

Efficient One-Pot Synthesis of Mono and Bis *N*-Cyclohexyl-3-alkyl(aryl)-quinoxaline-2-amines Using *N*-halo Catalysts

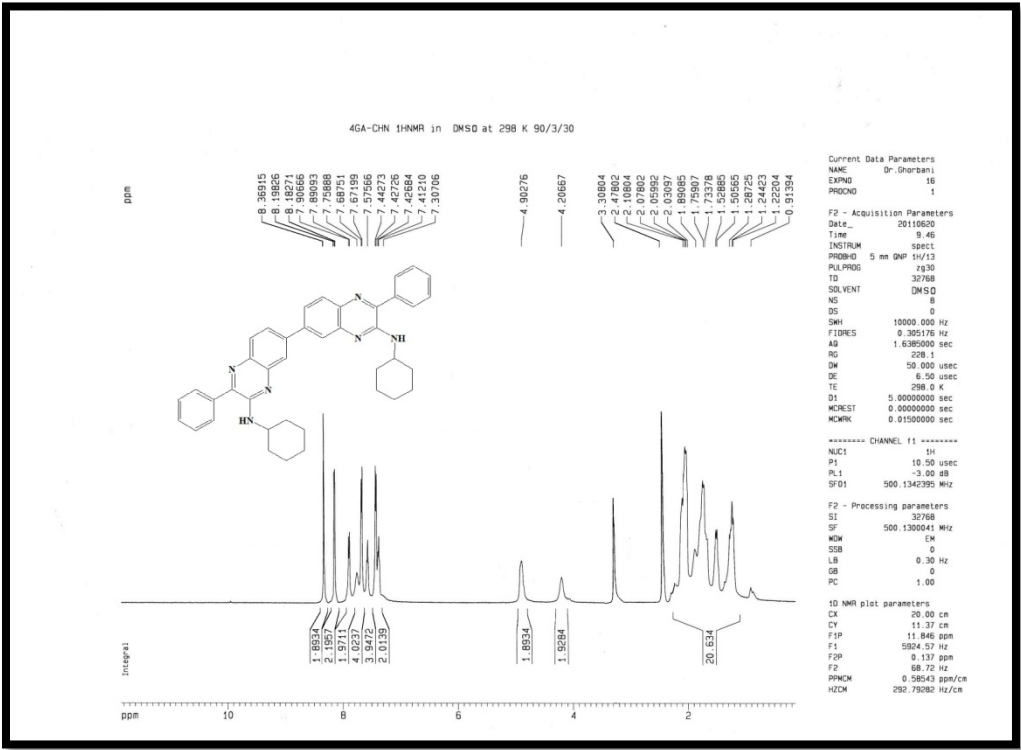
Supporting Information

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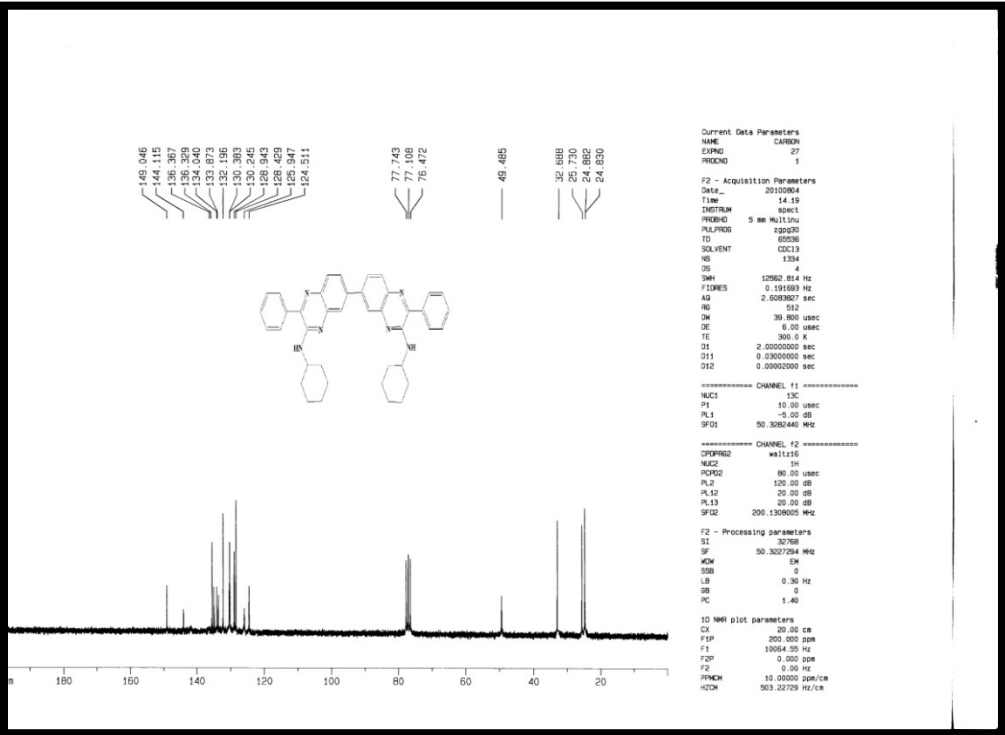
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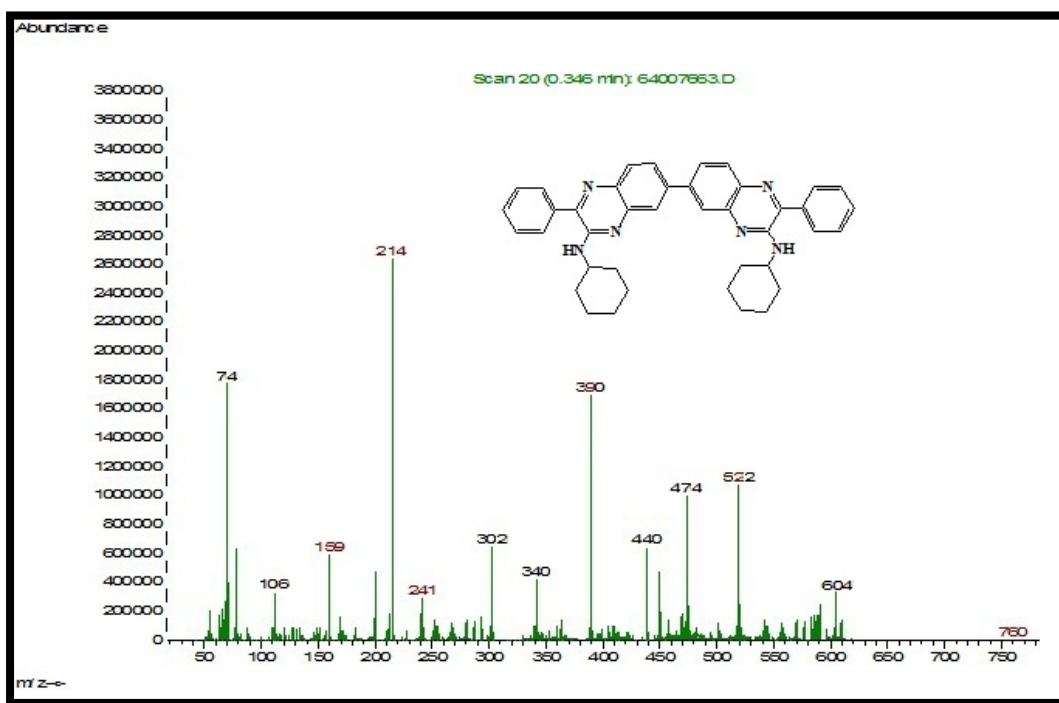
¹H NMR



