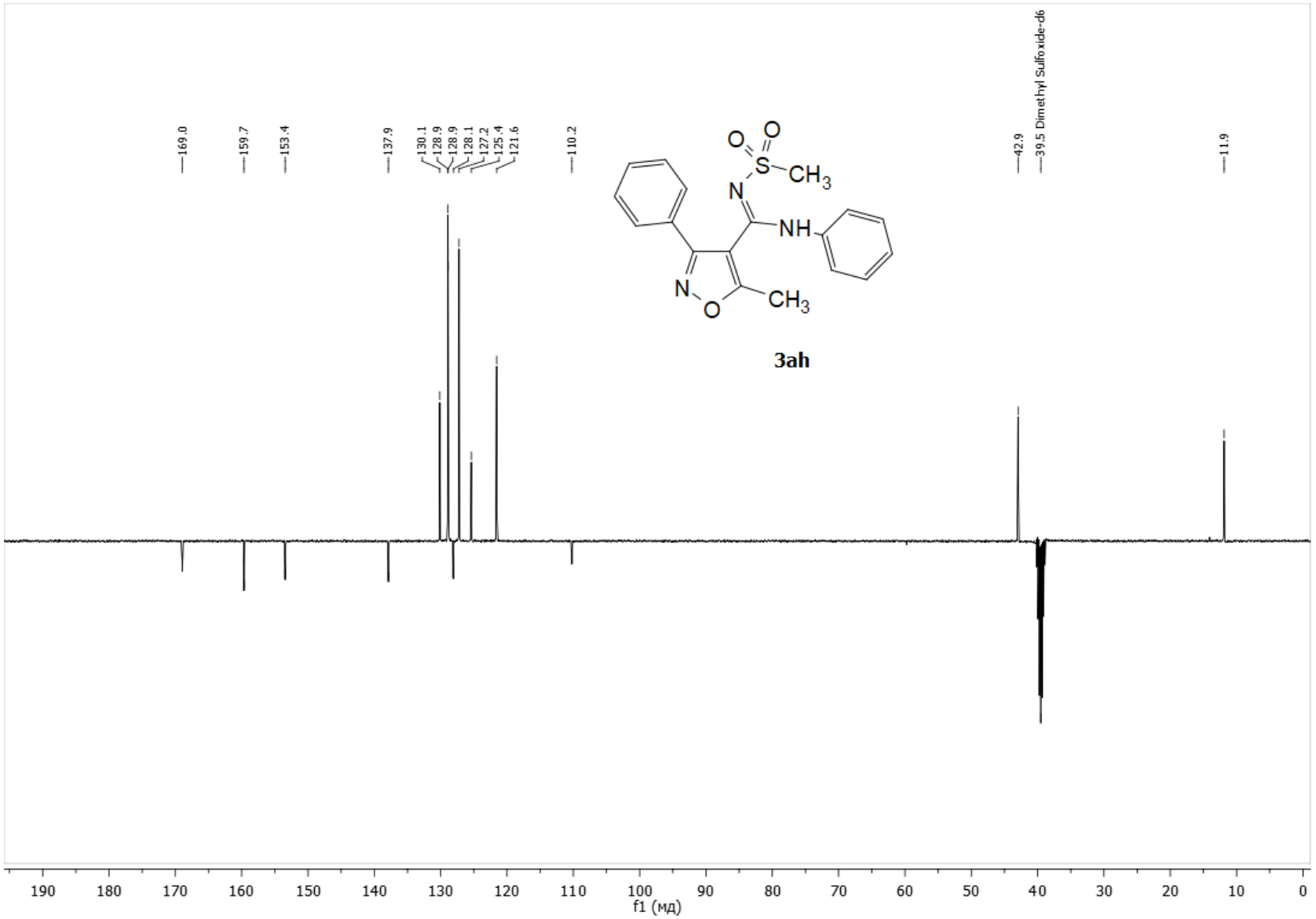
The ^{1}H NMR (400 MHz, DMSO-d_6) spectrum of compound **3ag**.



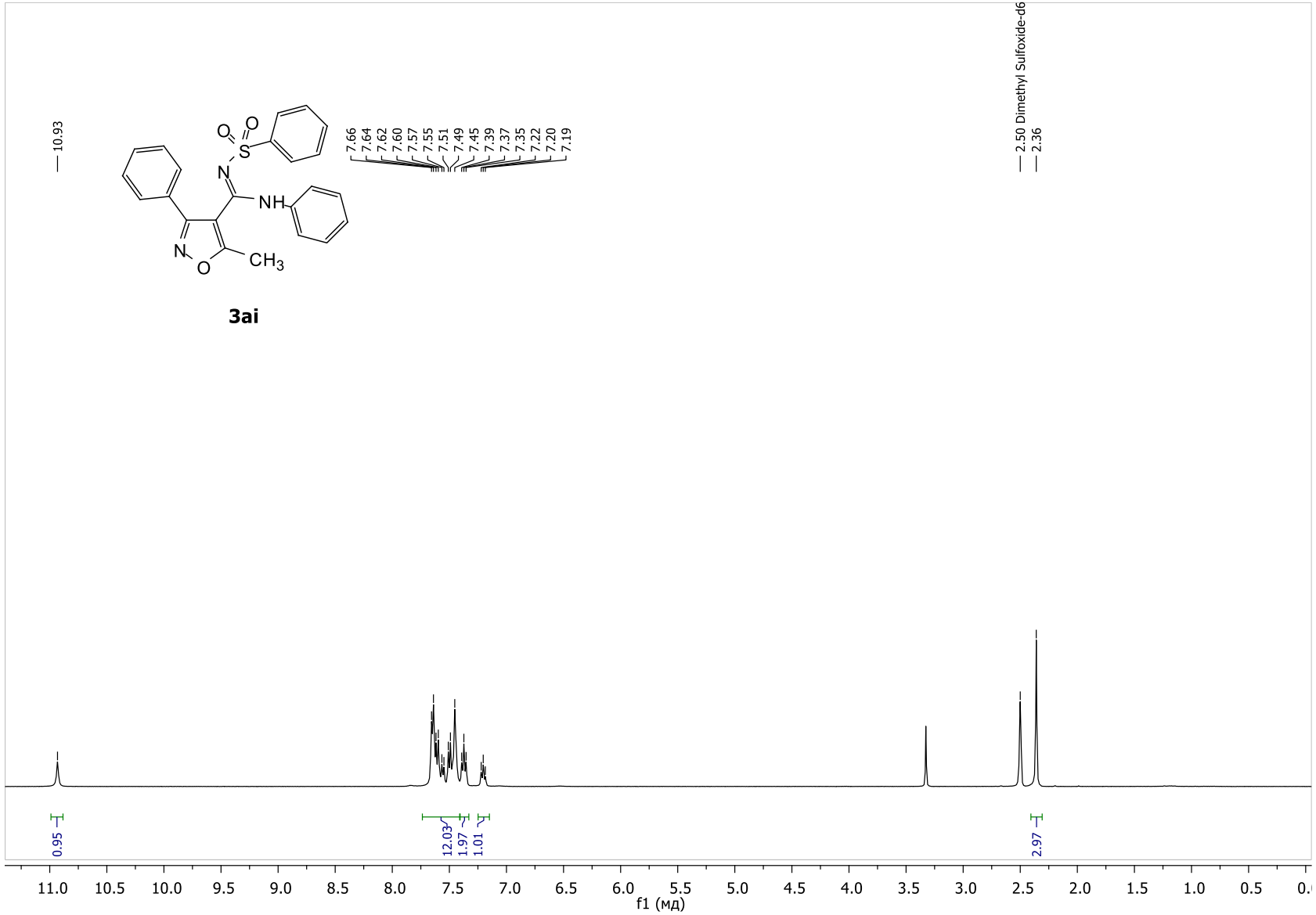
The ^{13}C NMR (100 MHz, DMSO-d_6) spectrum of compound **3ag**.



