

Supporting Information

A New and Facile Protocol for the Synthesis of Dithiocarbamate-linked 3,4-Dihydro-2H-pyran Using N-Halo Catalysts Under Mild Conditions Reaction

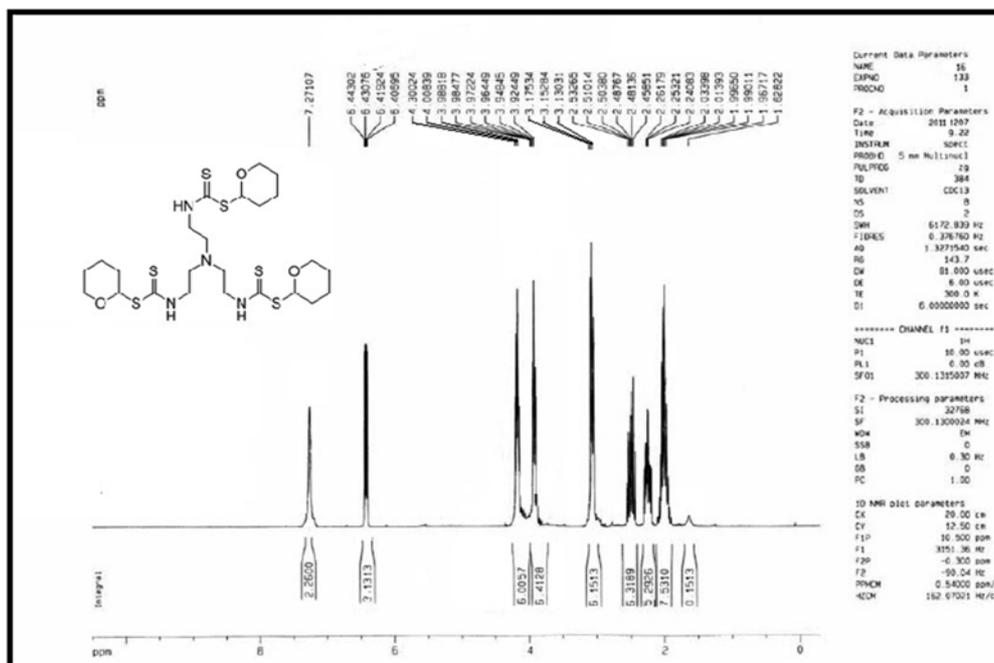
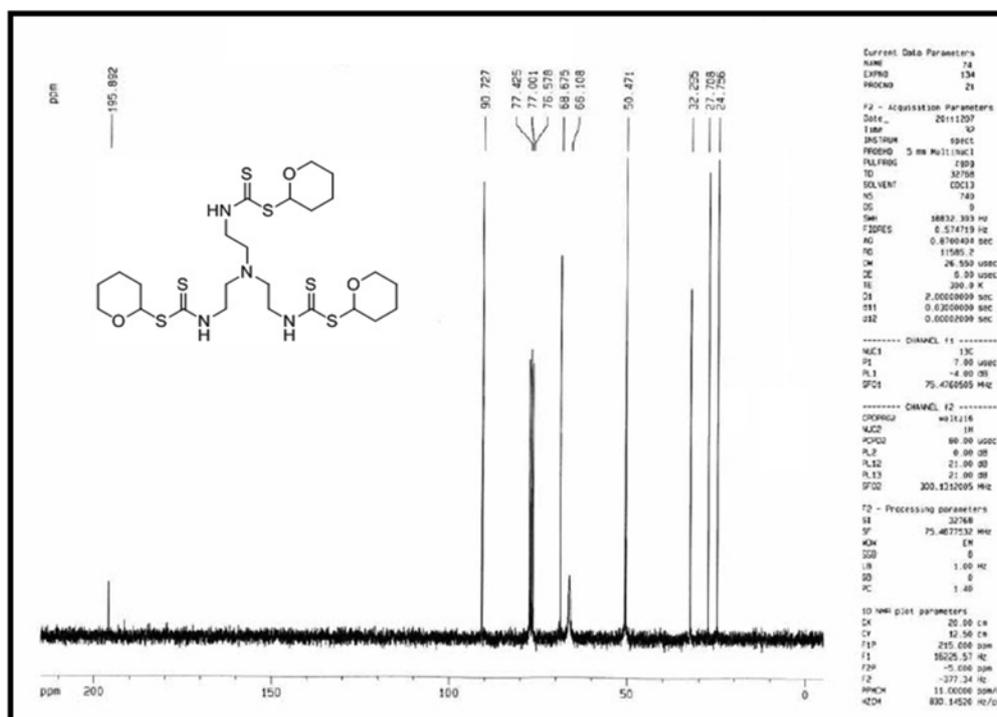
Ramin Ghorbani-Vaghei,^{*} Mostafa Amiri, and Hojat Veisi[†]

Department of Organic Chemistry, Faculty of Chemistry, Bu-Ali-Sina University, 65174, Hamedan, Iran

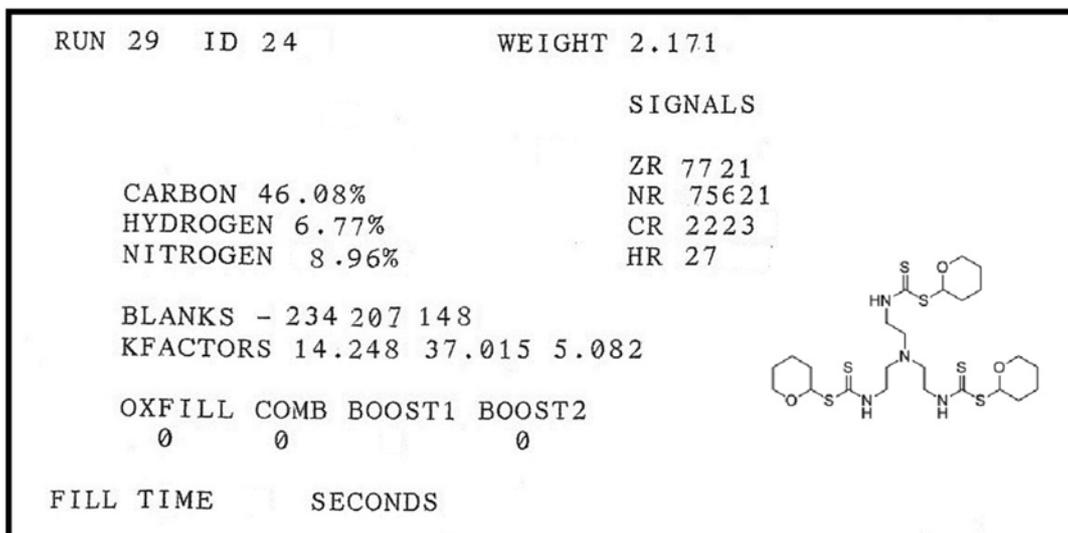
^{}E-mail: rgvaghei@yahoo.com*

[†]Department of chemistry, Payame Noor University, 19395-4697 Tehran, I.R. of Iran

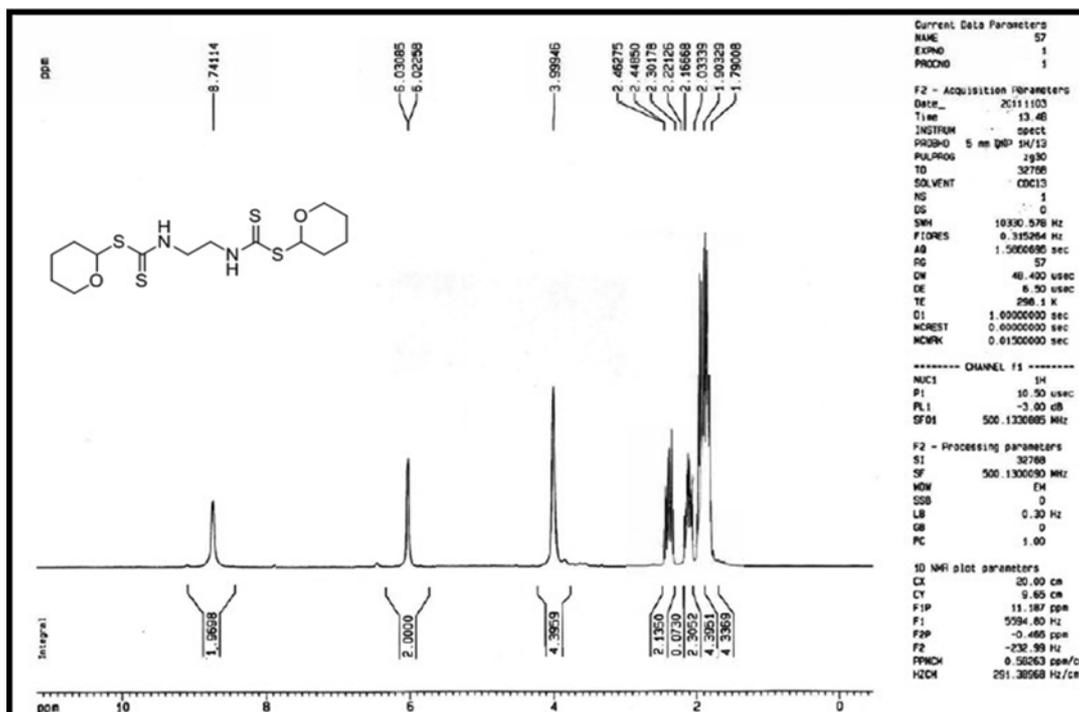
Received August 11, 2012, Accepted September 14, 2012