¹³C NMR

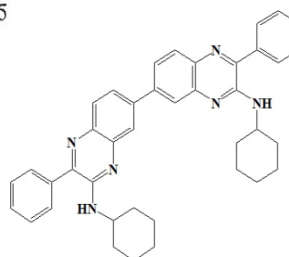


Mass

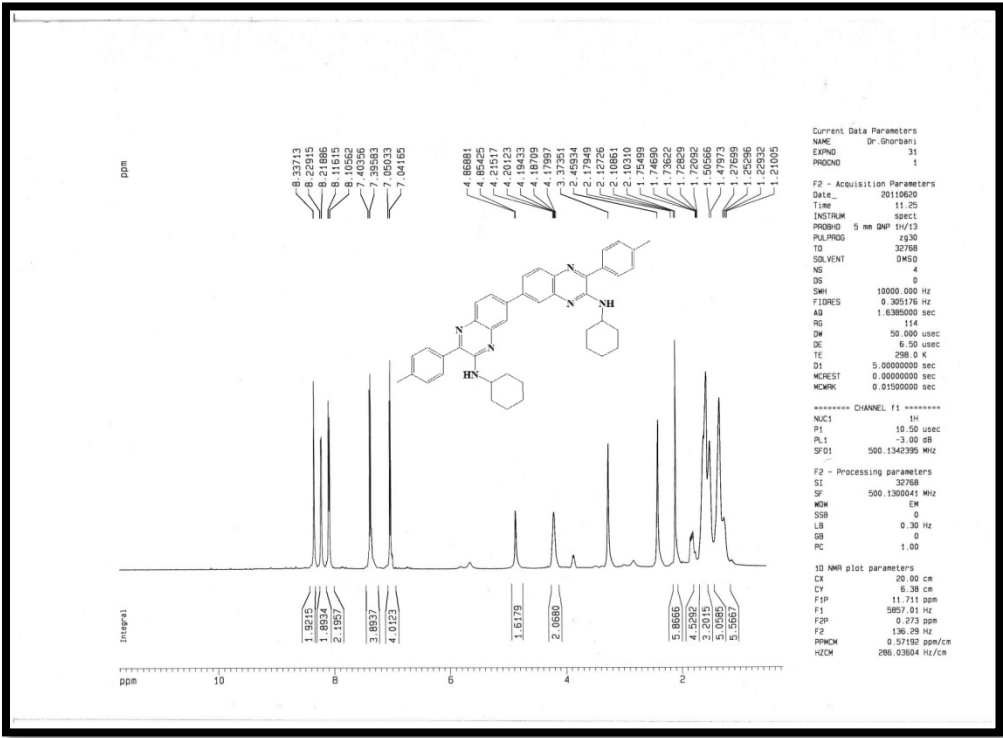


CHN

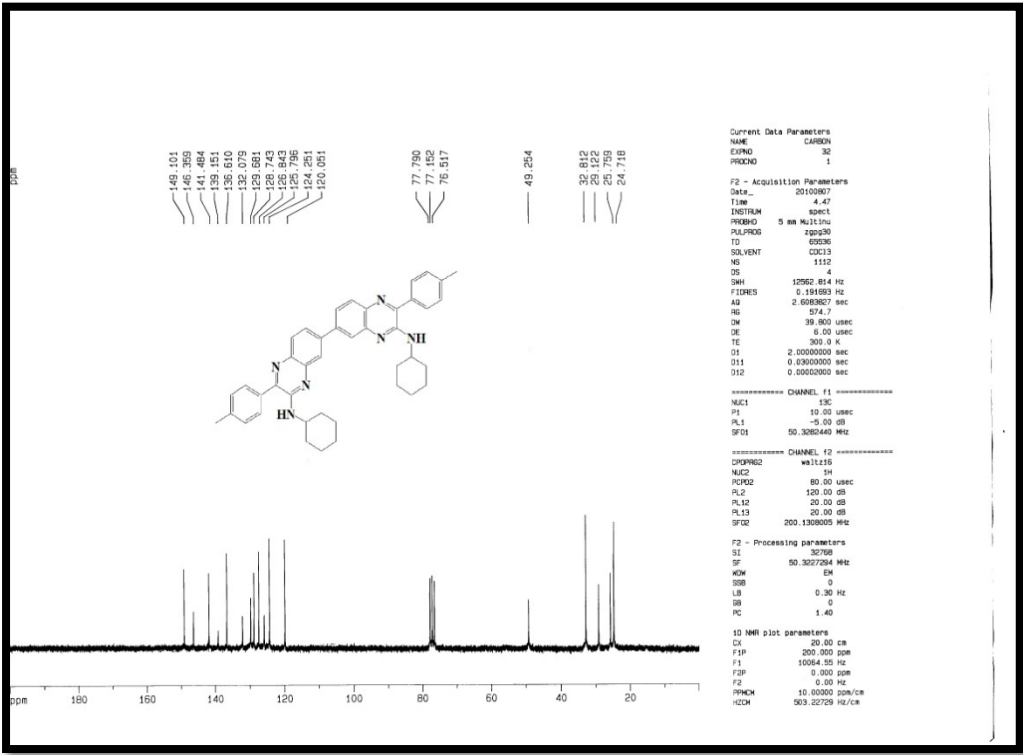
DATE 15 12 90	TIME 11 30 24	OPERATOR ID GHAEMI
RUN 13	ID MO14	WEIGHT 2.464
SIGNALS		
CARBON 79.85%	ZR 2106	
HYDROGEN 6.85%	NR 3851	
NITROGEN 14.06%	CR 19984	
	HR 24955	
BLANKS -206 221 162		
KFACTORS 15.055 36.649 5.086		
OXFILL COMB BOOST1 BOOST2		
0 0 0 0		
FILL TIME 13 SECONDS		