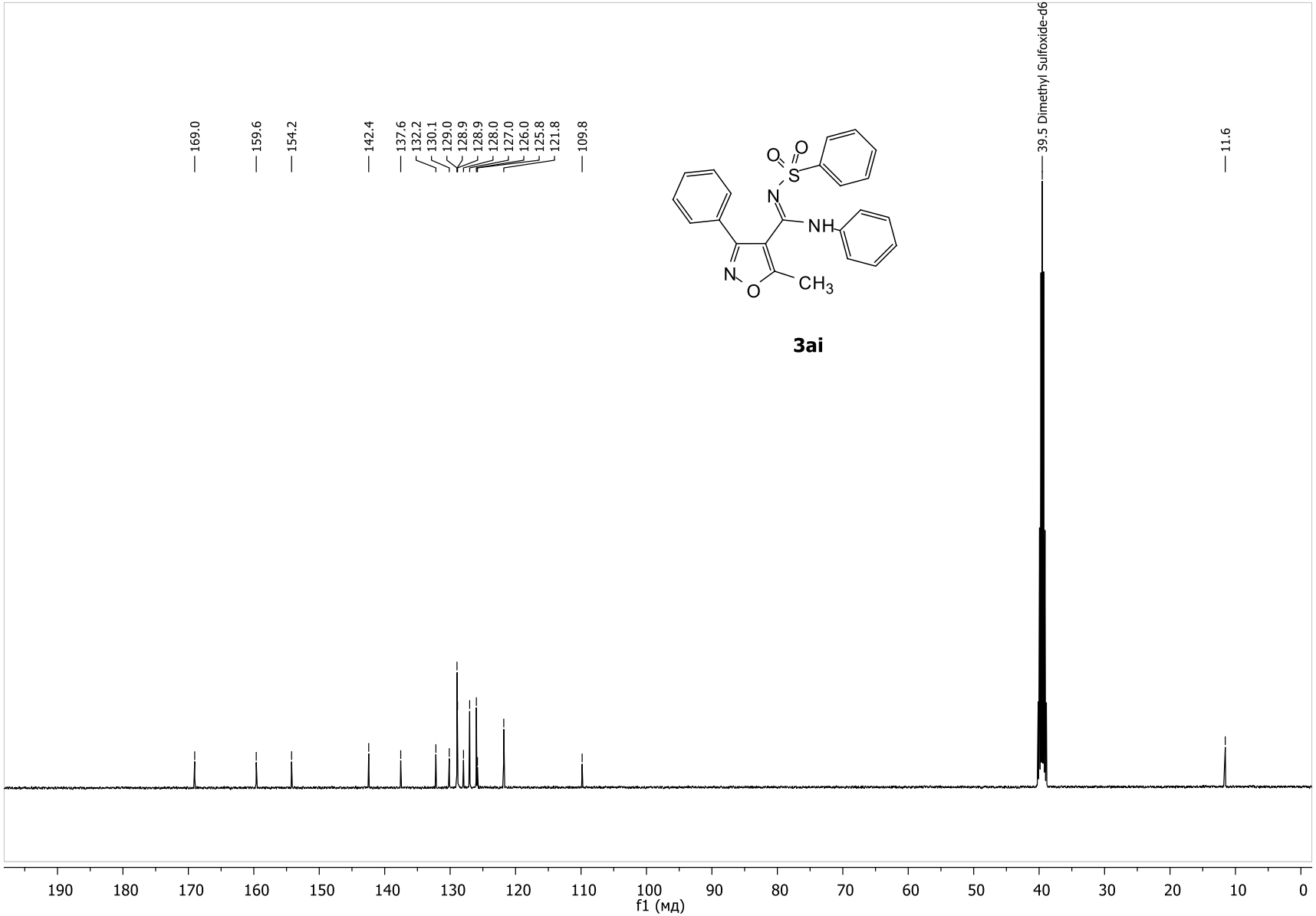
The ^{1}H NMR (400 MHz, CD_3OD) spectrum of compound **3ah**.



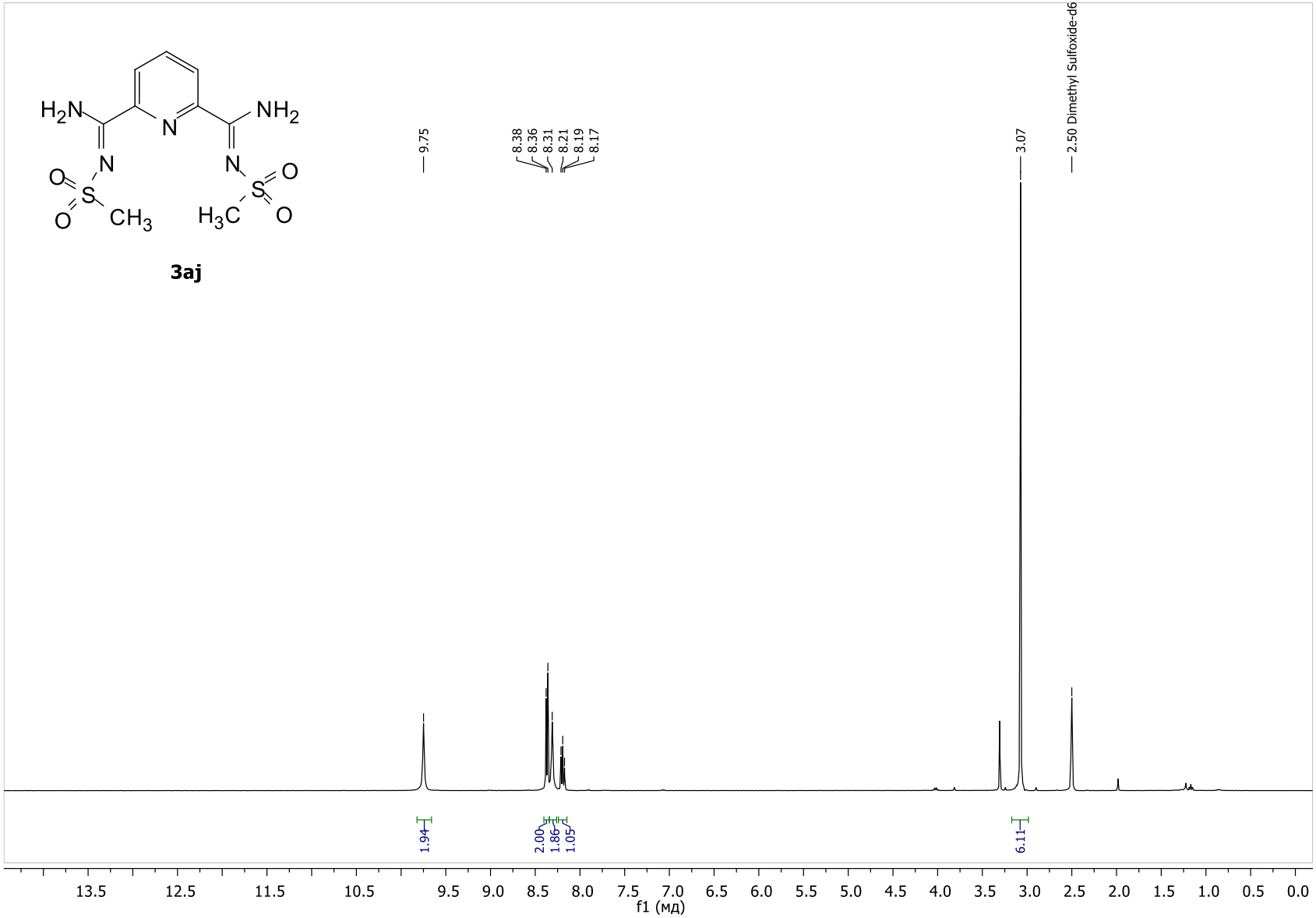
The ^{13}C NMR (100 MHz, DMSO-d_6) spectrum of compound **3ah**.