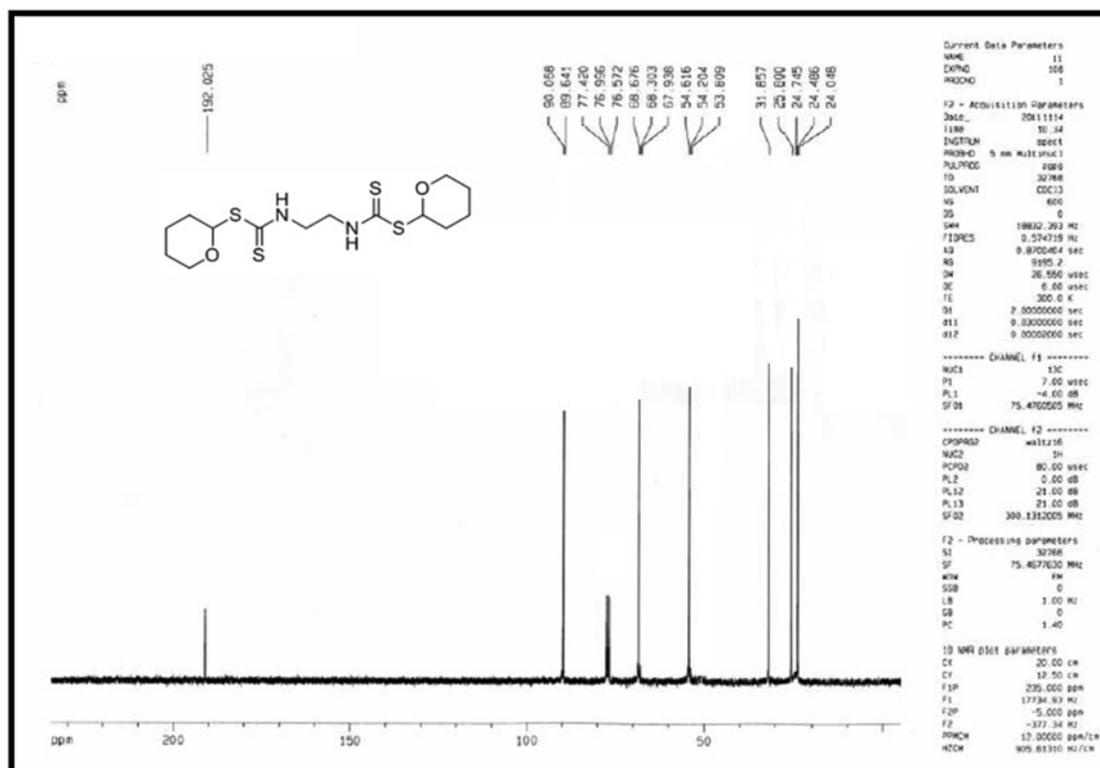
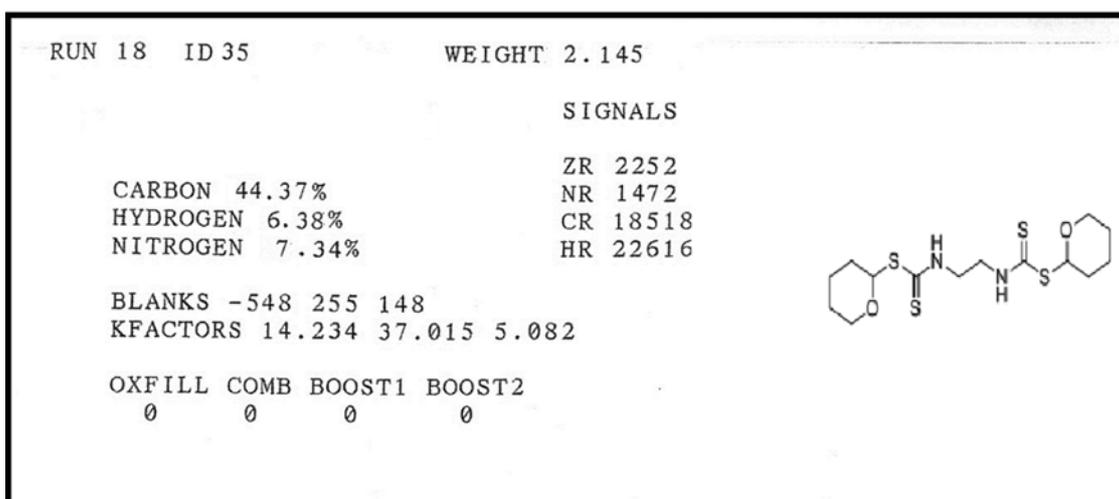
¹H NMR. Tris(tetrahydro-2H-pyran-2-yl)(nitrilotris(ethane-2,1-diyl))tricarbamodithioate¹³C NMR. Tris(tetrahydro-2H-pyran-2-yl)(nitrilotris(ethane-2,1-diyl))tricarbamodithioate