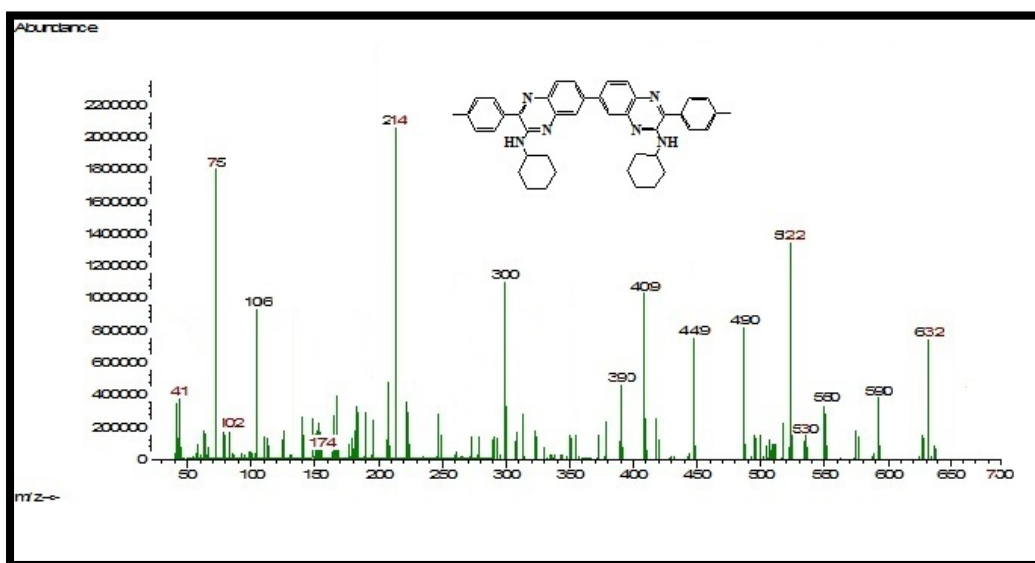
¹H NMR



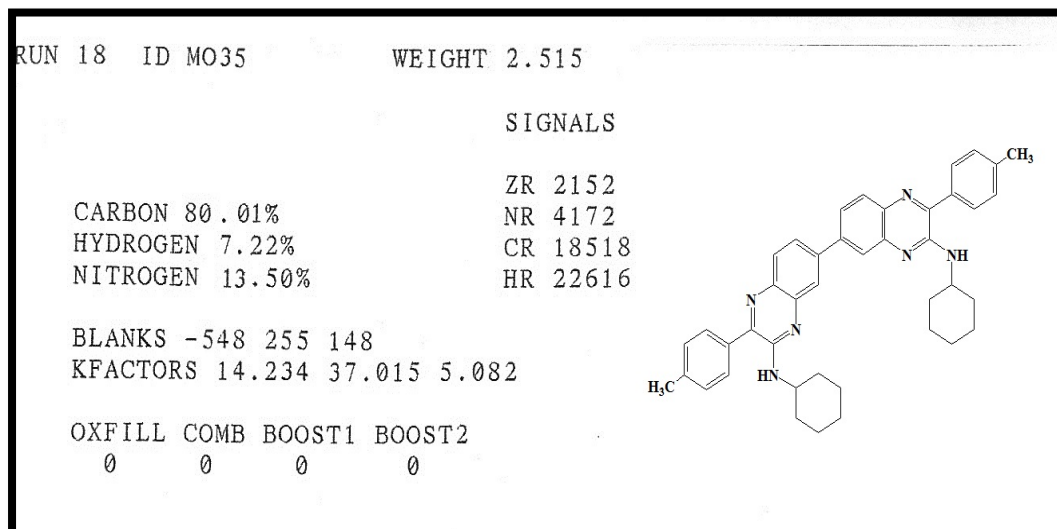
¹³C NMR



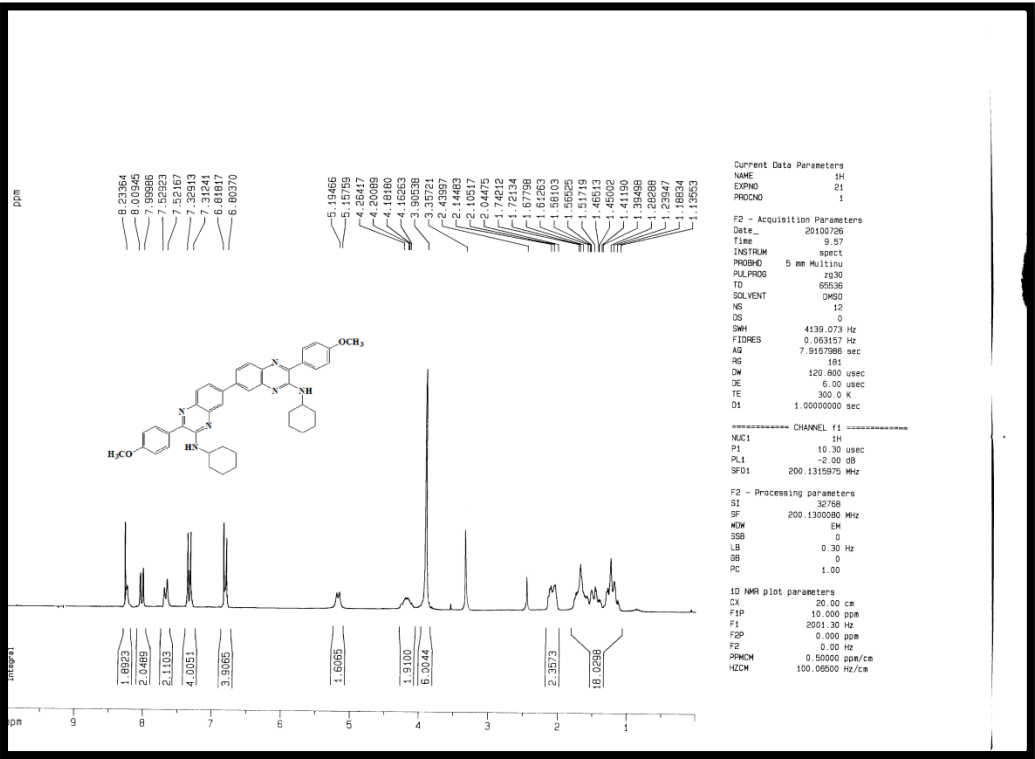
Mass



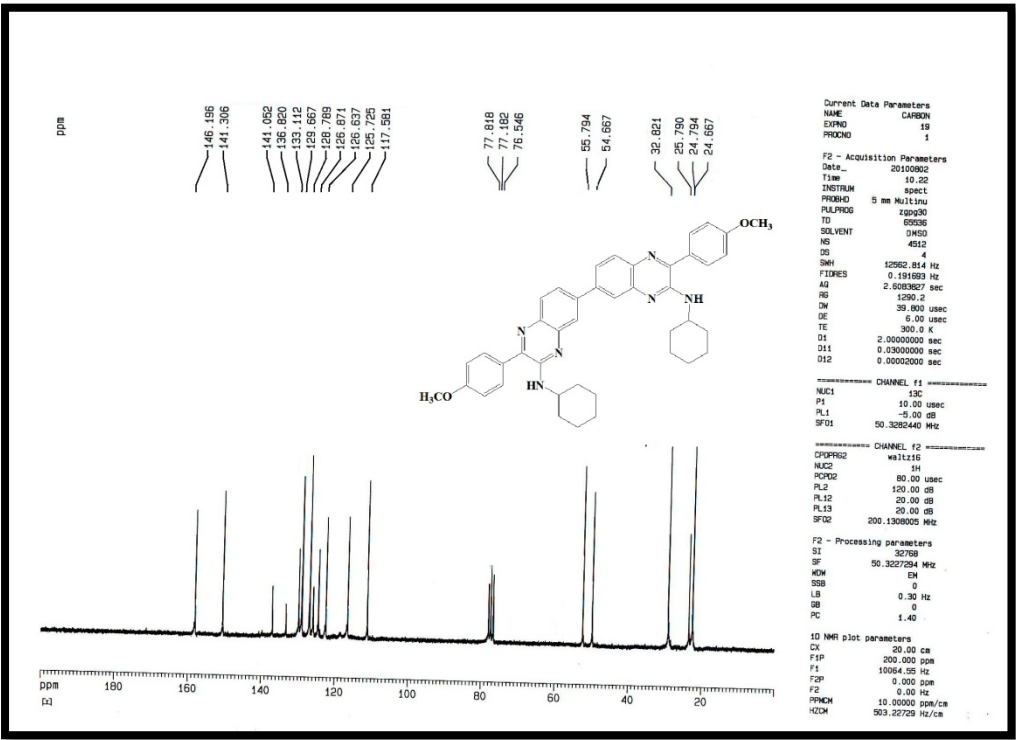
CHN



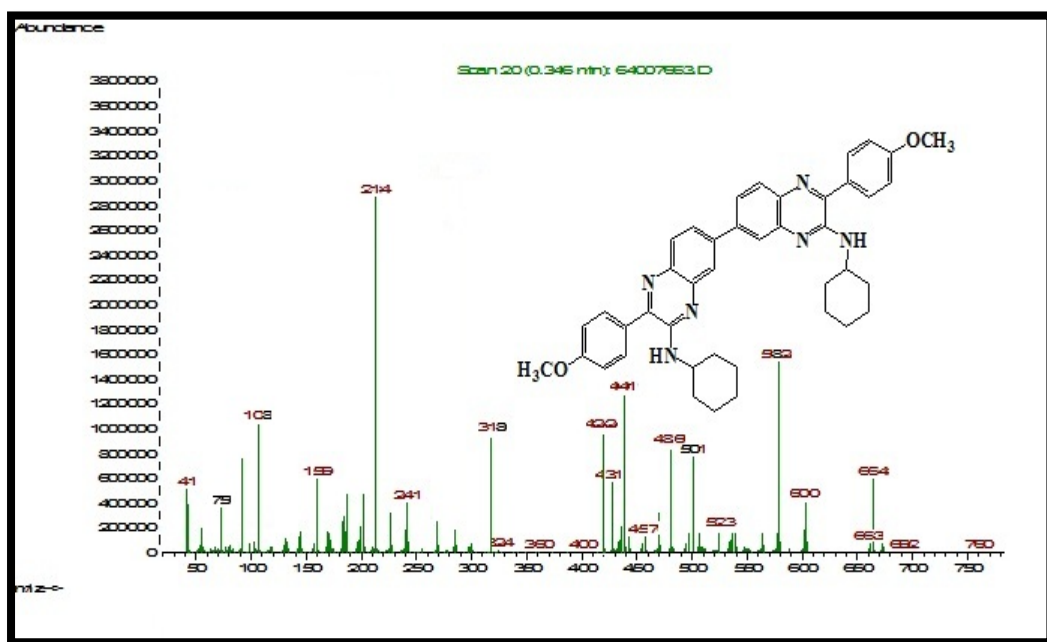
1H NMR



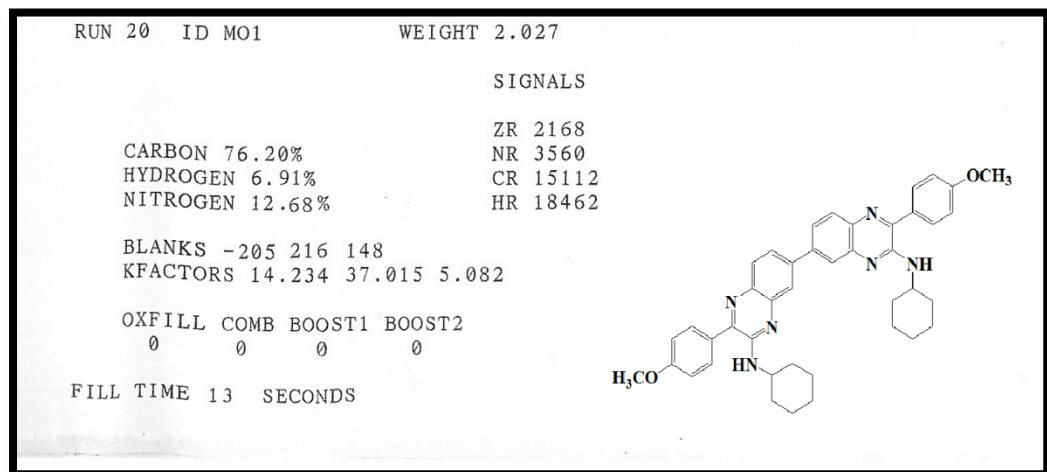
13C NMR



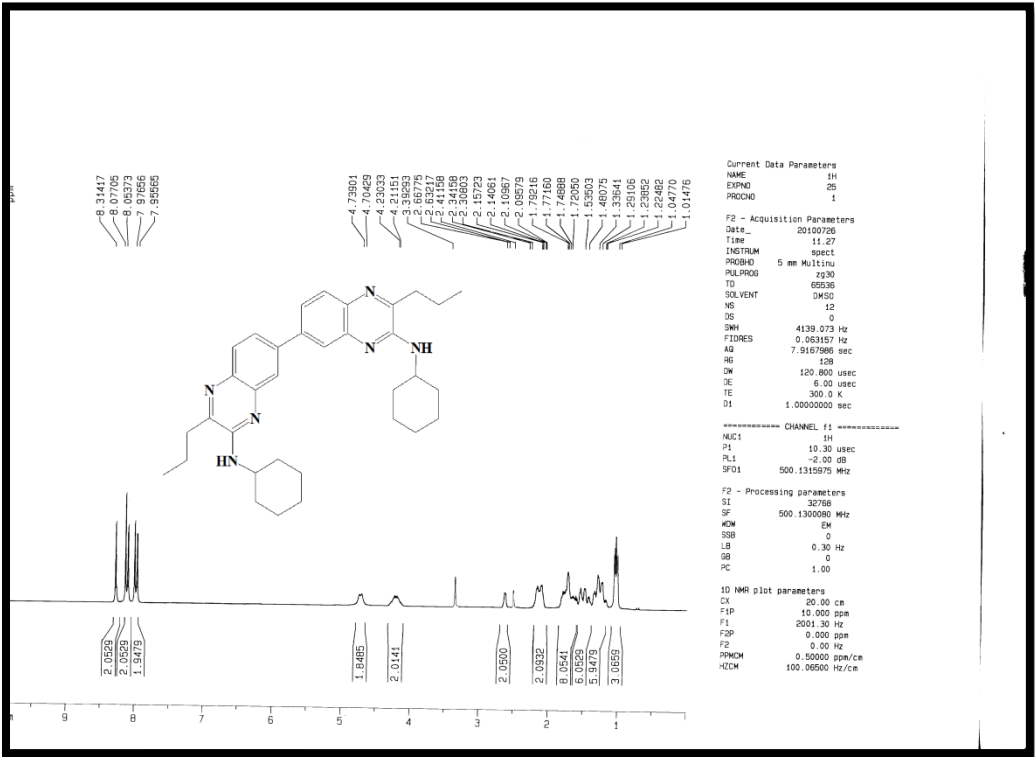
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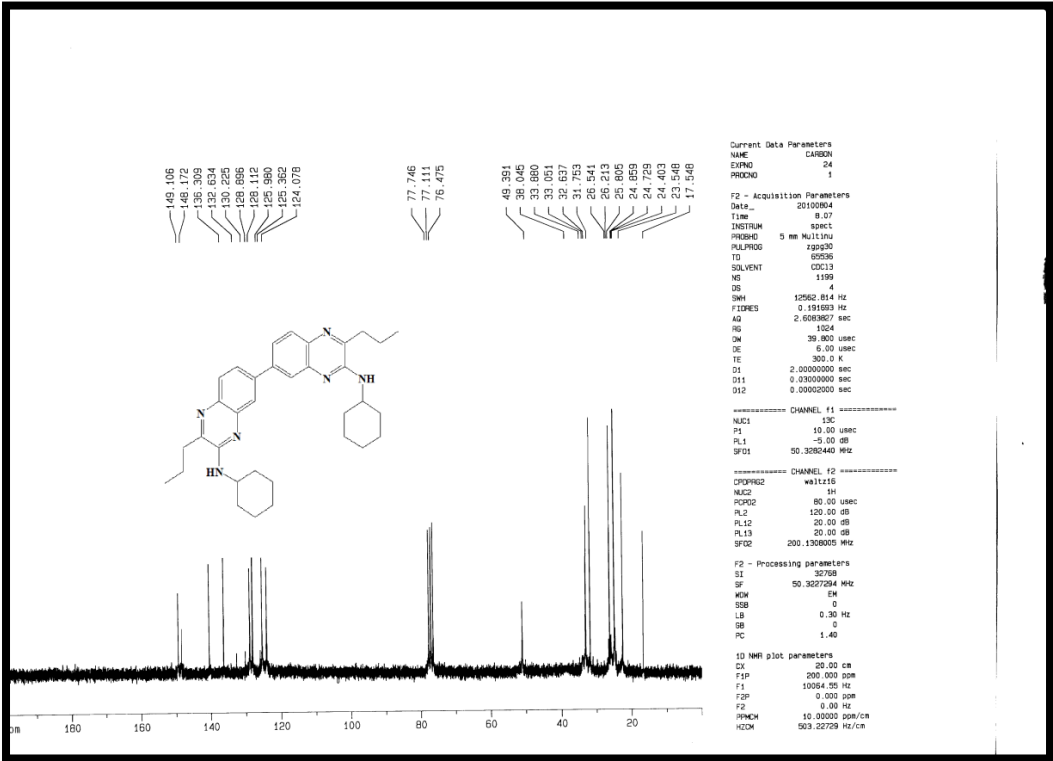
CHN