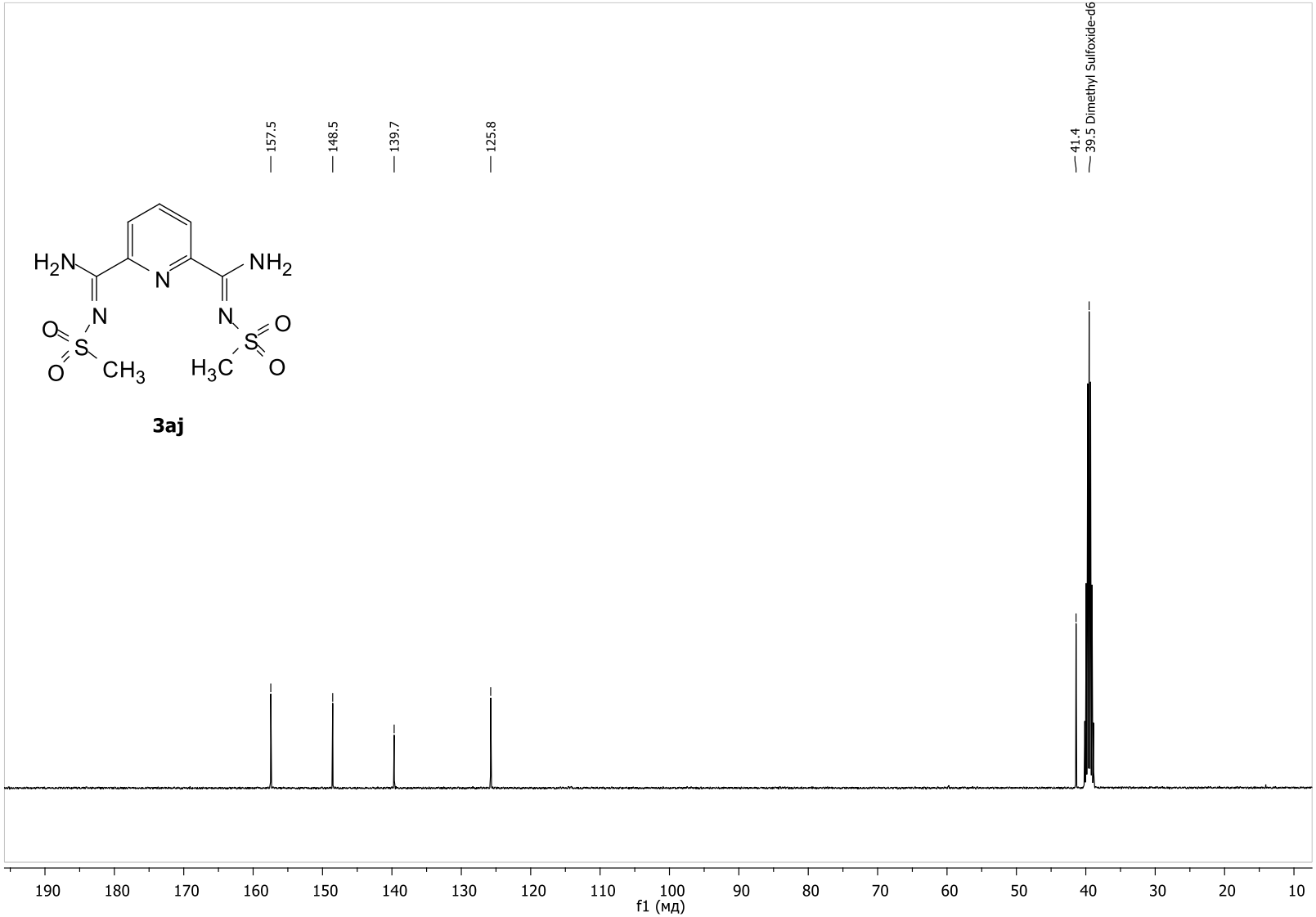
The ^{1}H NMR (400 MHz, DMSO-d_6) spectrum of compound **3ai**.



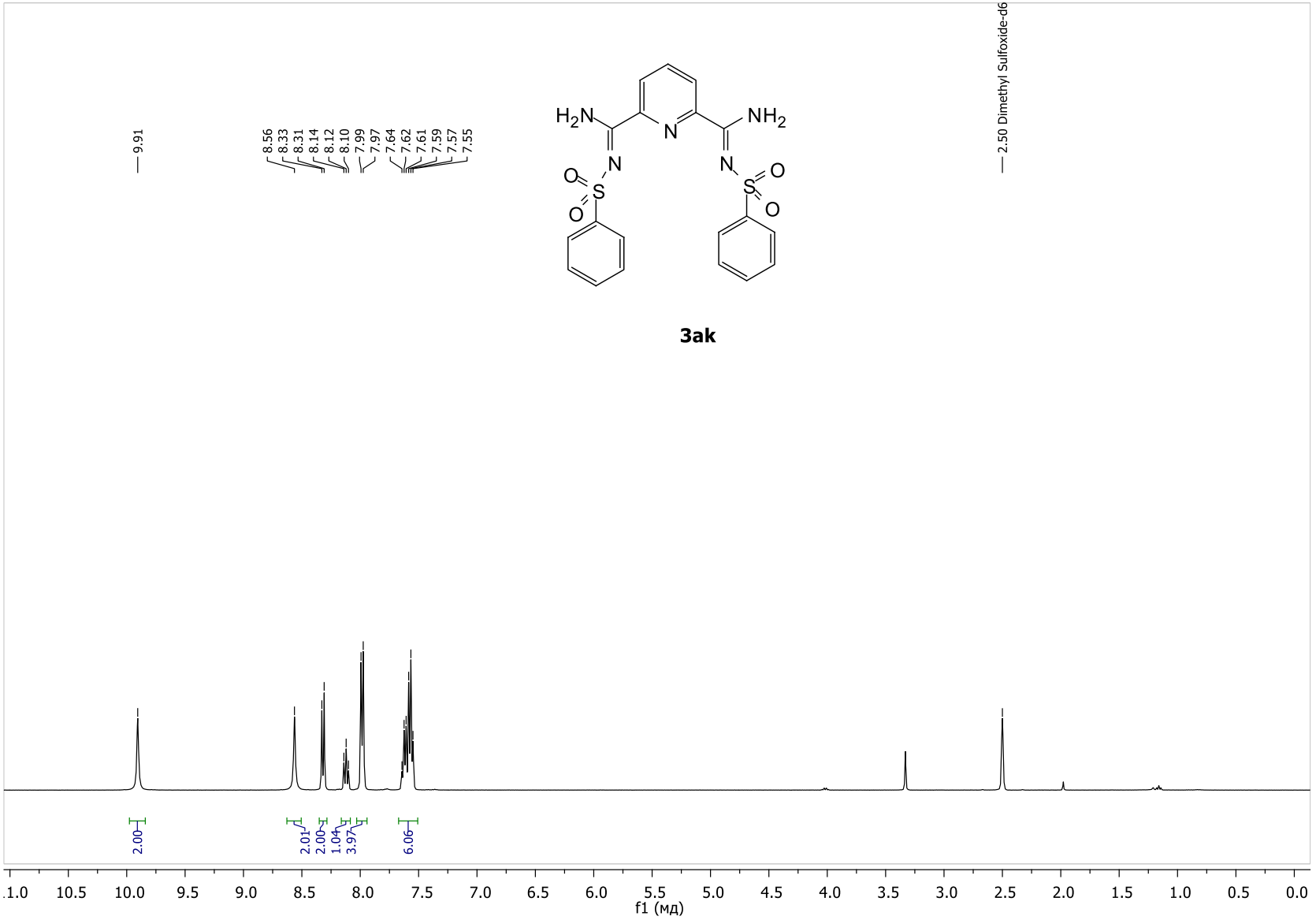
The ^{13}C NMR (100 MHz, DMSO-d_6) spectrum of compound **3ai**.