CHN. bis(tetrahydro-2H-pyran-2-yl) ethane-1,2-diyl dithiocarbamate

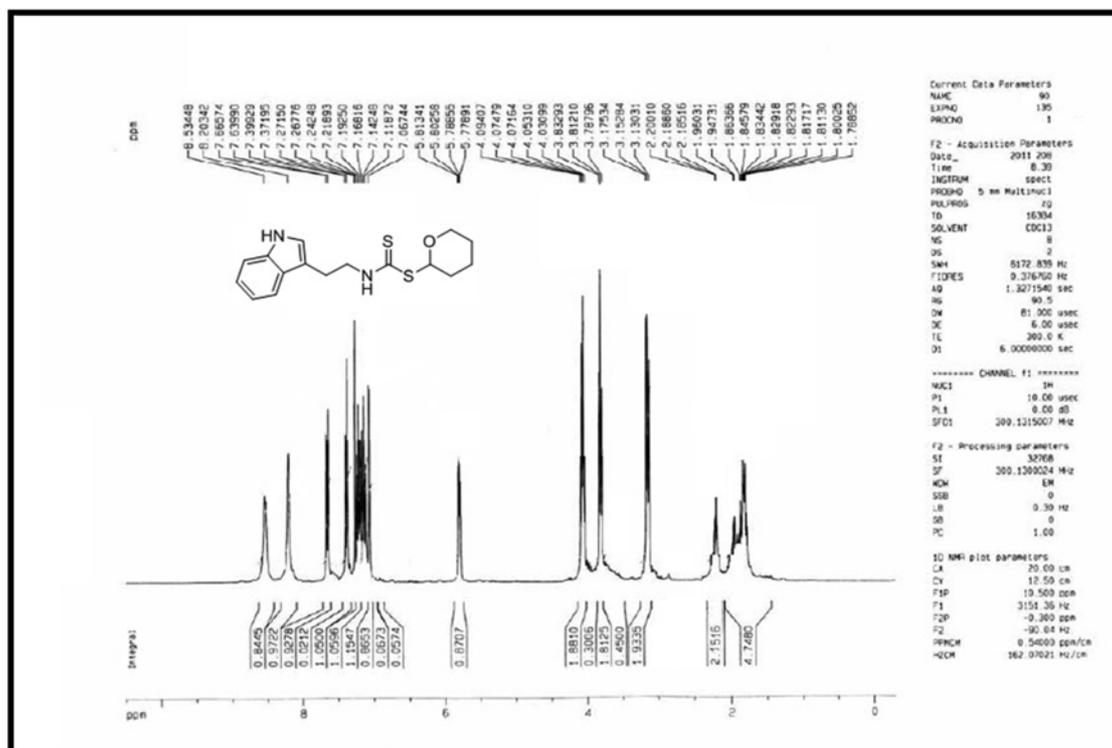


¹H NMR. bis(tetrahydro-2H-pyran-2-yl) ethane-1,2-diyl dithiocarbamate

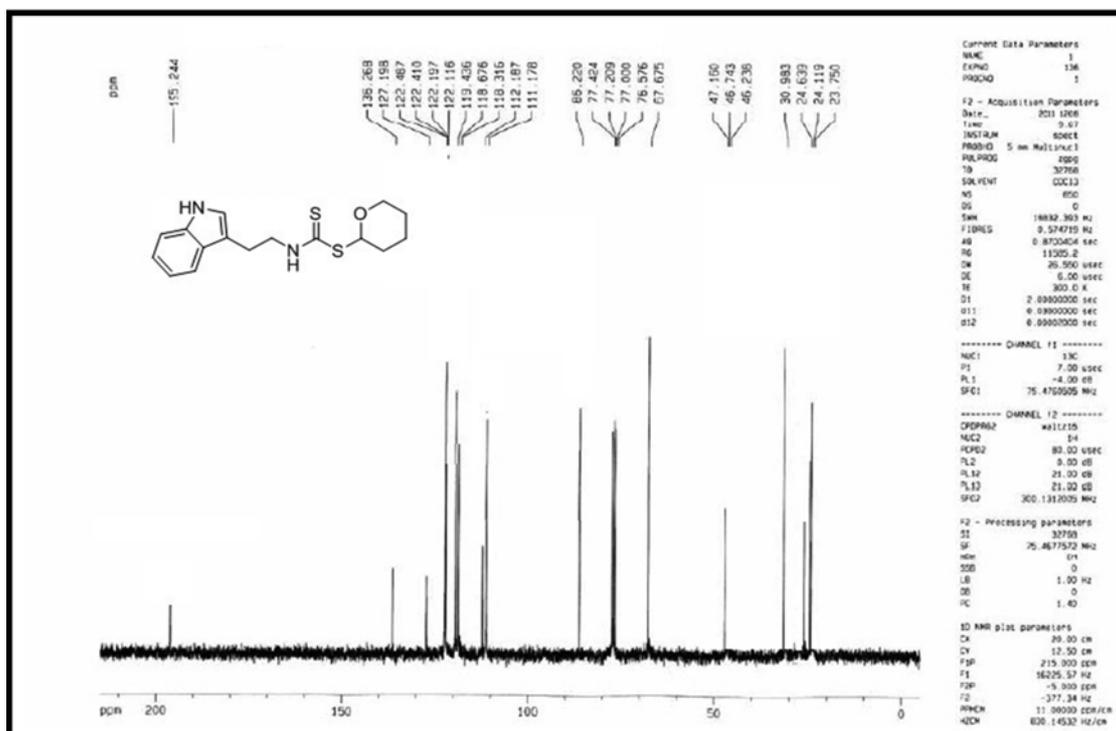


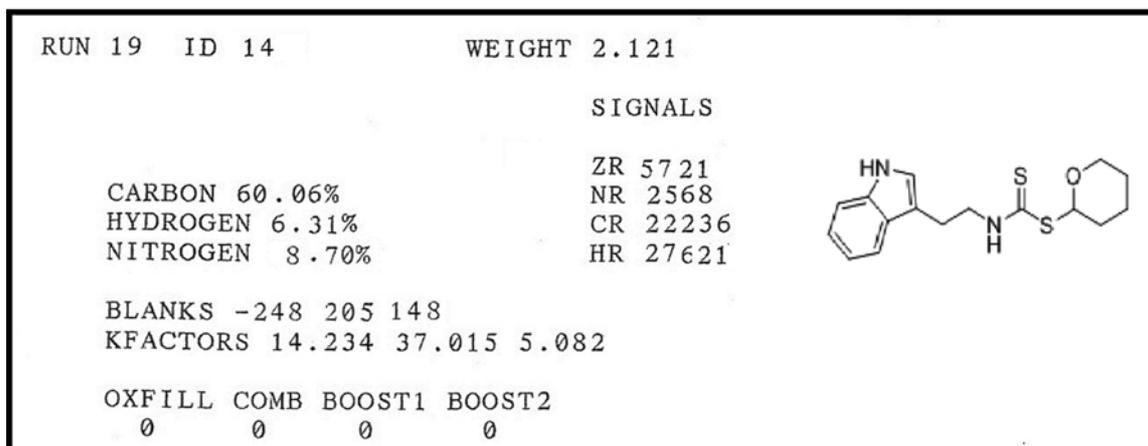
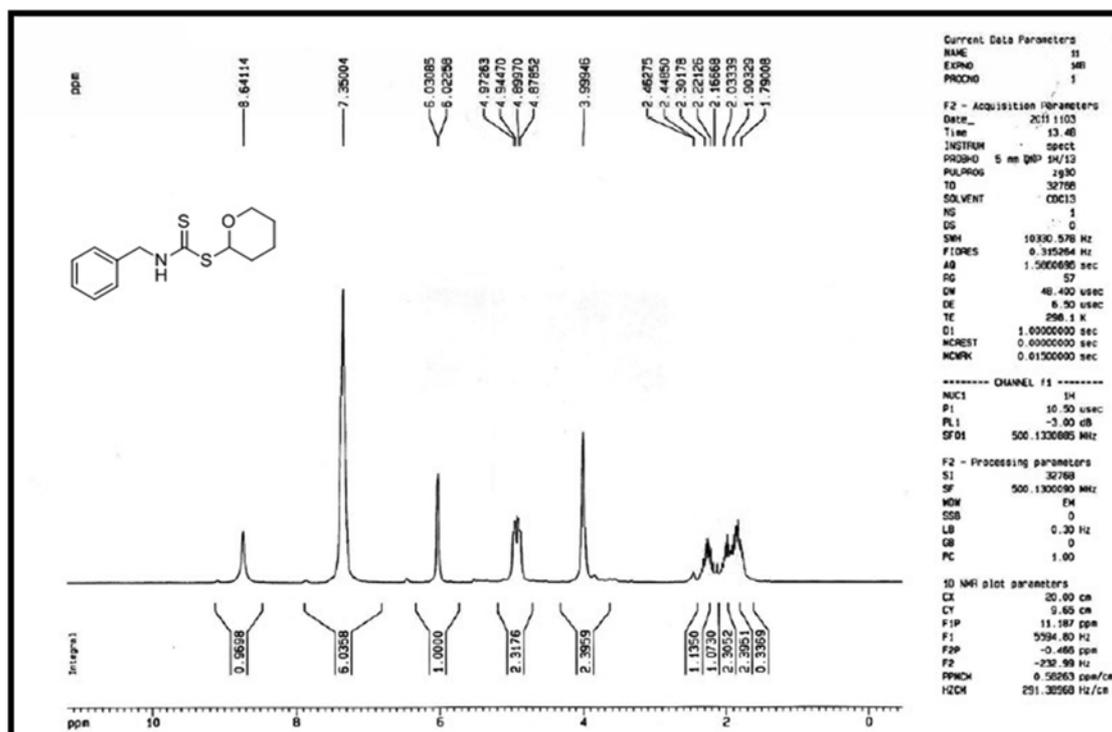
¹³C NMR. bis(tetrahydro-2H-pyran-2-yl) ethane-1,2-diyldicarbamodithioate**CHN.** bis(tetrahydro-2H-pyran-2-yl) ethane-1,2-diyldicarbamodithioate