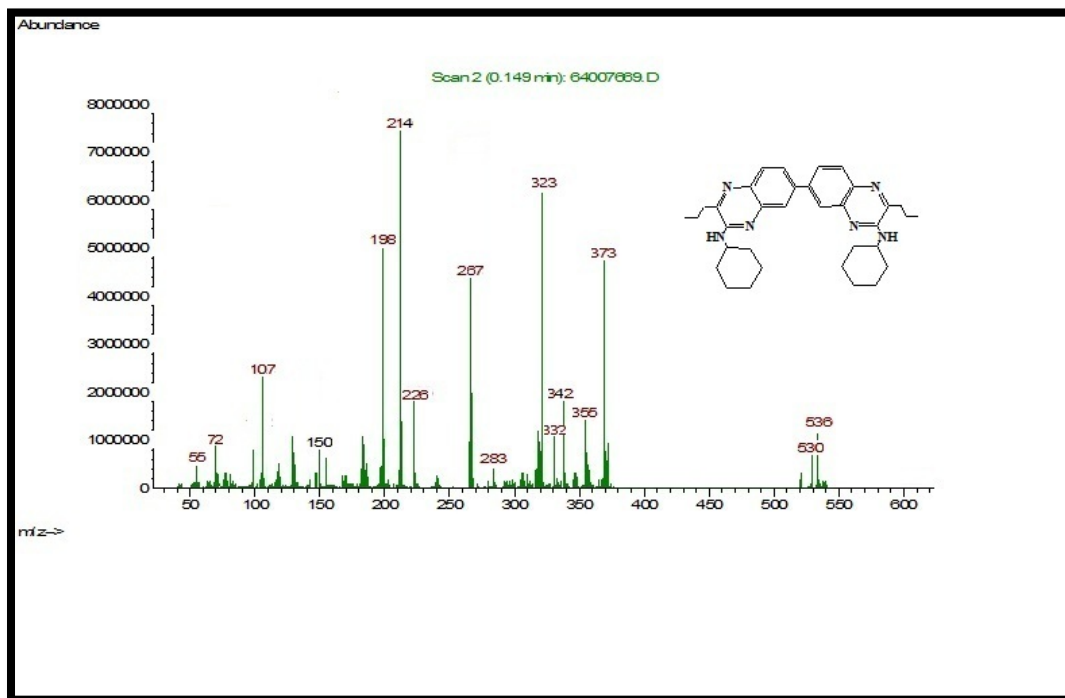
¹H NMR



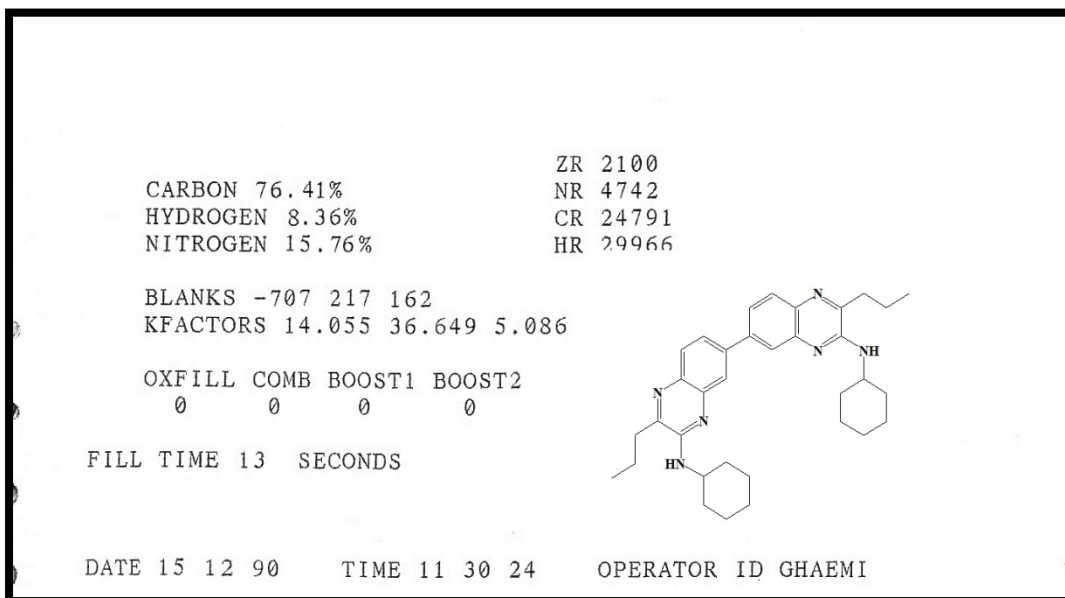
¹³C NMR



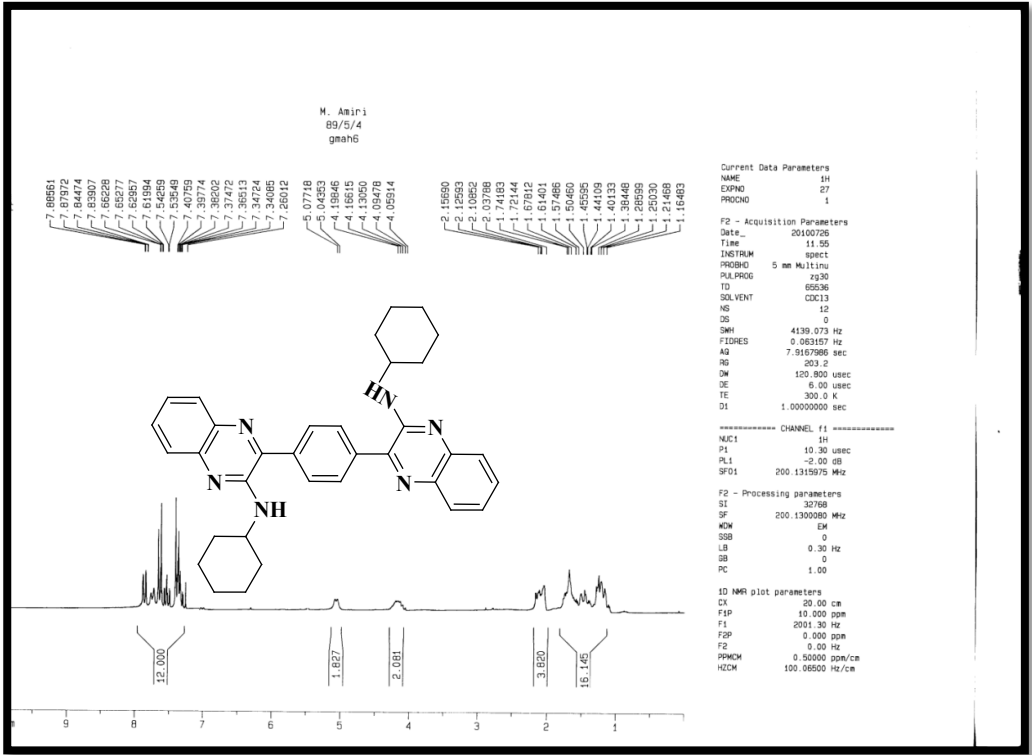
Mass



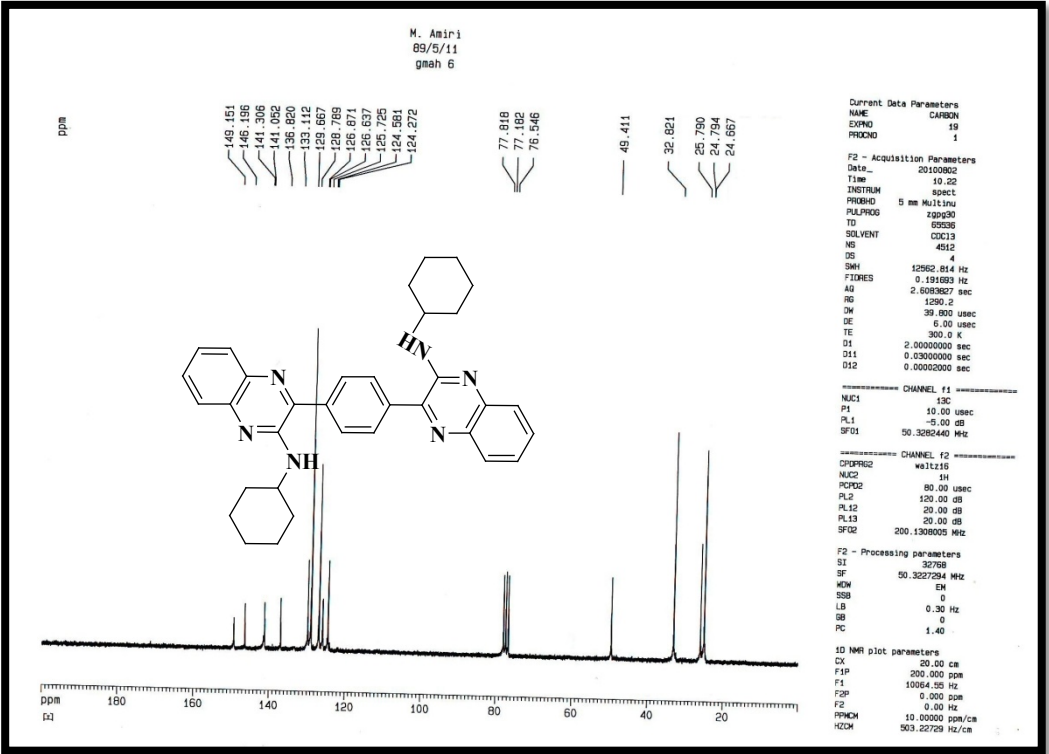
CHN

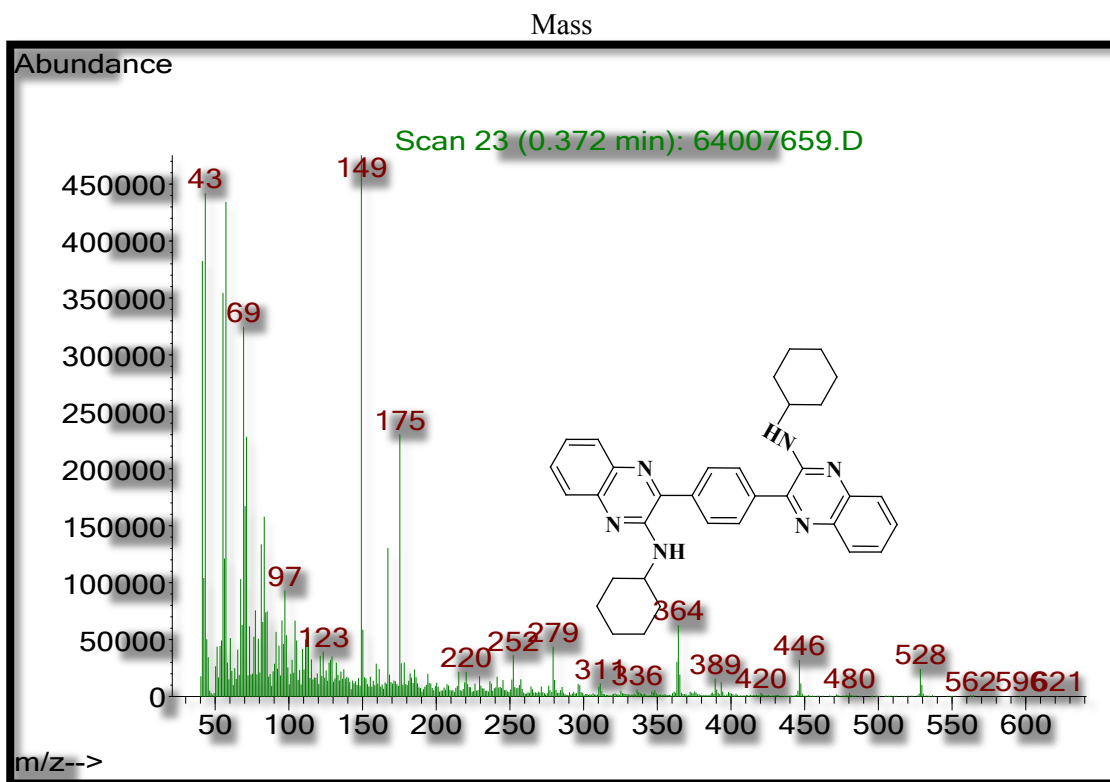


¹H NMR

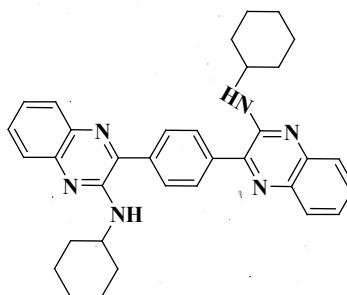


¹³C NMR