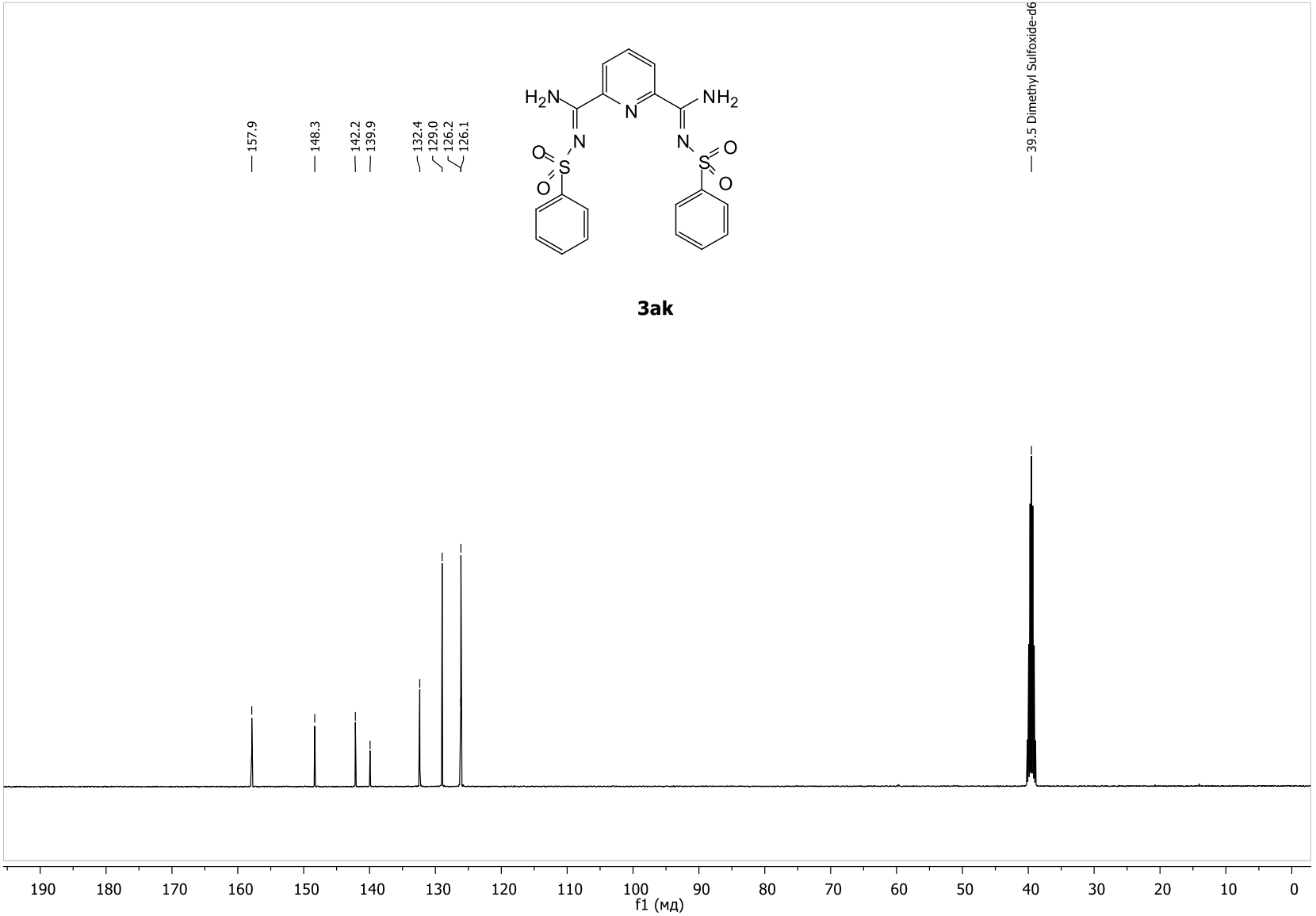
The ^{1}H NMR (400 MHz, DMSO-d_6) spectrum of compound **3aj**.



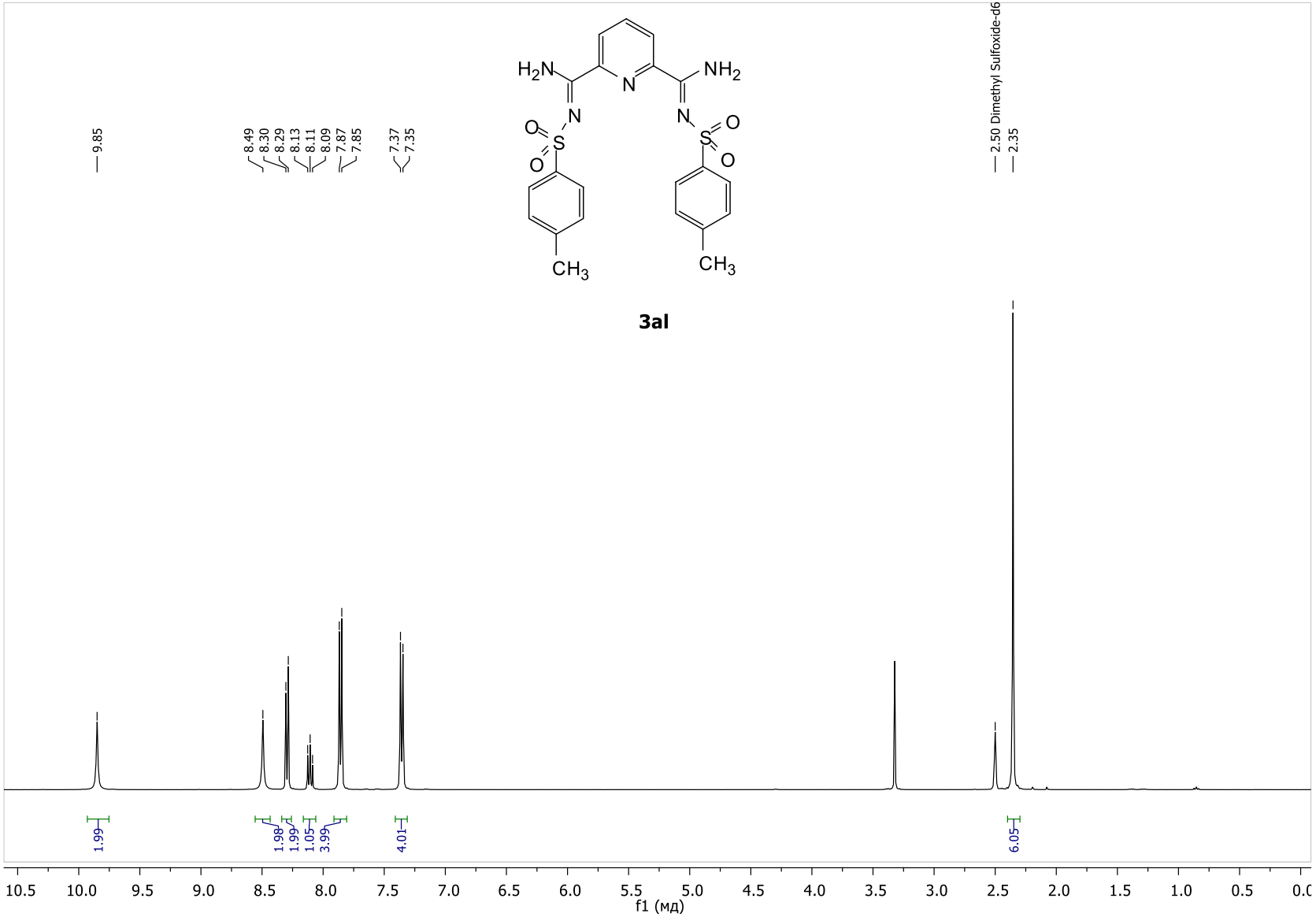
The ^{13}C NMR (100 MHz, DMSO-d_6) spectrum of compound **3aj**.



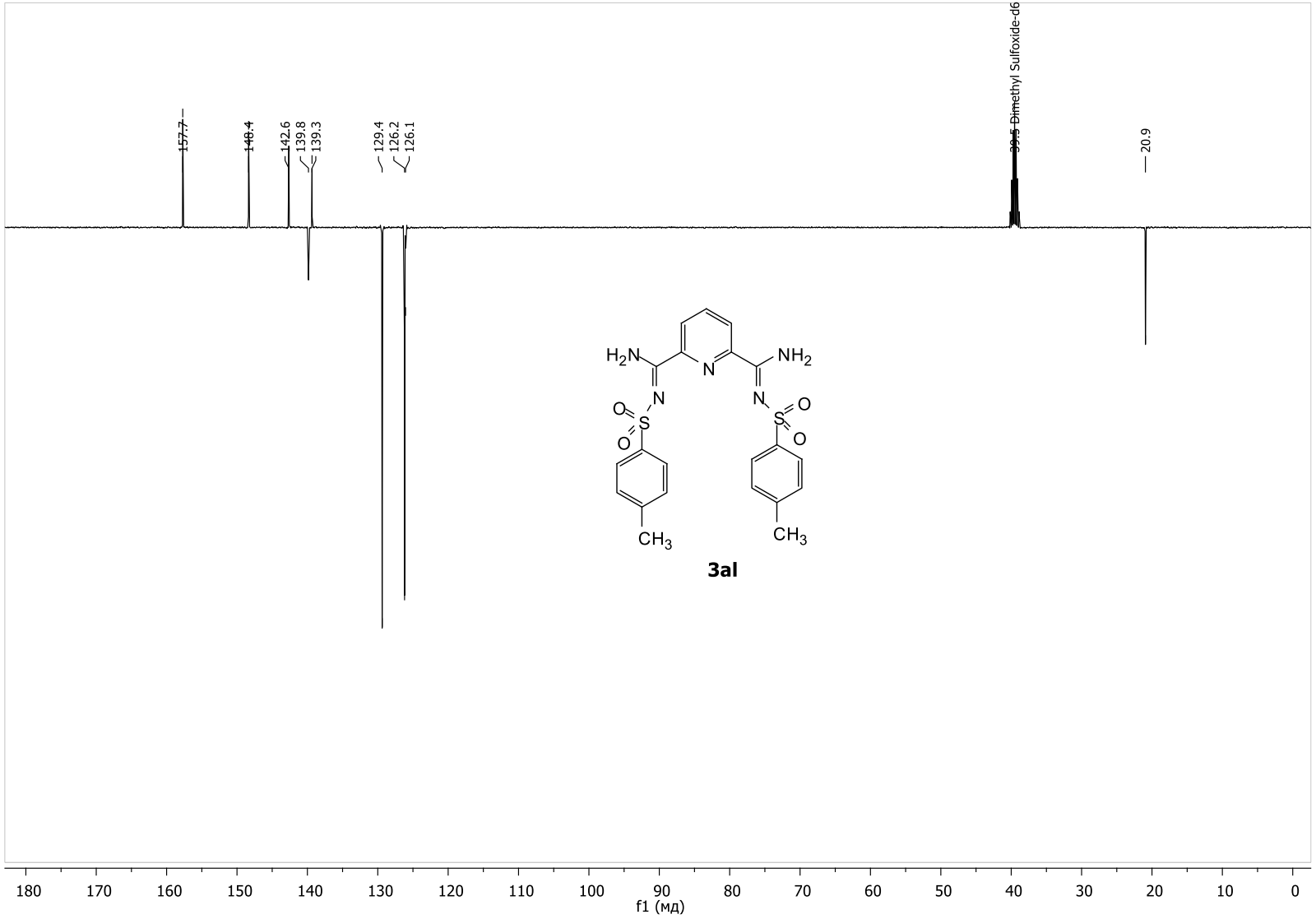
The ^{1}H NMR (400 MHz, DMSO-d_6) spectrum of compound **3ak**.