¹H NMR. Tetrahydro-2H-pyran-2-yl (2-(1H-indol-3-yl)ethyl)carbamodithioate

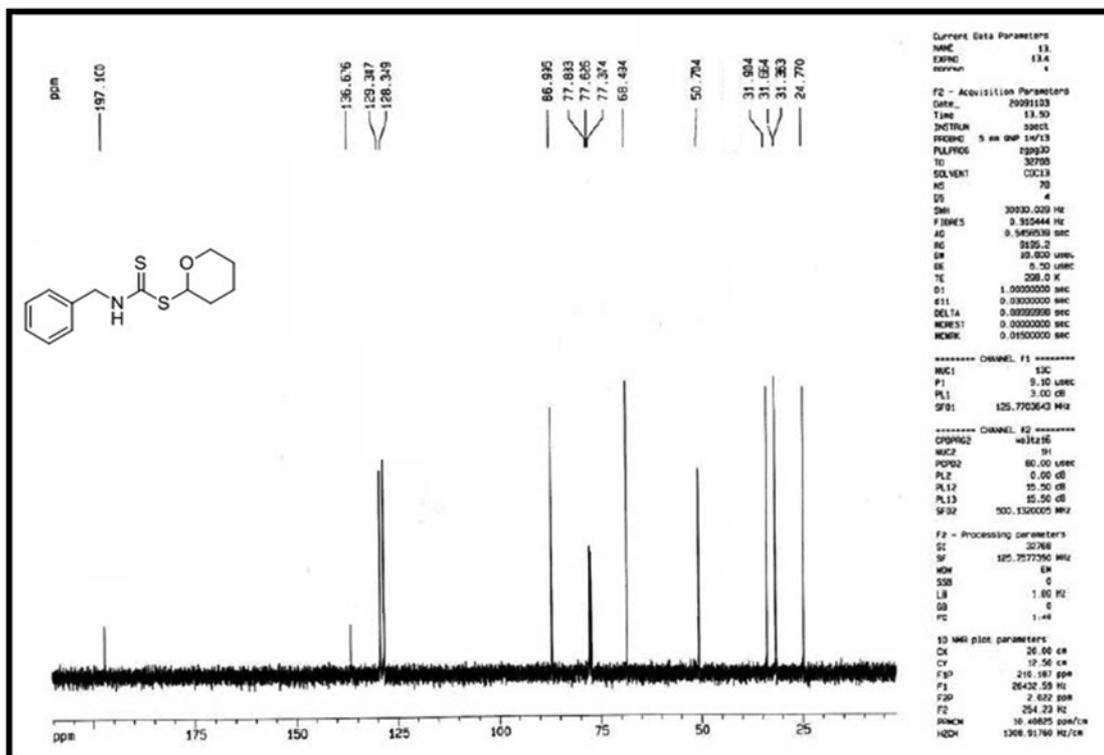


¹³C NMR. Tetrahydro-2H-pyran-2-yl (2-(1H-indol-3-yl)ethyl)carbamodithioate

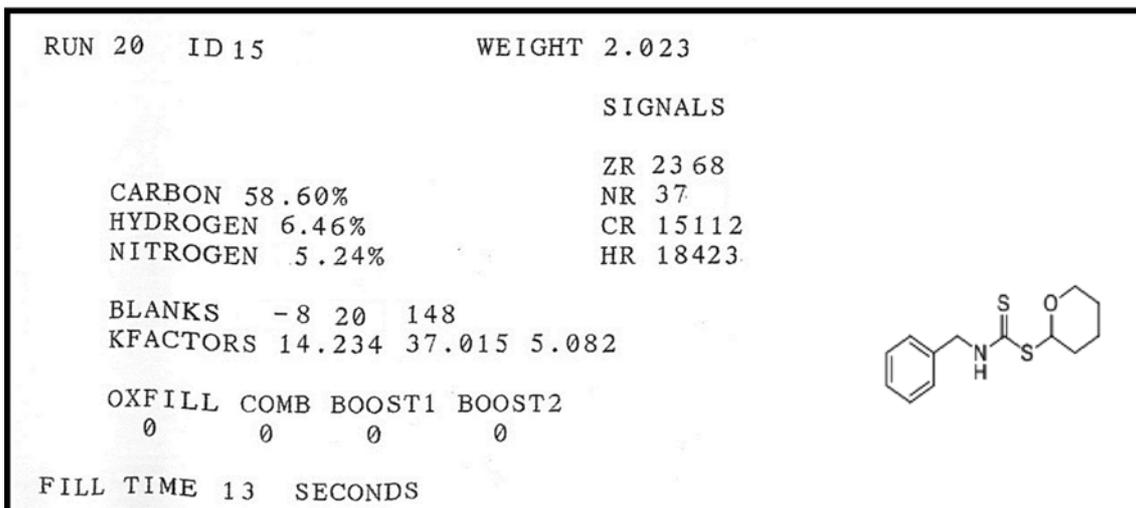


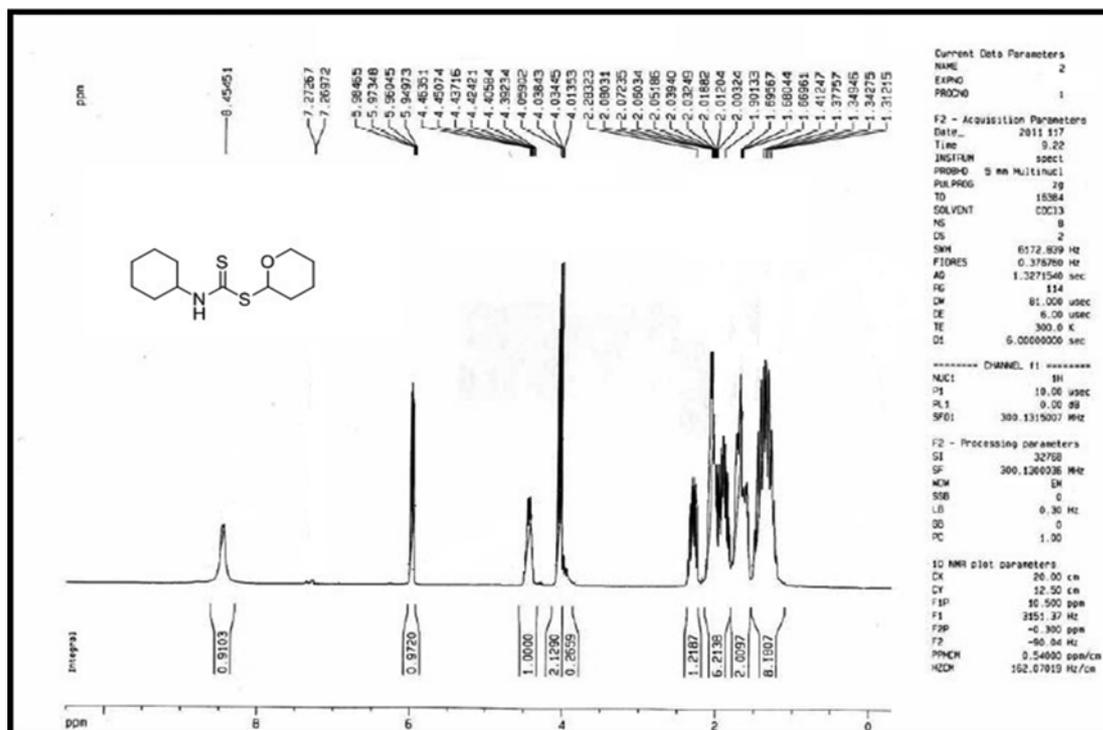
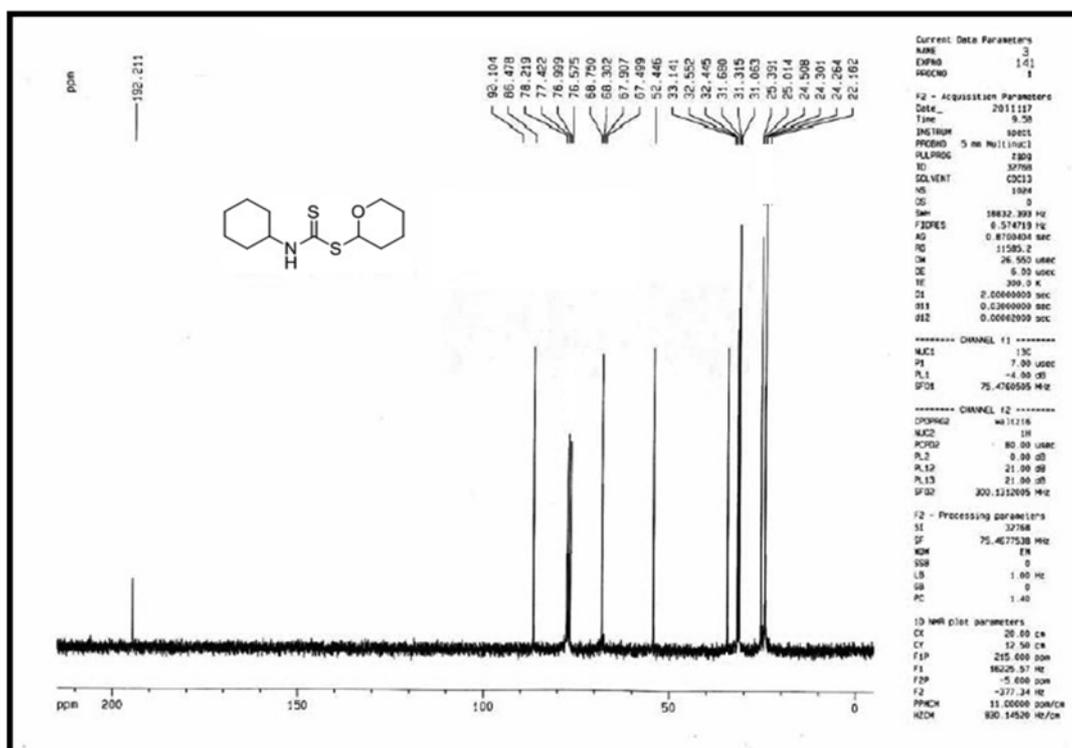
CHN. Tetrahydro-2H-pyran-2-yl (2-(1H-indol-3-yl)ethyl)carbamodithioate**¹H NMR.** Tetrahydro-2H-pyran-2-yl benzylcarbamodithioate

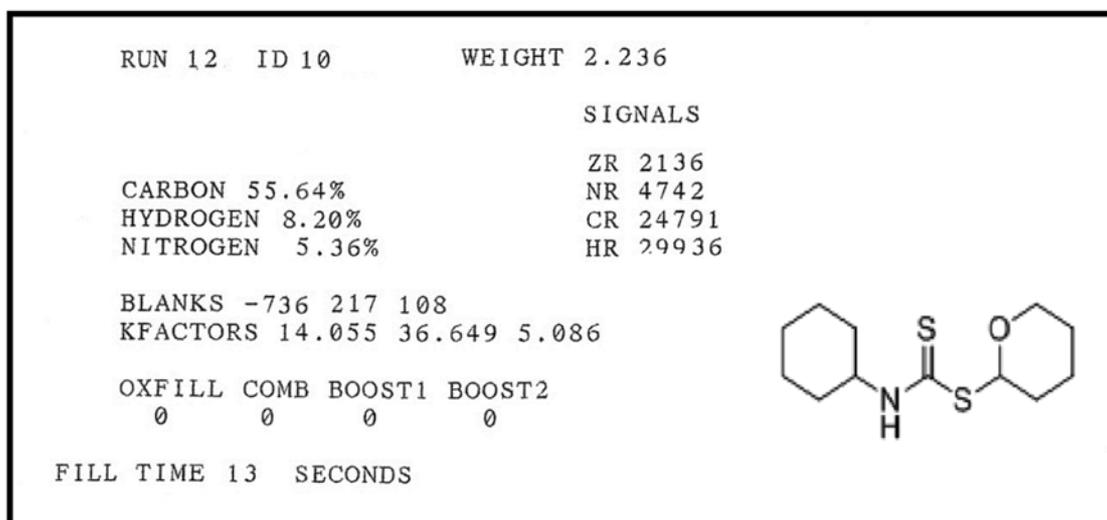
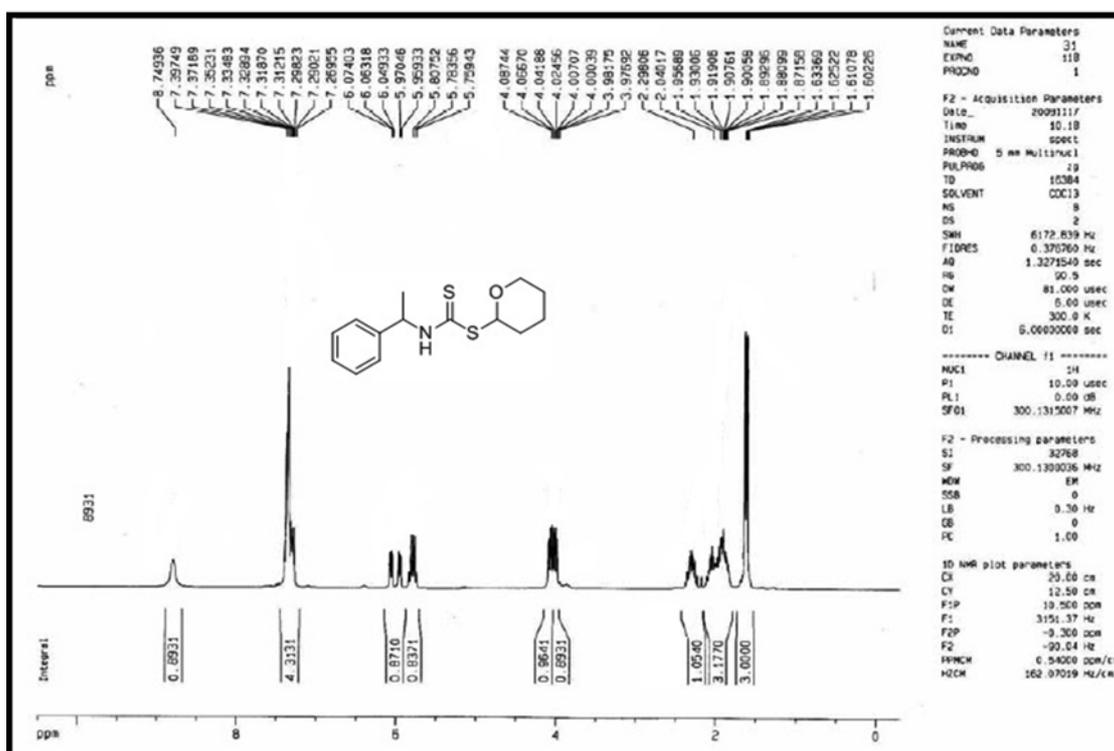
¹³C NMR. Tetrahydro-2H-pyran-2-yl benzylcarbamodithioate