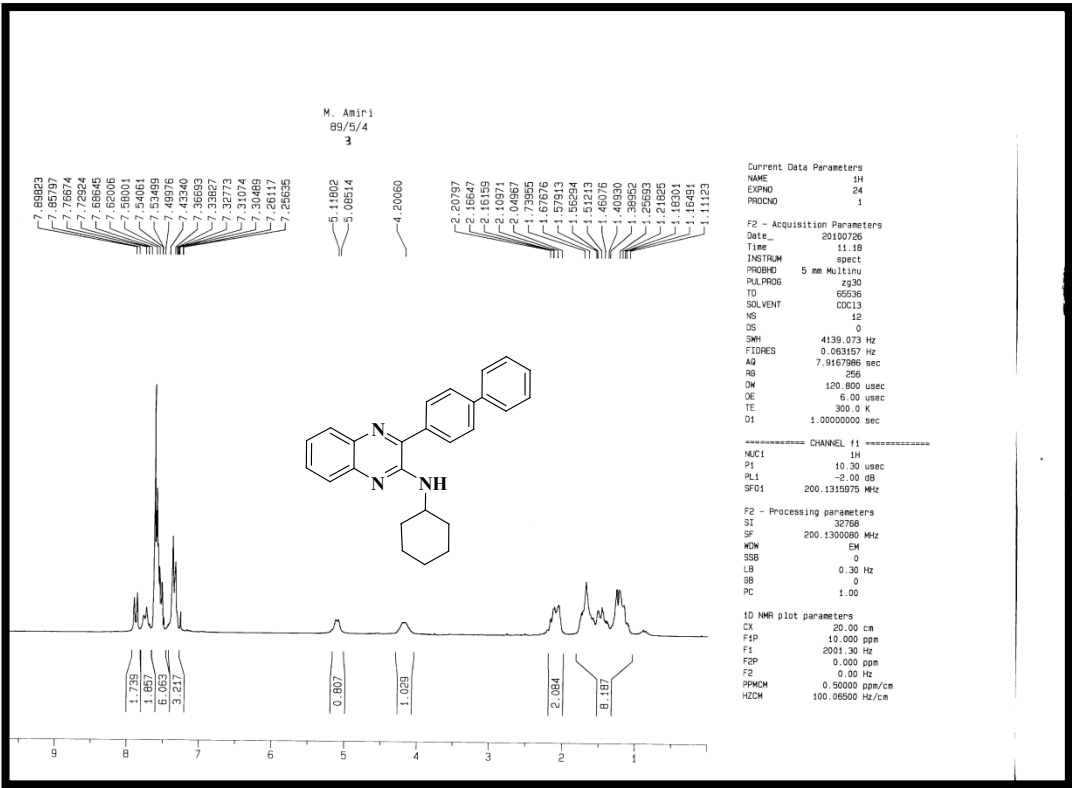




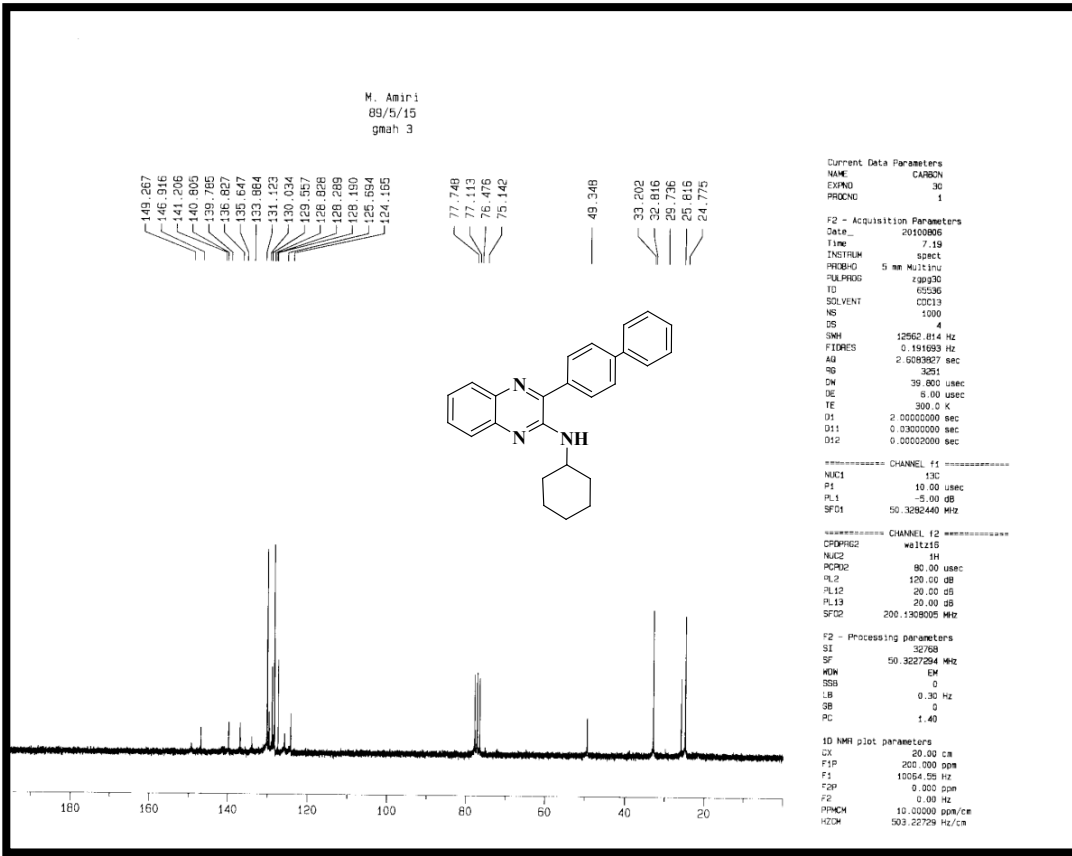
RUN 49	ID DGA6	WEIGHT 2.066
SIGNALS		
ZR 1680		
NR 3714		
CR 25345		
HR 30172		
CARBON 77.63%		
HYDROGEN 6.63%		
NITROGEN 16.02%		
BLANKS 27 167 320		
KFACTORS 14.555 36.606 5.179		
OXFILL COMB BOOST1 BOOST2		
0 0 0 0		