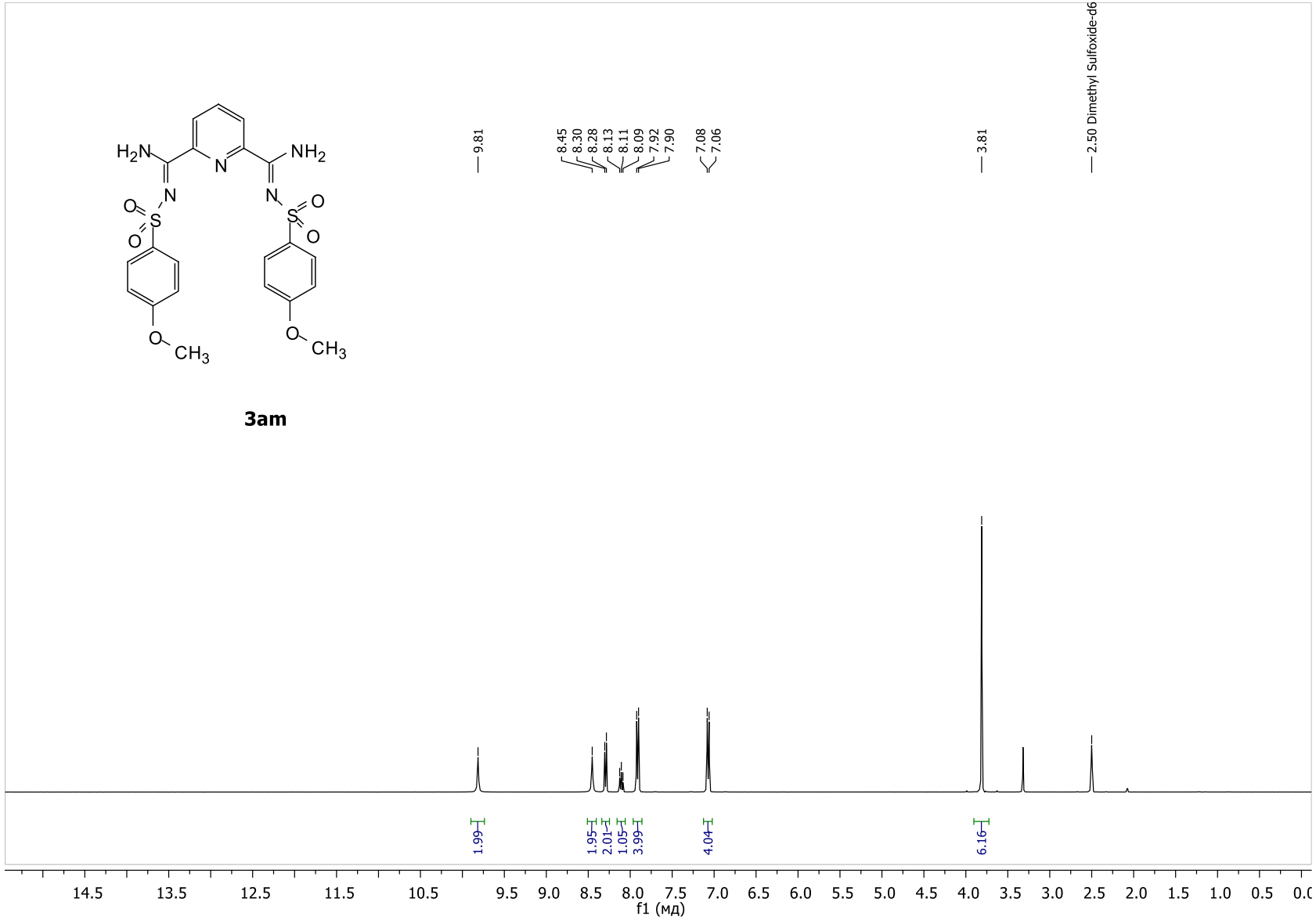
The ^{13}C NMR (100 MHz, DMSO-d_6) spectrum of compound **3ak**.



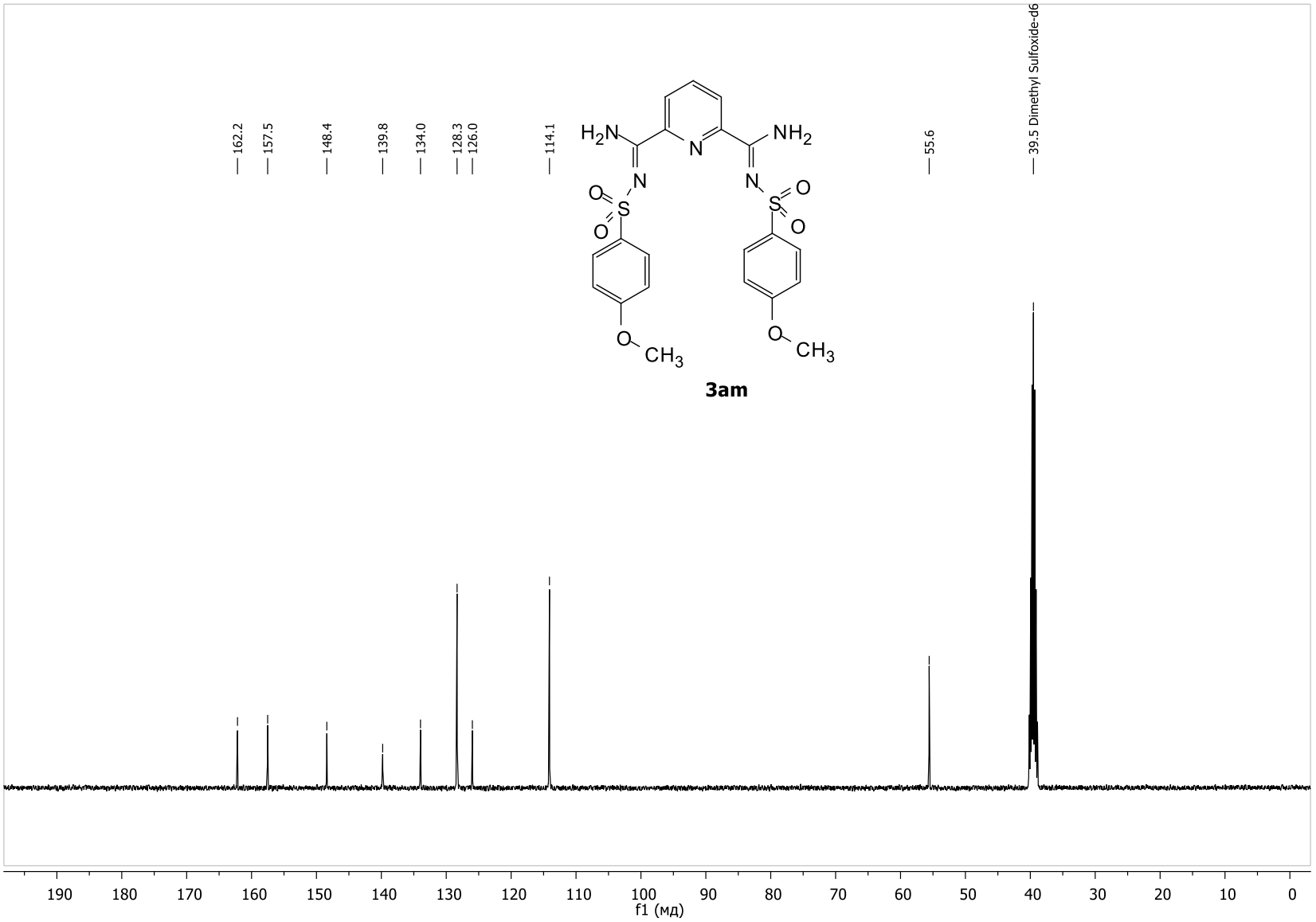
The ^{1}H NMR (400 MHz, DMSO-d_6) spectrum of compound **3al**.