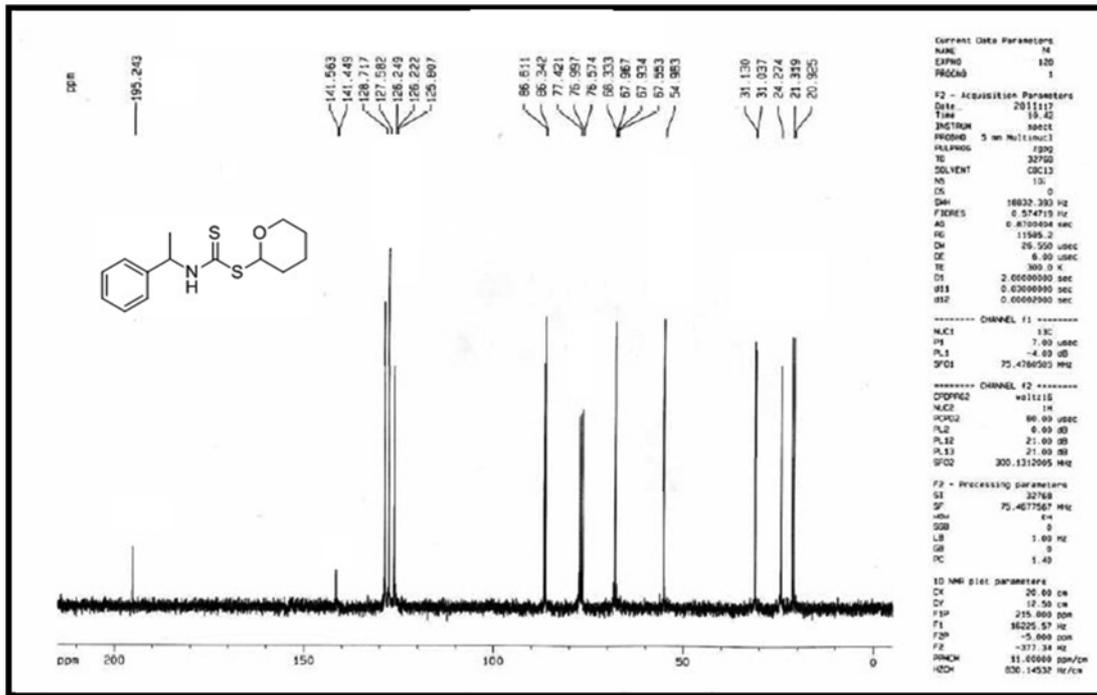
CHN. Tetrahydro-2H-pyran-2-yl (2-(1H-indol-3-yl)ethyl)carbamodithioate



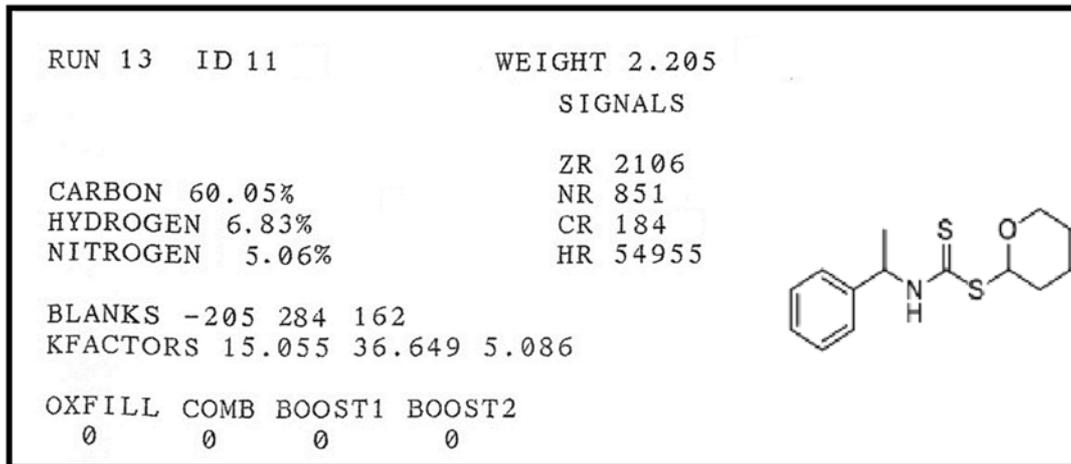
¹H NMR. Tetrahydro-2H-pyran-2-yl cyclohexylcarbamodithioate**¹³C NMR.** Tetrahydro-2H-pyran-2-yl cyclohexylcarbamodithioate

CHN. Tetrahydro-2H-pyran-2-yl cyclohexylcarbamodithioate**¹H NMR.** Tetrahydro-2H-pyran-2-yl (1-phenylethyl)carbamodithioate

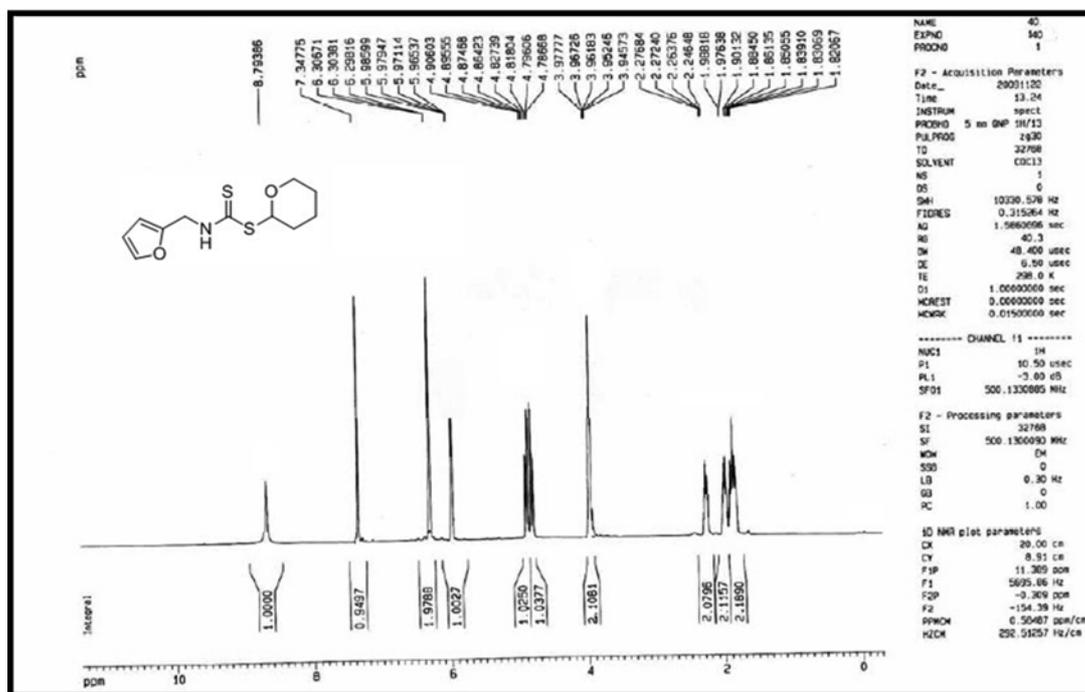
¹³C NMR. Tetrahydro-2H-pyran-2-yl (1-phenylethyl)carbamodithioate



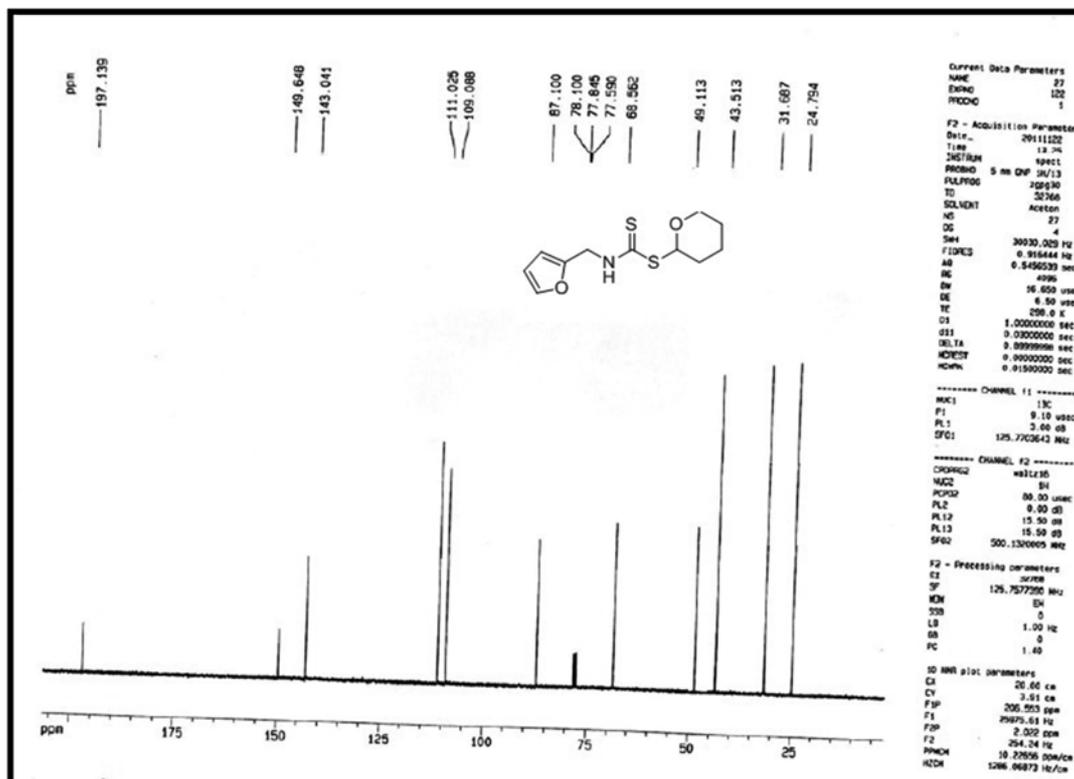
CHN. Tetrahydro-2H-pyran-2-yl (1-phenylethyl)carbamodithioate