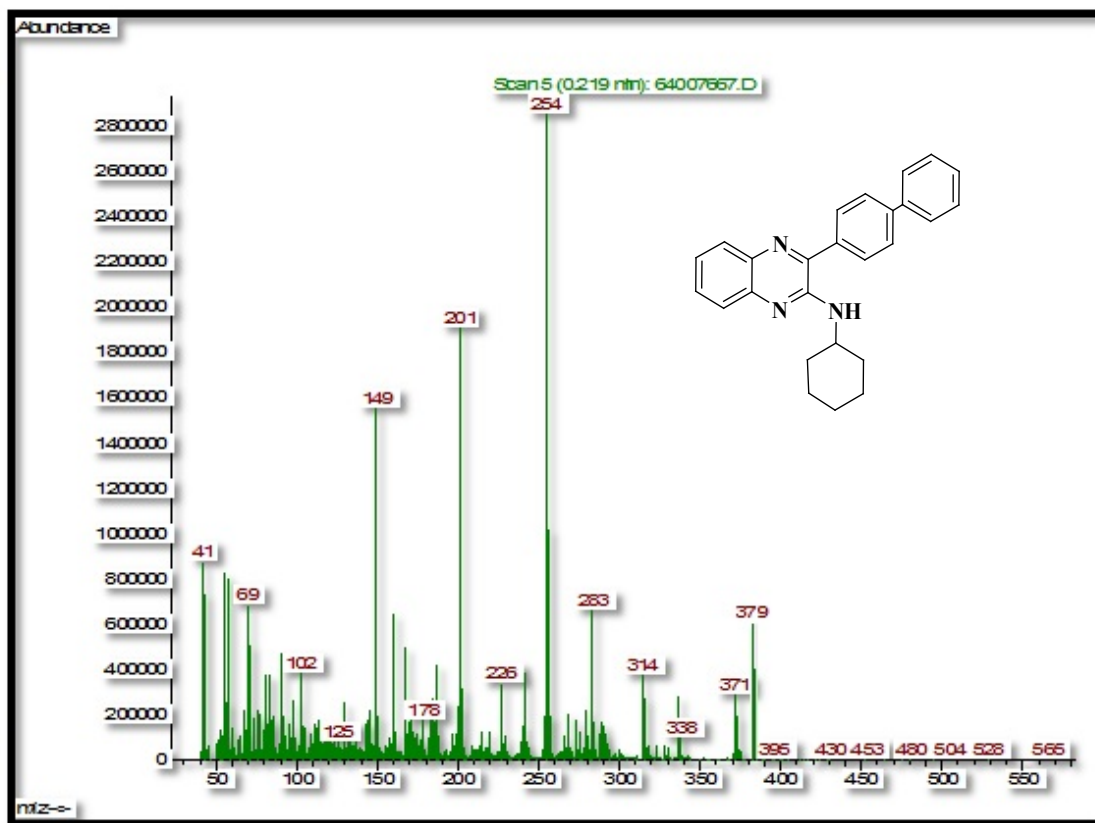
¹H NMR



¹³C NMR



Mass



CHN

DATE 22 09 90 TIME 20 03 02 OPERATOR ID GHAEMI

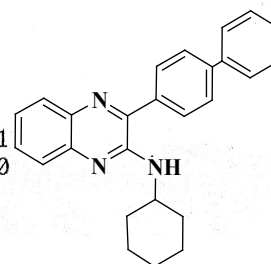
RUN 50 ID DGA7 WEIGHT 2.564

SIGNALS

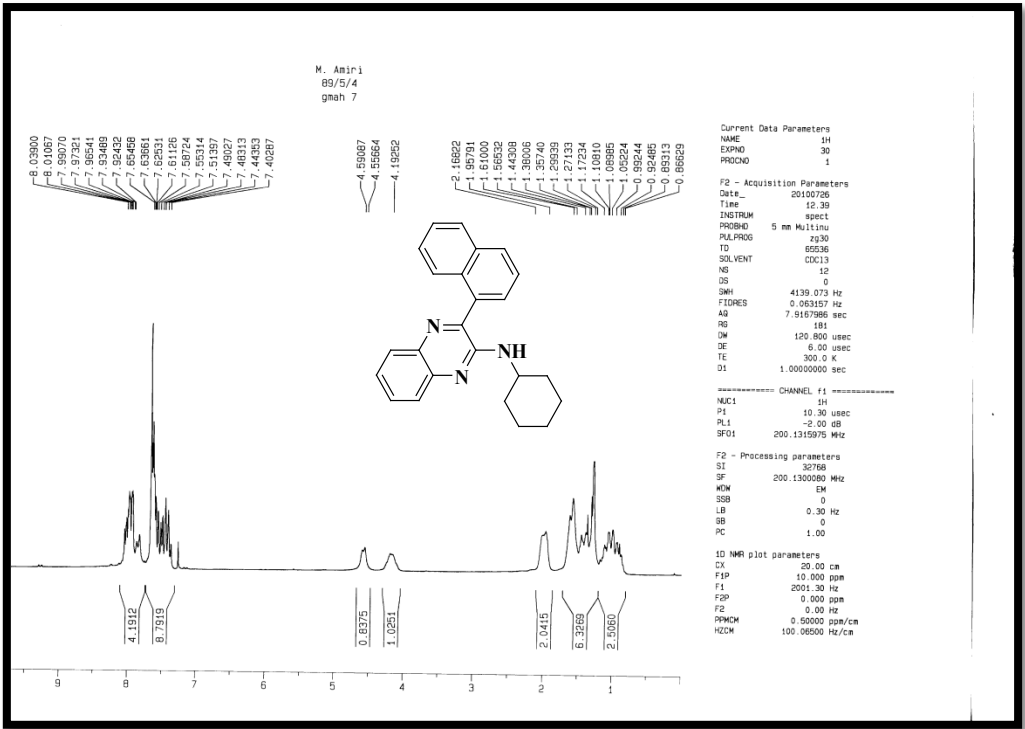
ZR 1688
NR 2959
CR 18961
HR 23410

CARBON 82.51%
HYDROGEN 6.86%
NITROGEN 11.16%

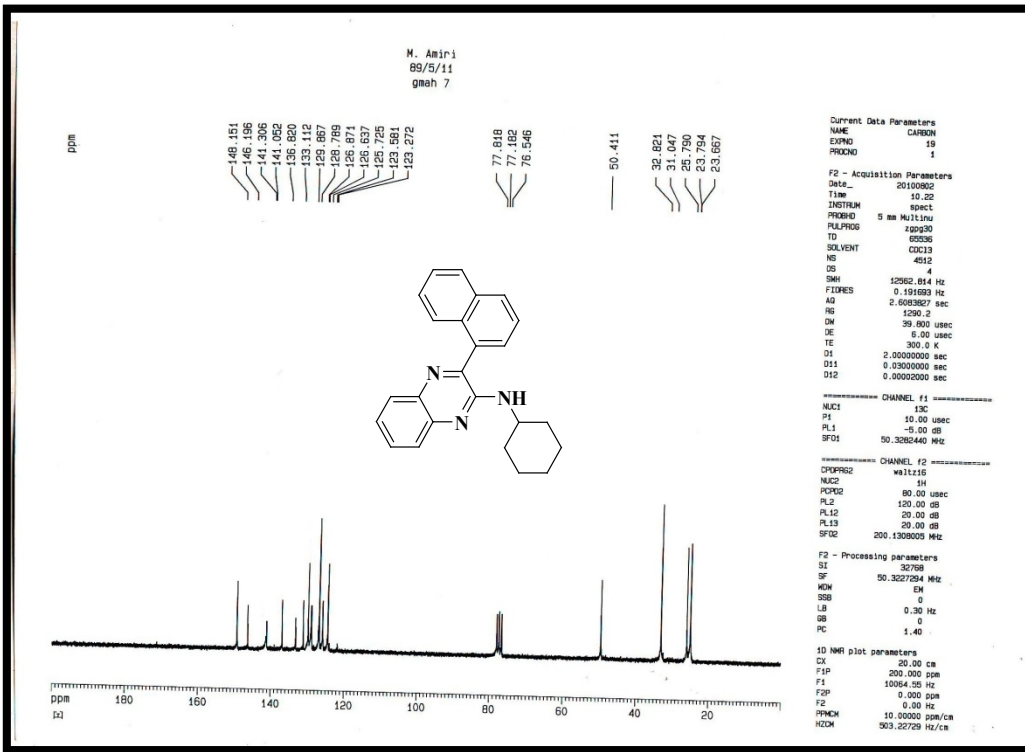
BLANKS 27 167 320



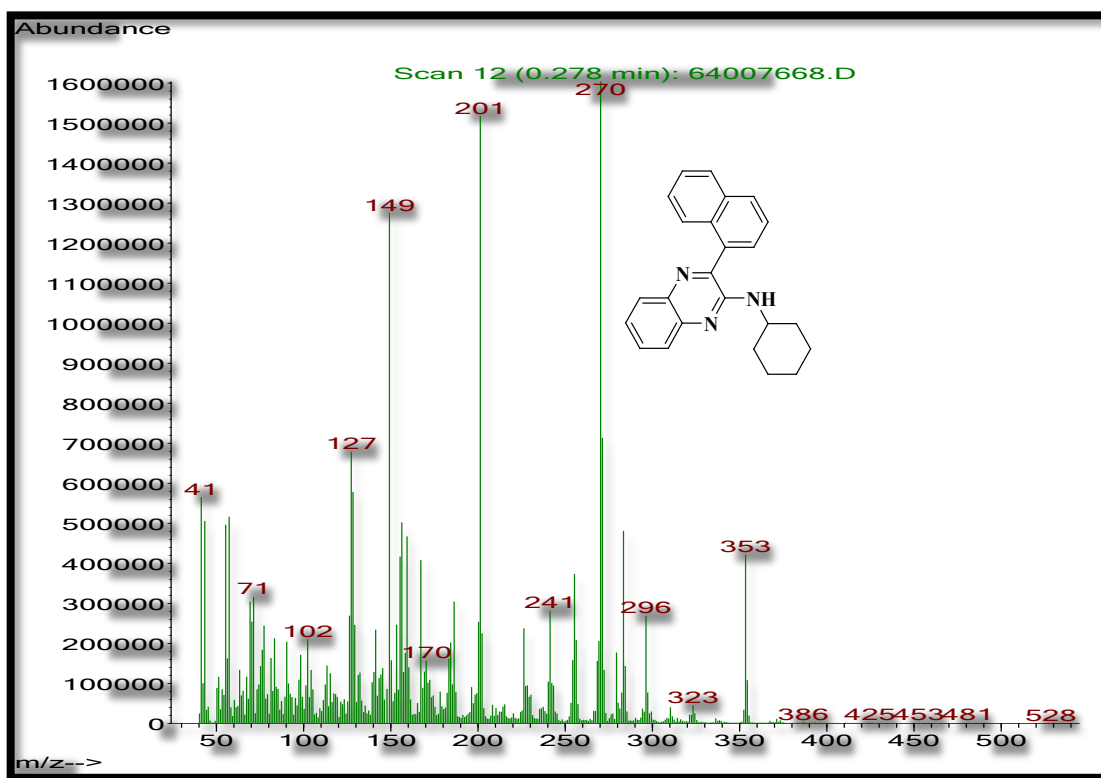
¹H NMR



¹³C NMR



Mass

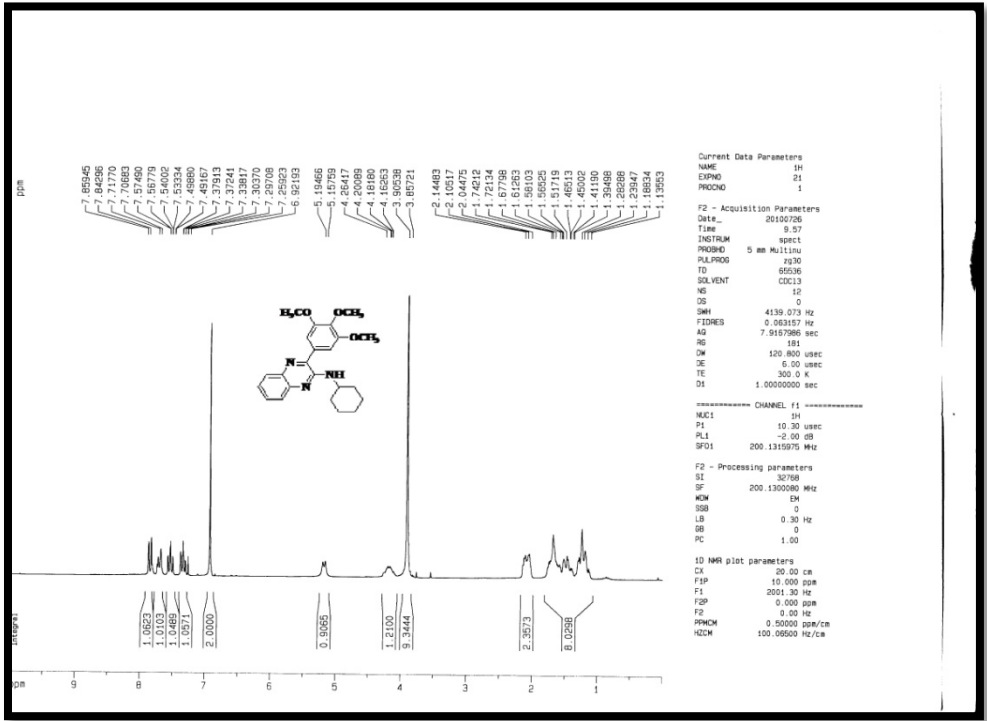


CHN

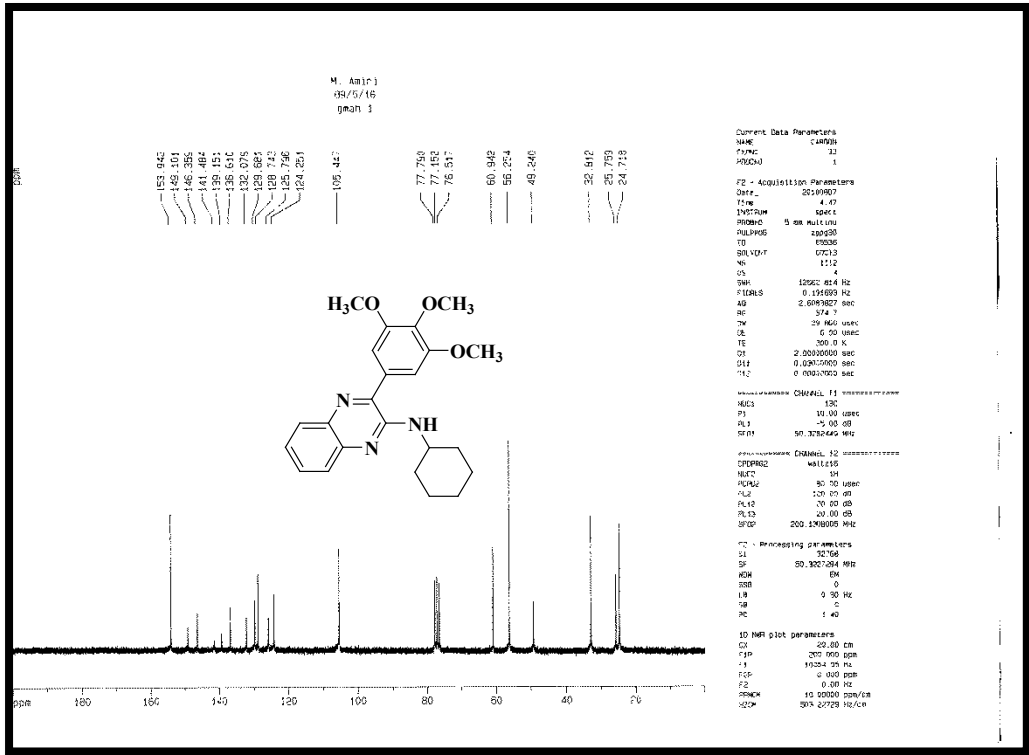
RUN 67	ID DGA8	WEIGHT 2.830	SIGNALS
CARBON 81.84%			ZR 1669
HYDROGEN 6.60%			NR 2883
NITROGEN 11.90%			CR 2092
			HR 2573
BLANKS 20	35	357	
KFACTORS 14.834	37.027	5.231	

Chemical structure of the compound (a quinazoline derivative) is shown in the center of the table.