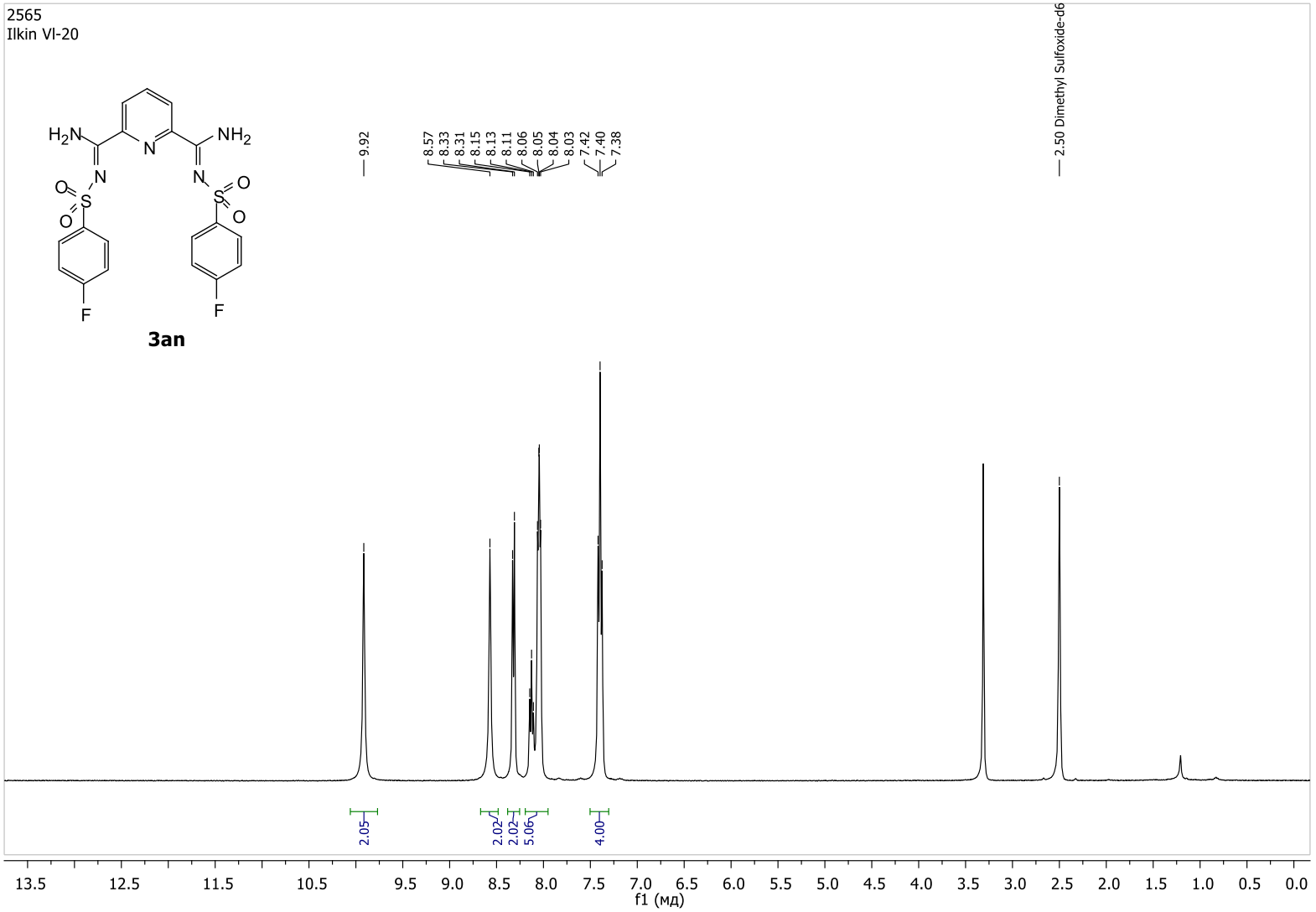
The ^{13}C NMR (100 MHz, DMSO-d_6) spectrum of compound **3al**.



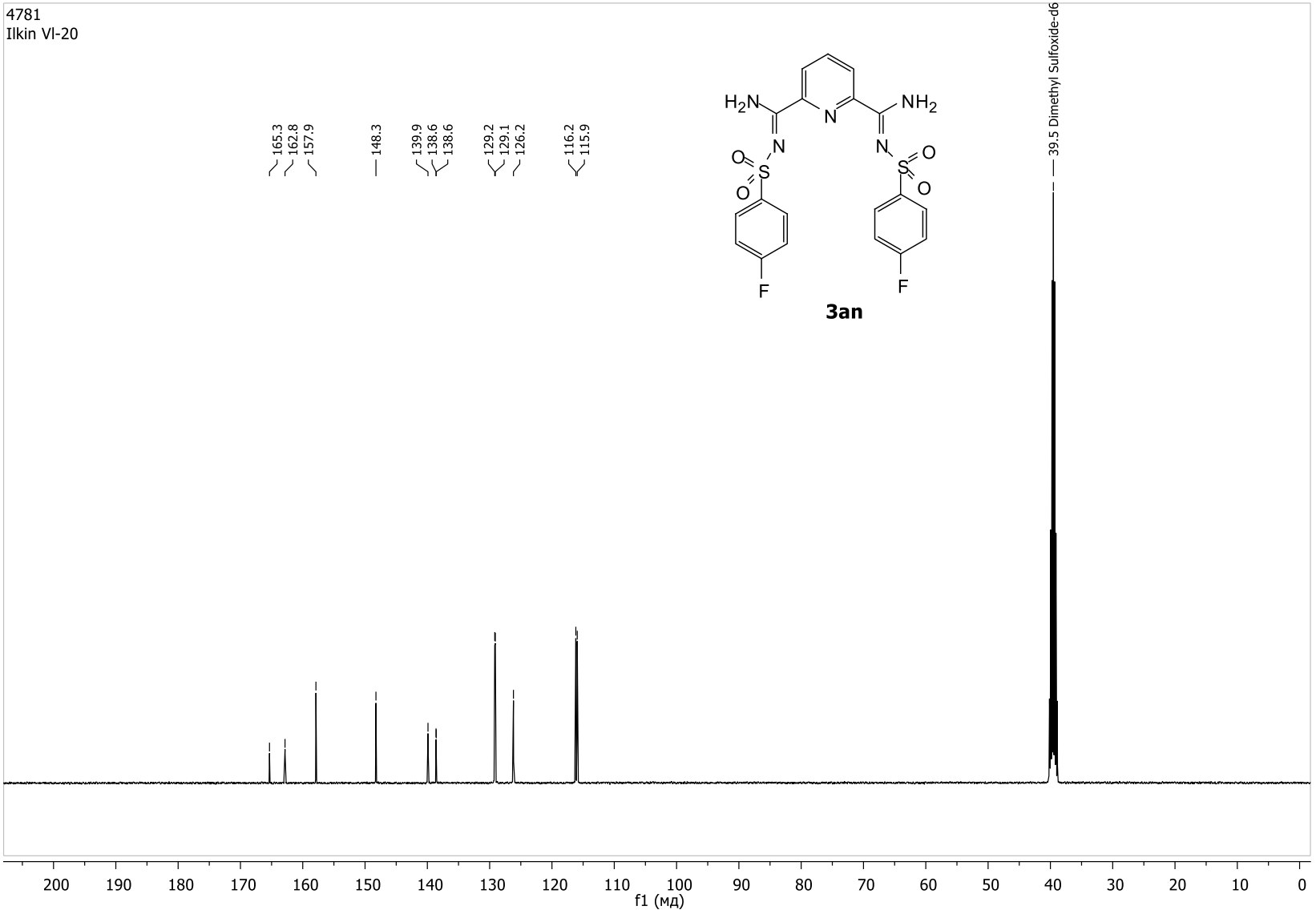
The ^{1}H NMR (400 MHz, DMSO-d_6) spectrum of compound **3am**.