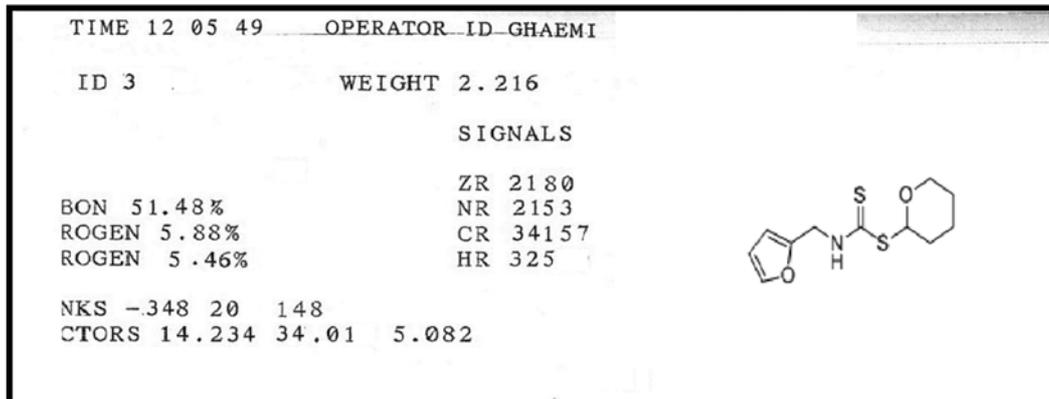
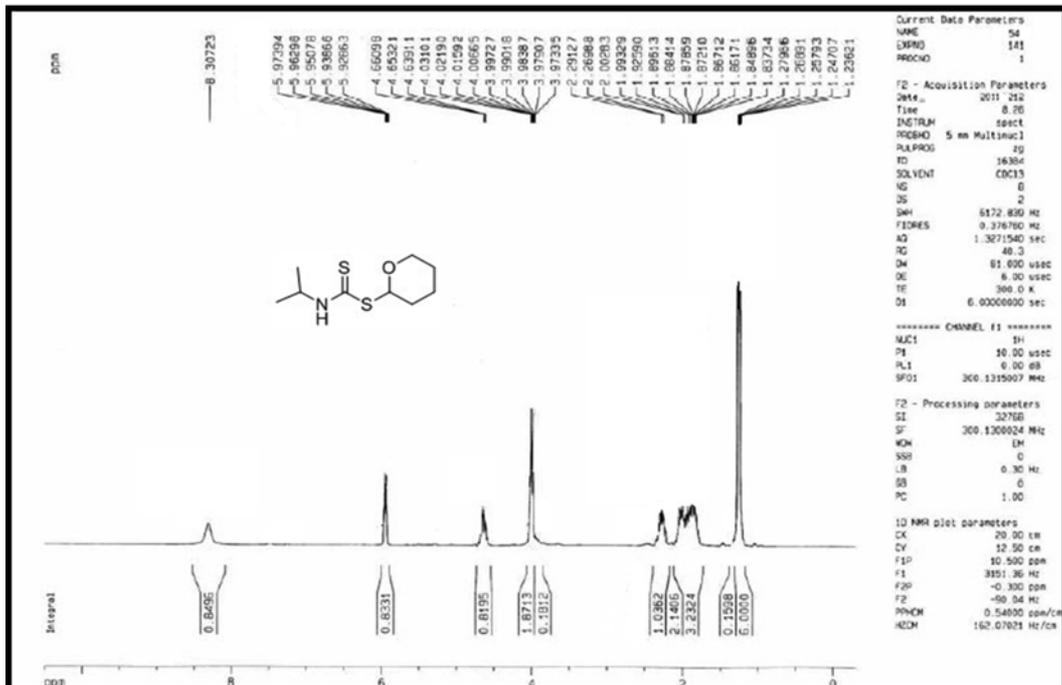