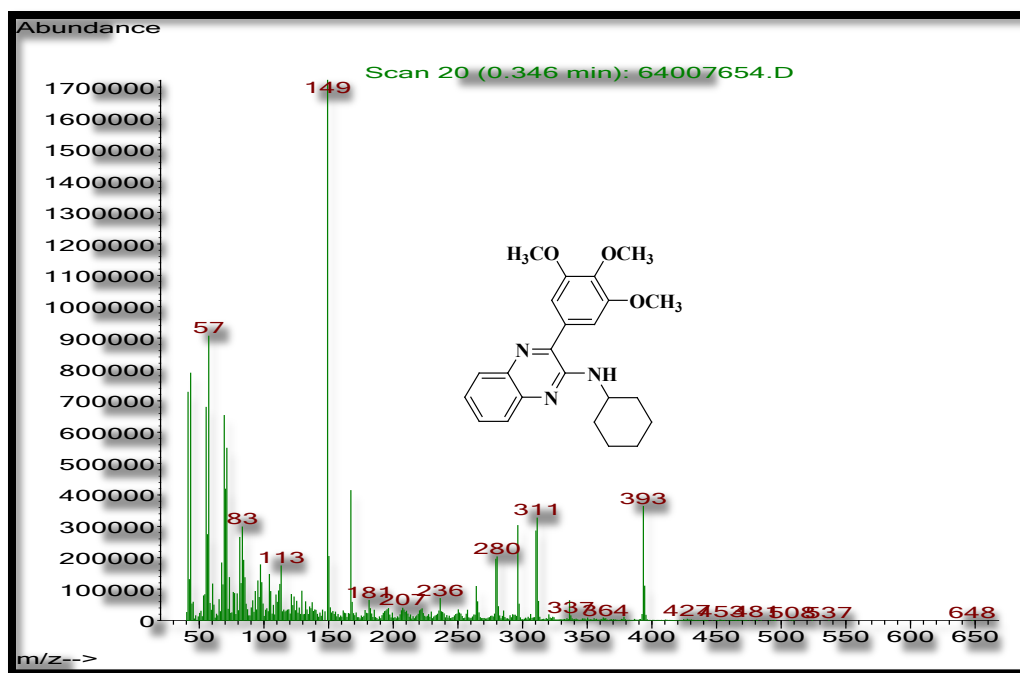
¹H NMR



¹³C NMR



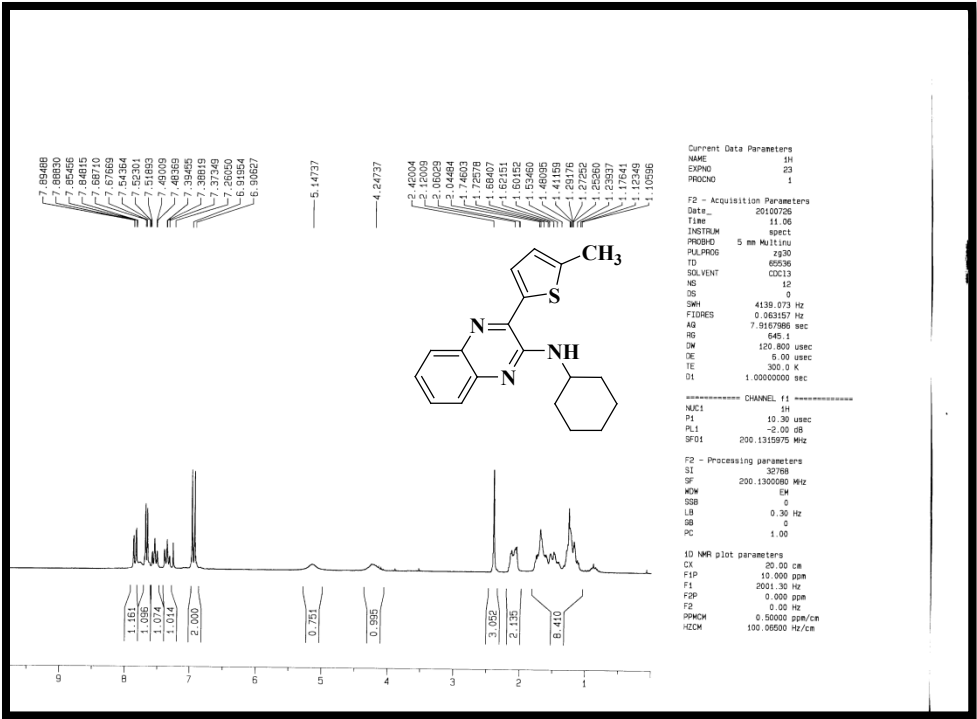
Mass



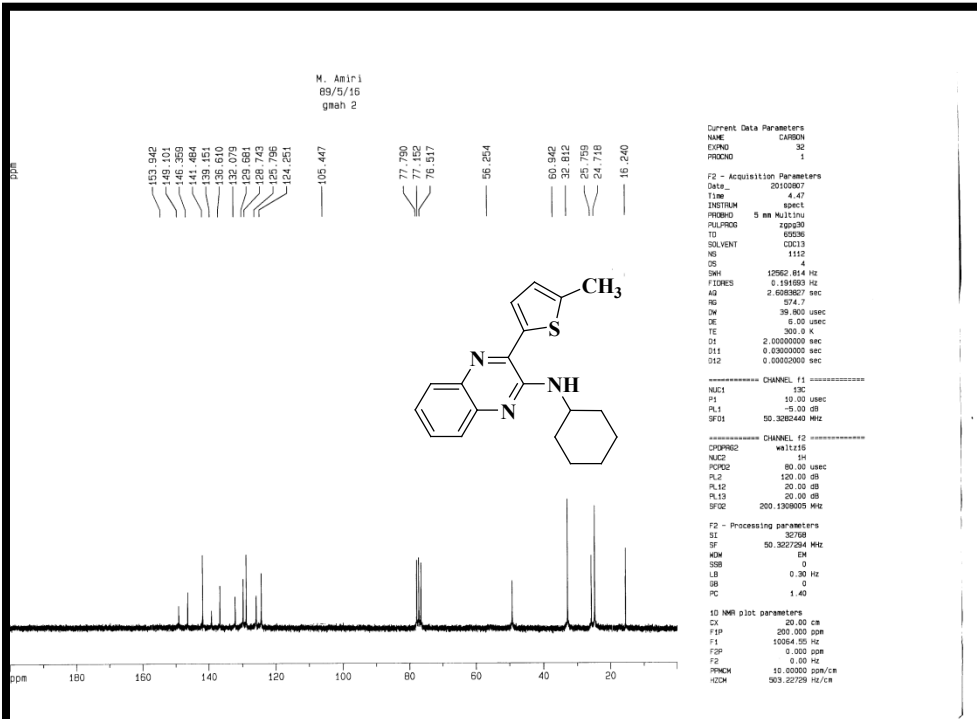
CHN

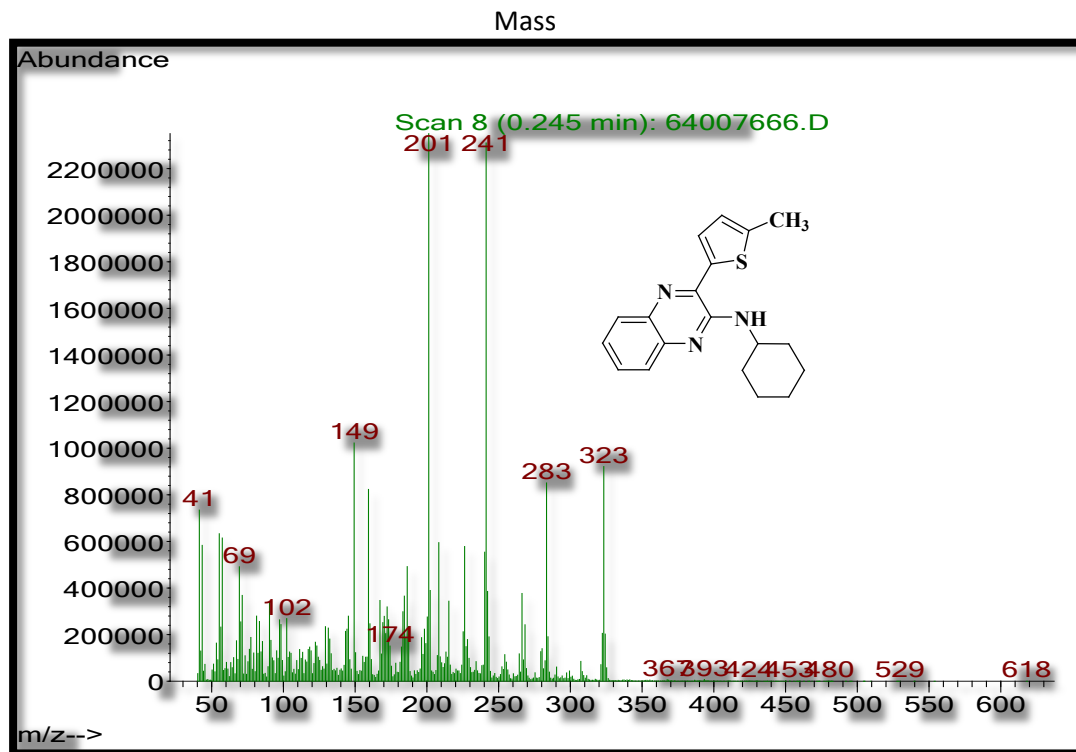
RUN 66	ID DGA7	WEIGHT 2.025
SIGNALS		
CARBON 70.42%		ZR 1658
HYDROGEN 7.04%		NR 2800
NITROGEN 10.72%		CR 16058
		HR 19590
BLANKS 20 135 357		
KFACTORS 14.834 37.027 5.231		