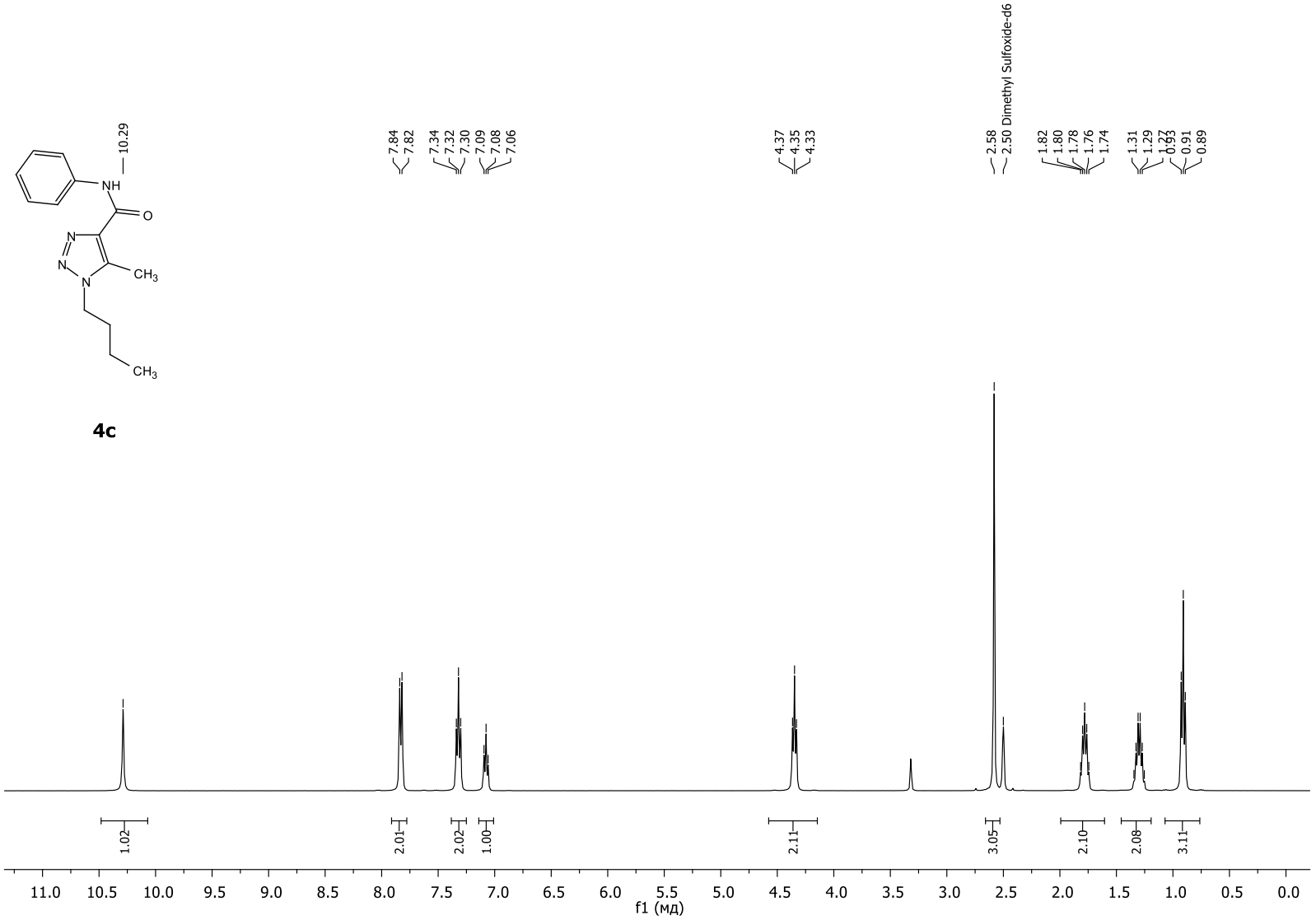
The ^{13}C NMR (100 MHz, DMSO-d_6) spectrum of compound **3am**.



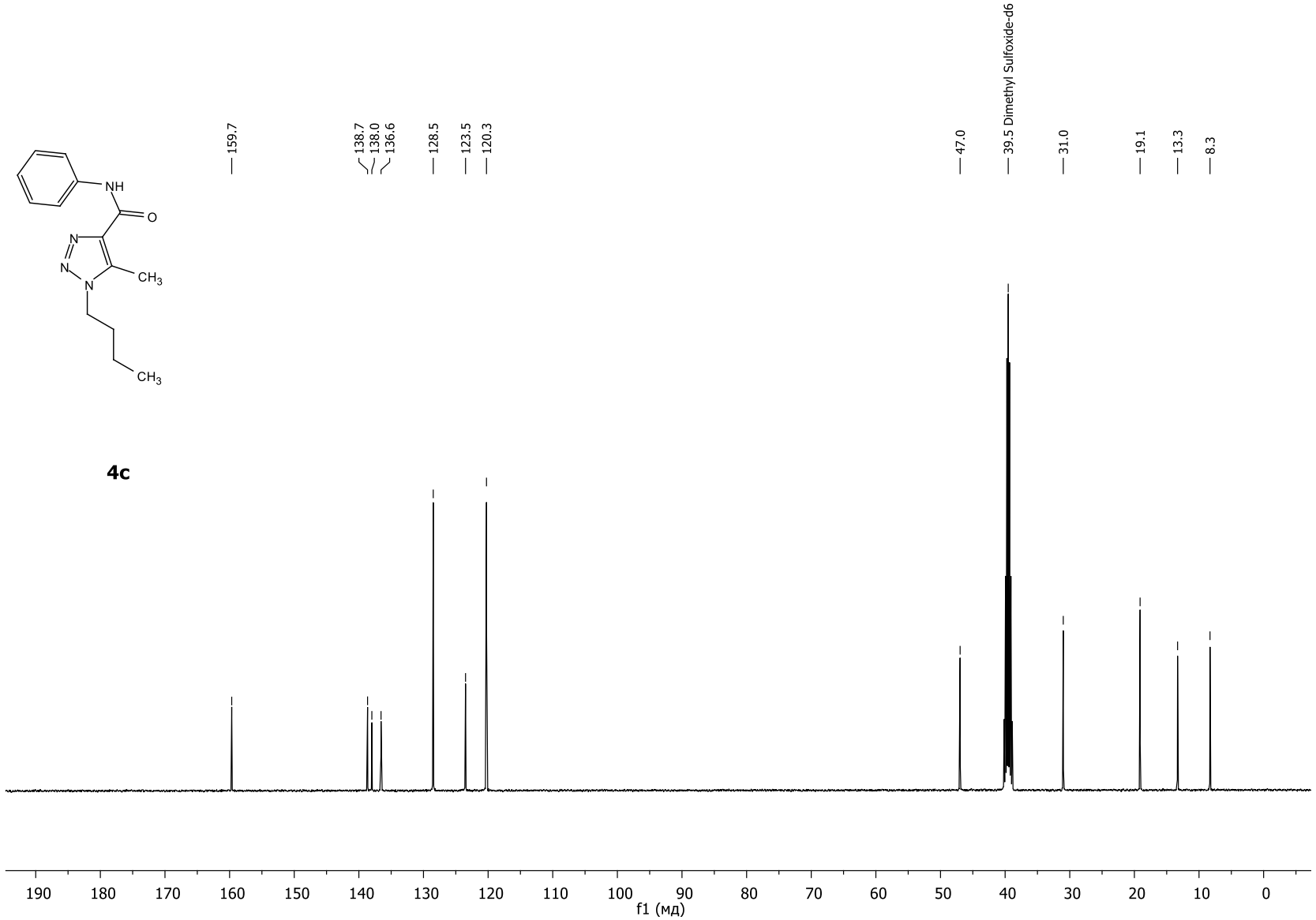
The ^{1}H NMR (400 MHz, DMSO-d_6) spectrum of compound **3an**.