¹H NMR. Tetrahydro-2H-pyran-2-yl (furan-2-ylmethyl)carbamodithioate

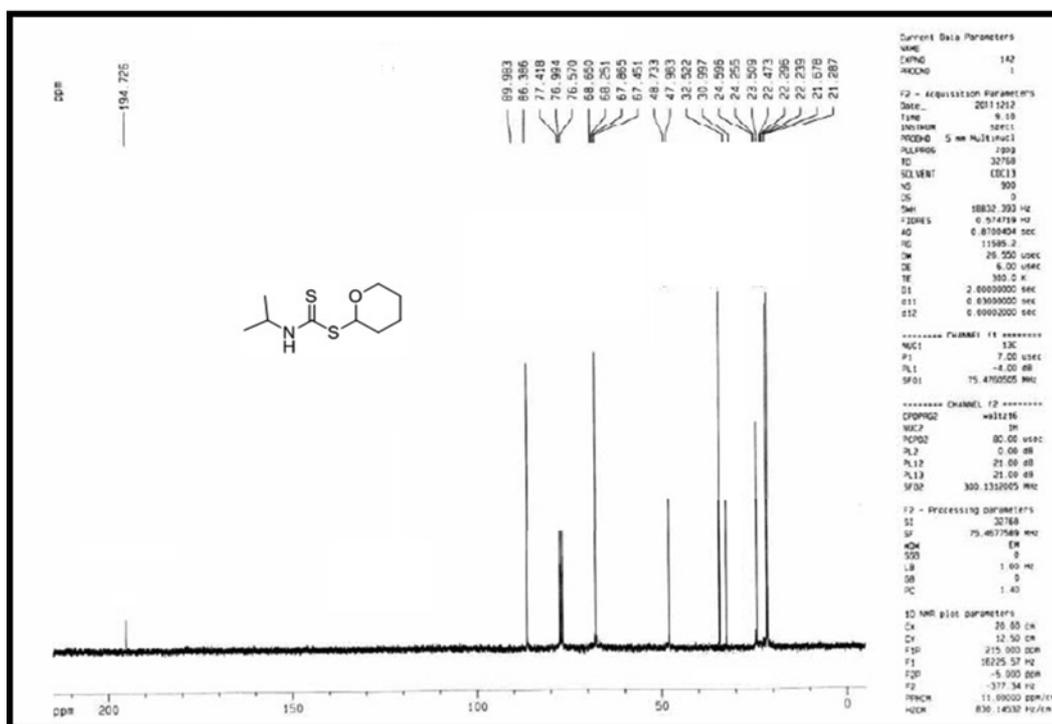


¹³C NMR. Tetrahydro-2H-pyran-2-yl (furan-2-ylmethyl)carbamodithioate

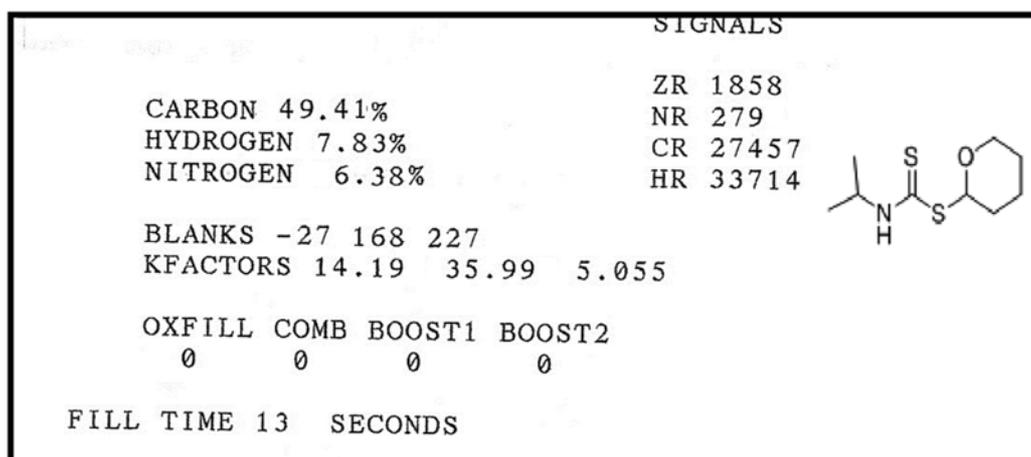


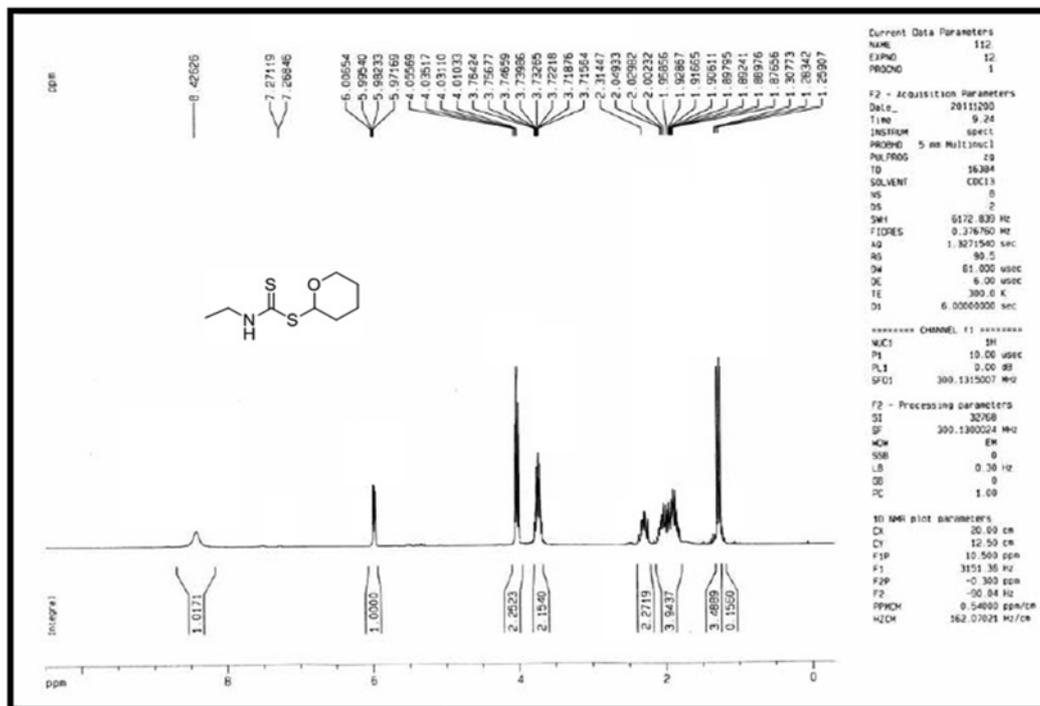
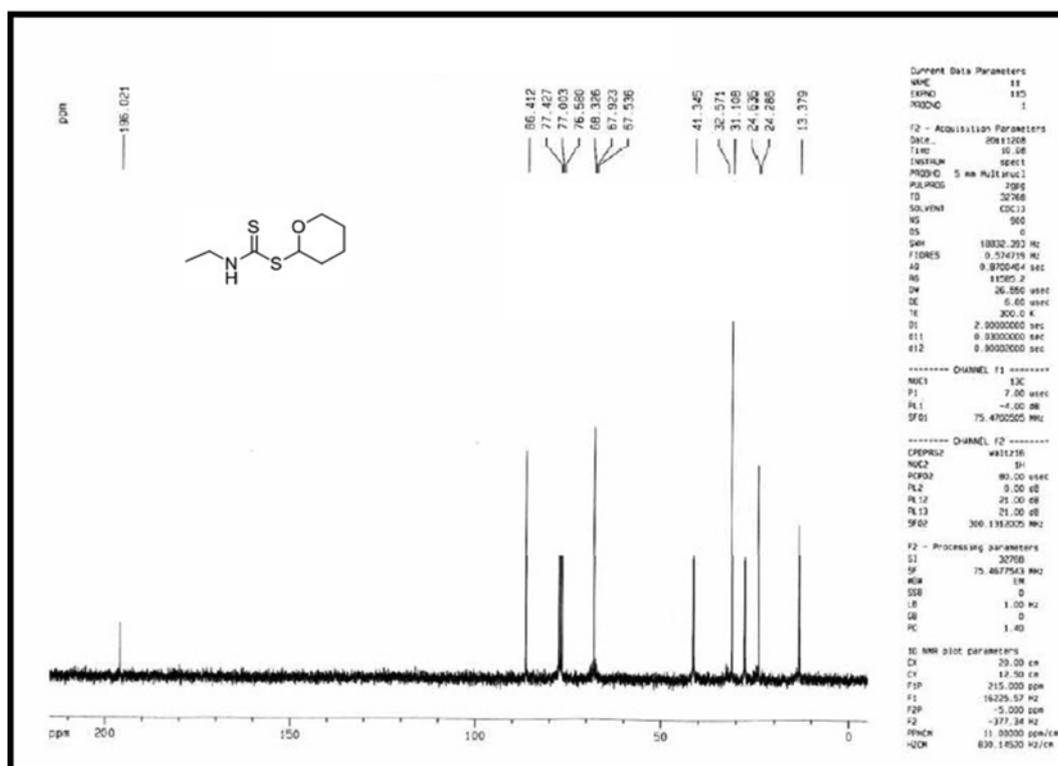
CHN. Tetrahydro-2H-pyran-2-yl (furan-2-ylmethyl)carbamodithioate**¹H NMR.** Tetrahydro-2H-pyran-2-yl isopropylcarbamodithioate

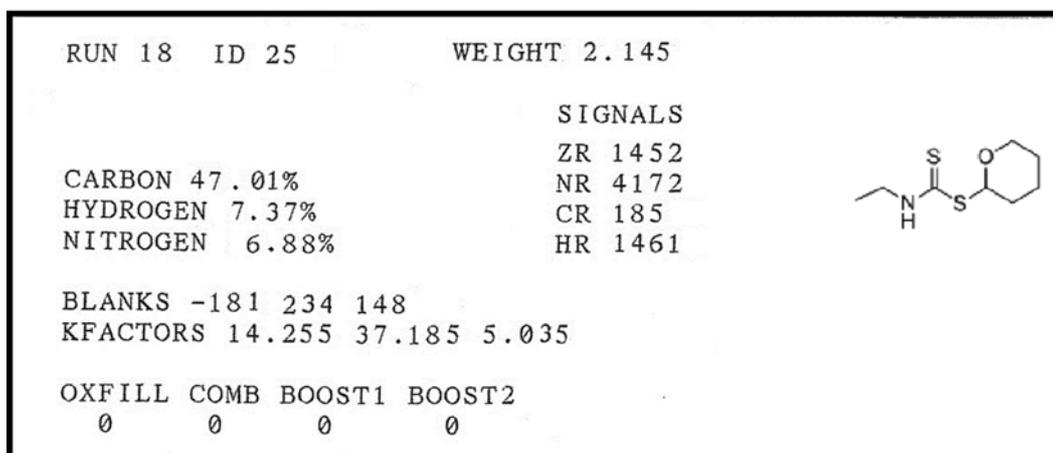
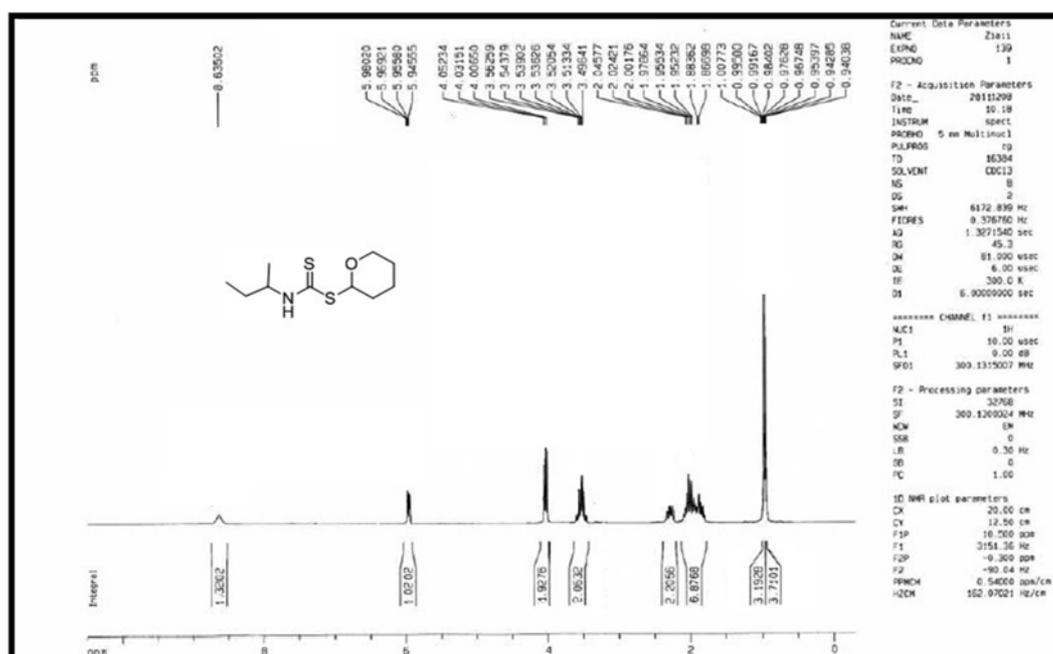
¹³C NMR. Tetrahydro-2H-pyran-2-yl isopropylcarbamo dithioate