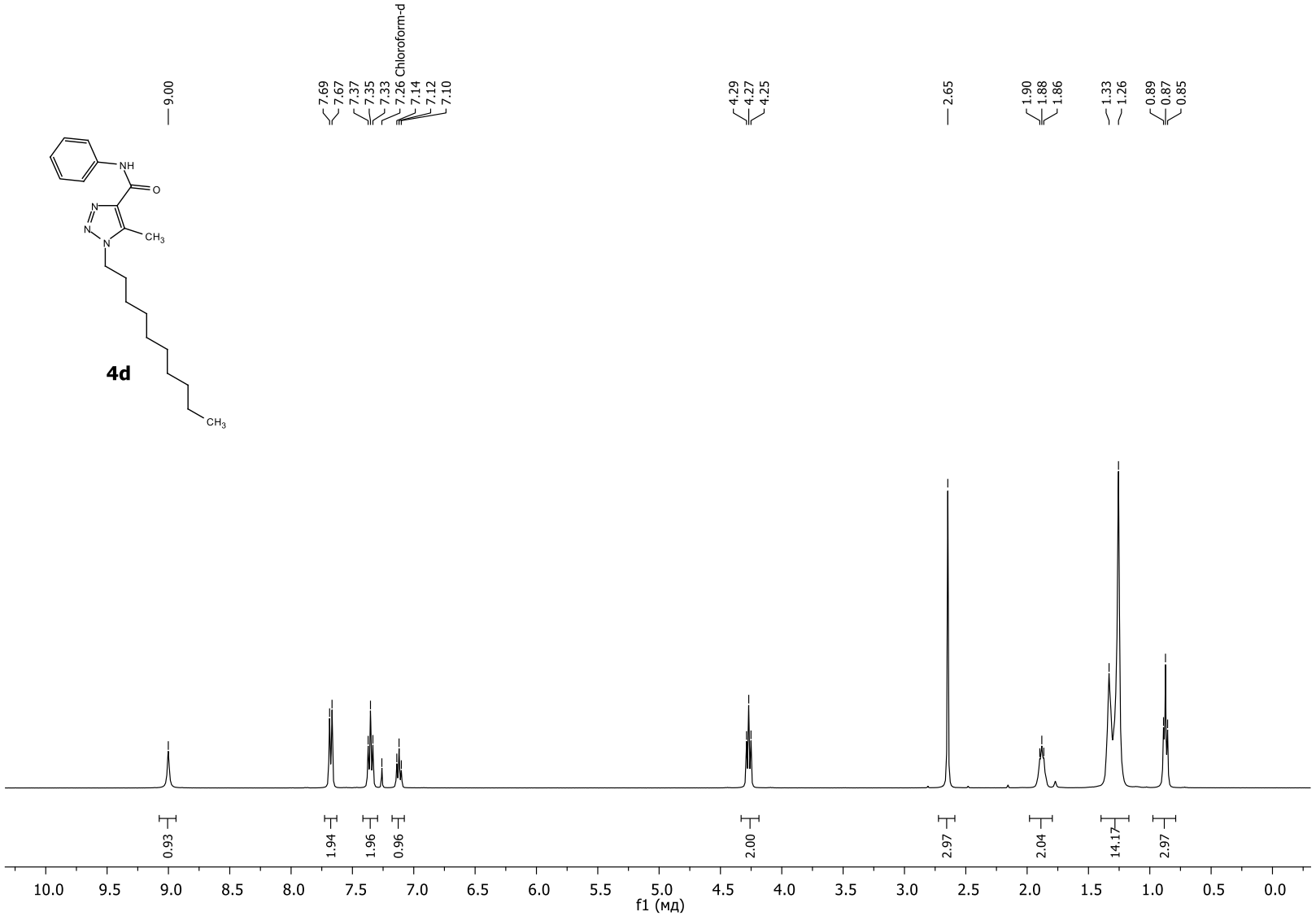
The ^{13}C NMR (100 MHz, DMSO-d_6) spectrum of compound **3an**.



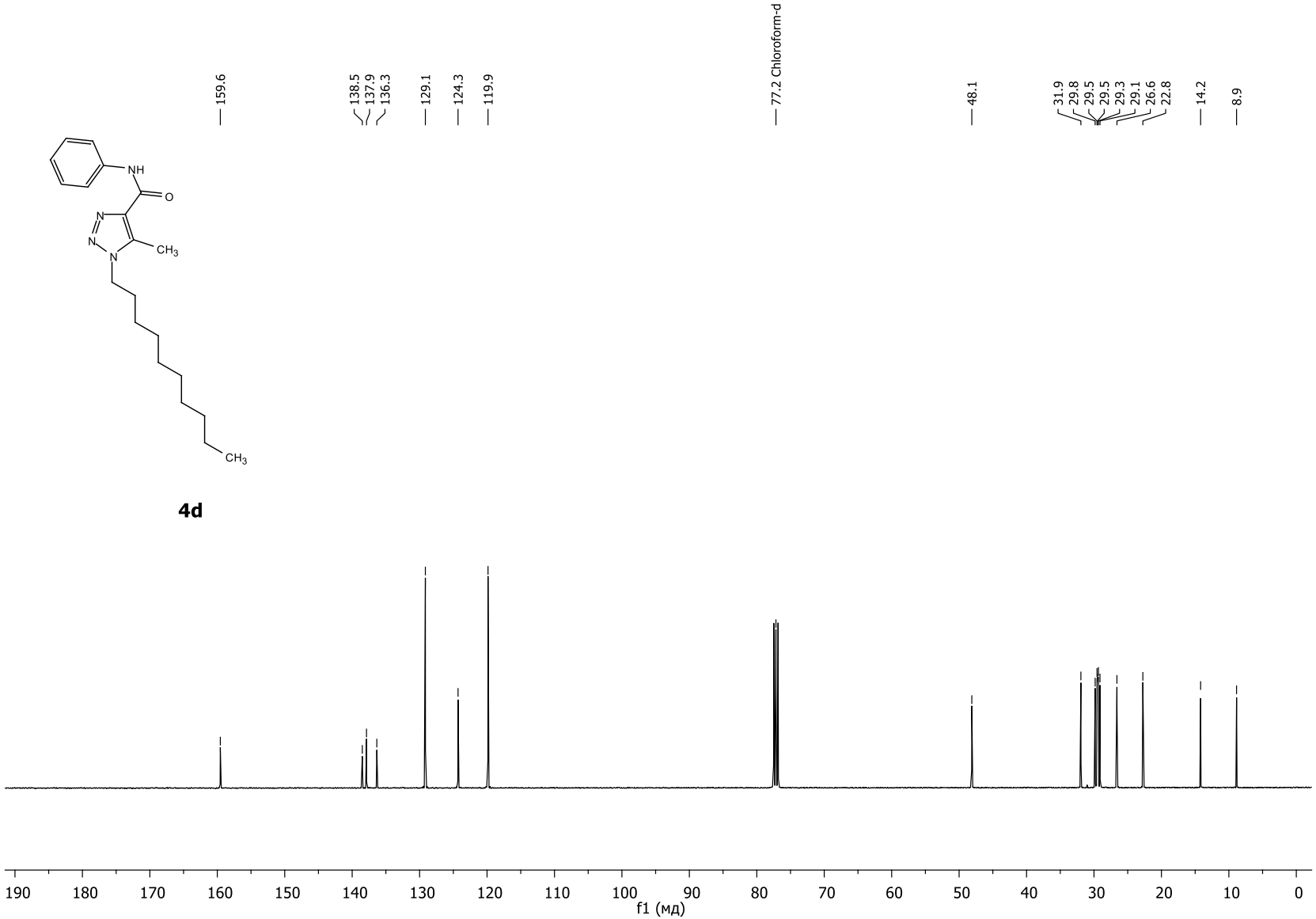
The ^{1}H NMR (400 MHz, DMSO-d_6) spectrum of compound **4c**.



The ^{13}C NMR (100 MHz, DMSO-d_6) spectrum of compound **4c**.



The ^{1}H NMR (400 MHz, $CDCl_3$) spectrum of compound **4d**.



The ^{13}C NMR (100 MHz, $CDCl_3$) spectrum of compound **4d**.