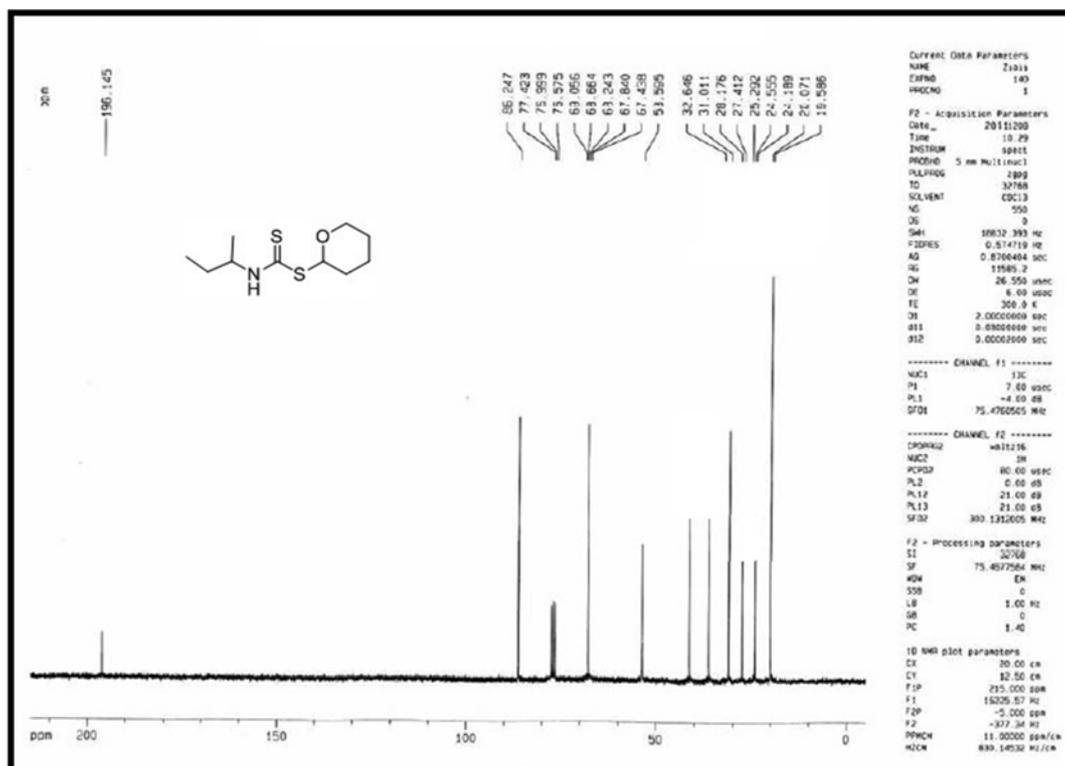
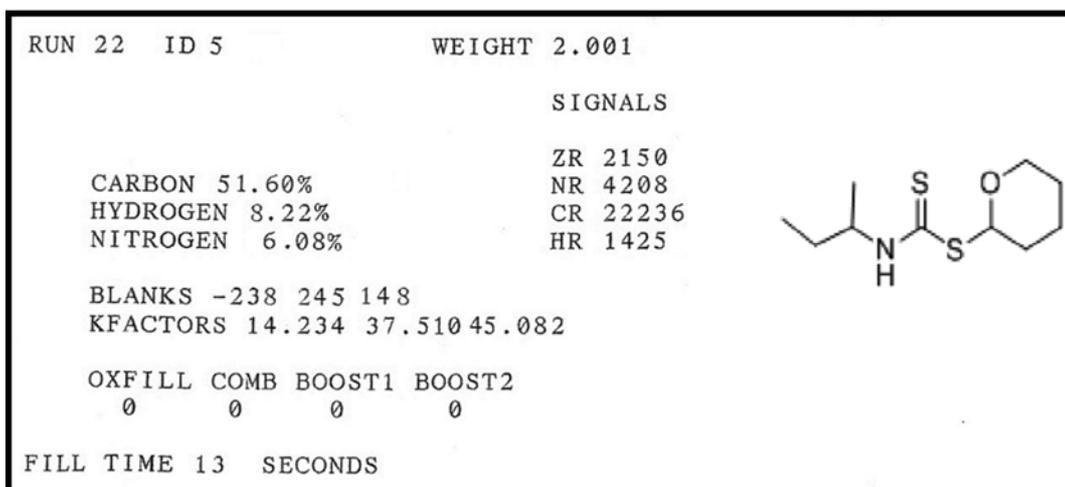


CHN. Tetrahydro-2H-pyran-2-yl isopropylcarbamo dithioate

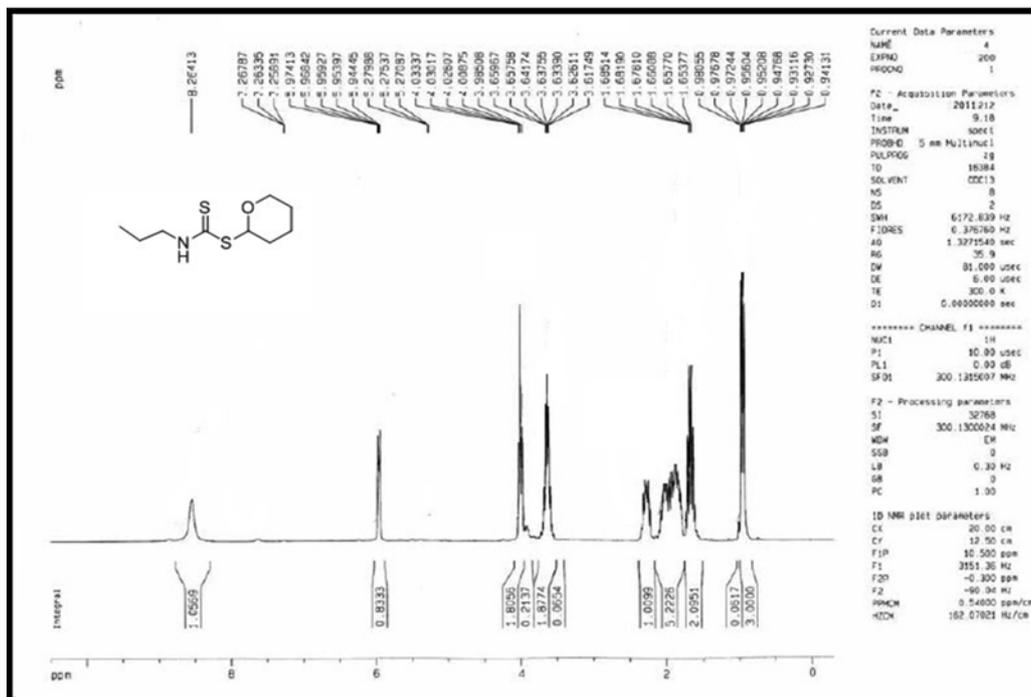


¹H NMR. Tetrahydro-2H-pyran-2-yl ethylcarbamodithioate**¹³C NMR.** Tetrahydro-2H-pyran-2-yl ethylcarbamodithioate

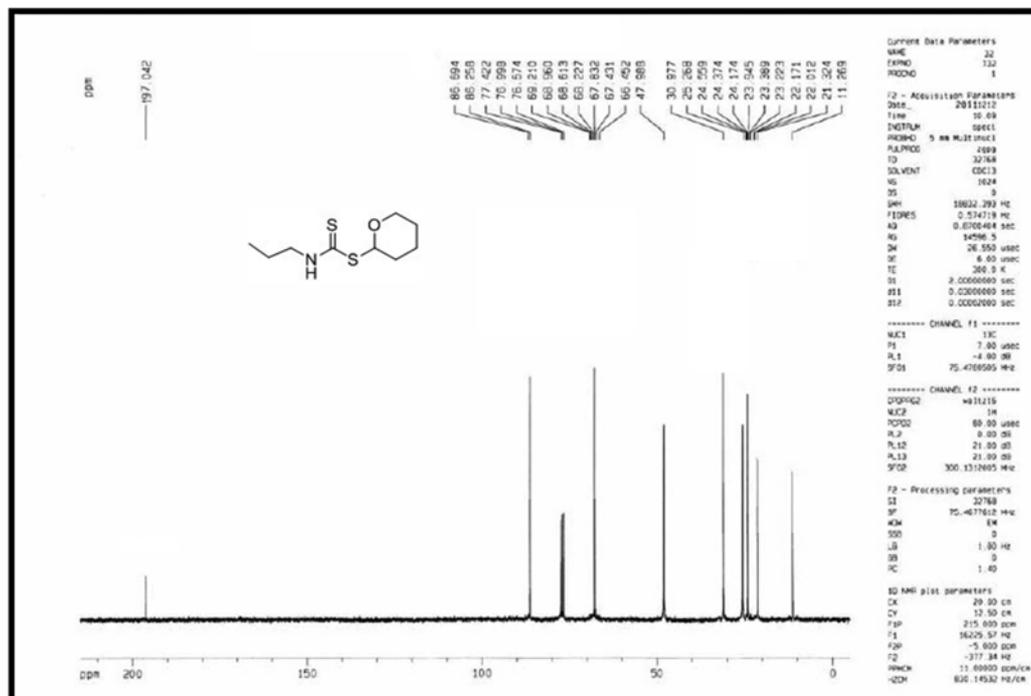
CHN. Tetrahydro-2H-pyran-2-yl ethylcarbamodithioate**¹H NMR.** Tetrahydro-2H-pyran-2-yl sec-butylcarbamodithioate

¹³C NMR. Tetrahydro-2H-pyran-2-yl sec-butylcarbamodithioate**CHN.** Tetrahydro-2H-pyran-2-yl sec-butylcarbamodithioate

¹H NMR. Tetrahydro-2H-pyran-2-yl propylcarbamodithioate



¹³C NMR. Tetrahydro-2H-pyran-2-yl propylcarbamodithioate



CHN. Tetrahydro-2H-pyran-2-yl propylcarbamodithioate

RUN 20	ID 25	WEIGHT 2.357	
			SIGNALS
CARBON 50.01%			ZR 4168
HYDROGEN 7.82%			NR 6260
NITROGEN 6.40%			CR 15112
			HR 18435
BLANKS -358 205 148			
KFACTORS 14.235 37.35 25.082			
OXFILL COMB BOOST1 BOOST			
0 0 0 0			
FILL TIME 13	SECONDS		