OXEILL COMB BOOST1 BOOST2		

¹H NMR



¹³C NMR

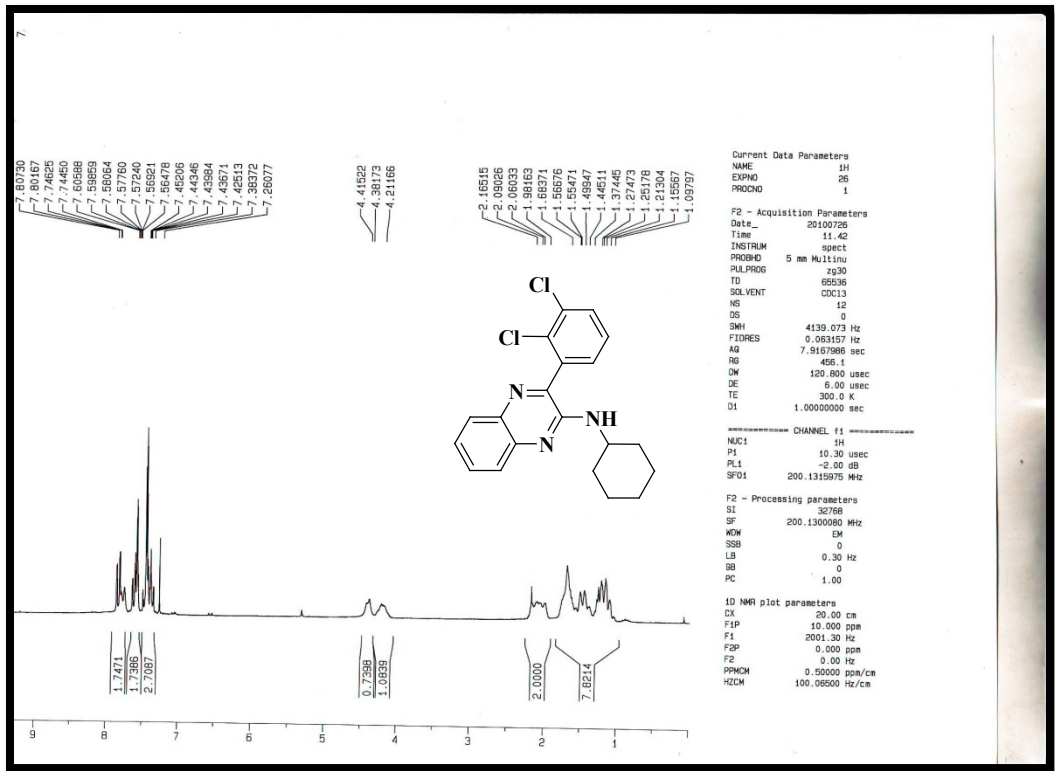




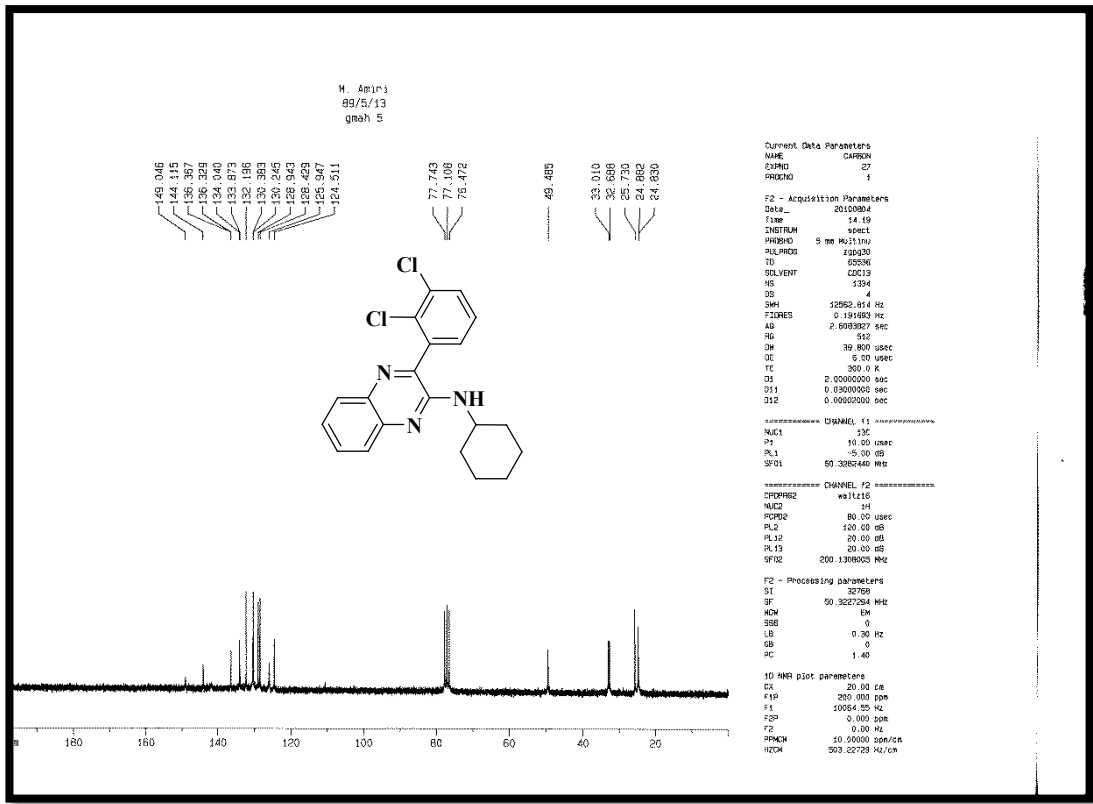
CHN

RUN 75	ID DGA11	WEIGHT 2.466	
			SIGNA
			ZR 16
			NR 39
			CR 28
			HR 35
CARBON	70.89%		
HYDROGEN	6.64%		
NITROGEN	13.09%		
BLANKS	24	150	345
KFACTORS	14.834	36.697	5.241

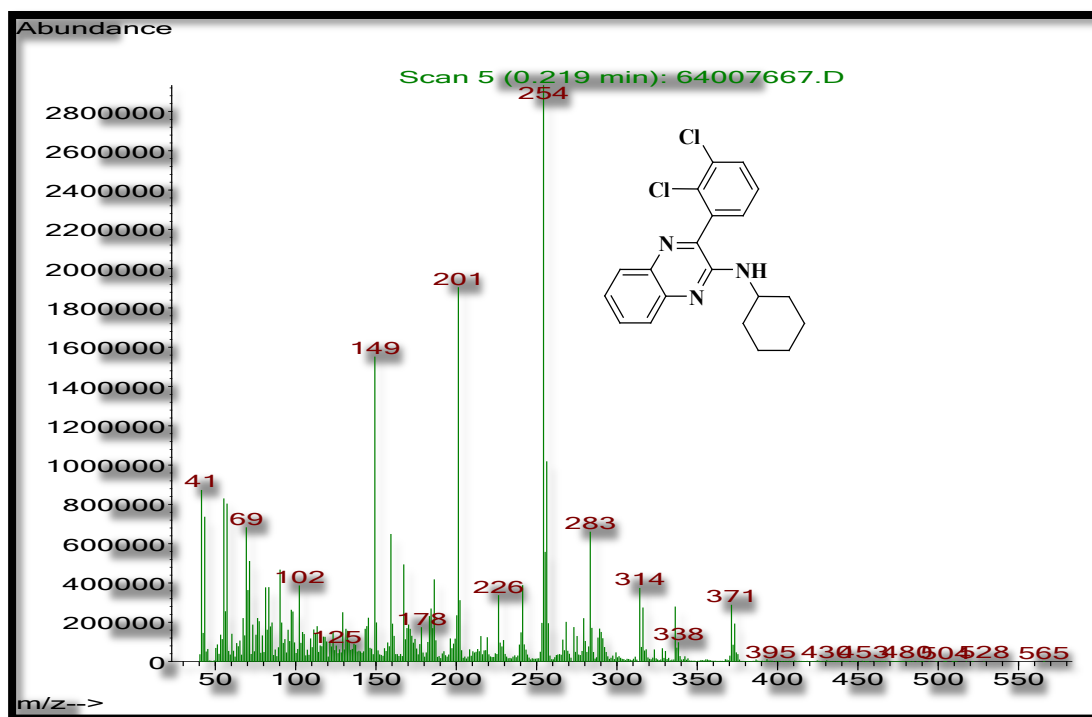
¹H NMR



¹³C NMR



Mass

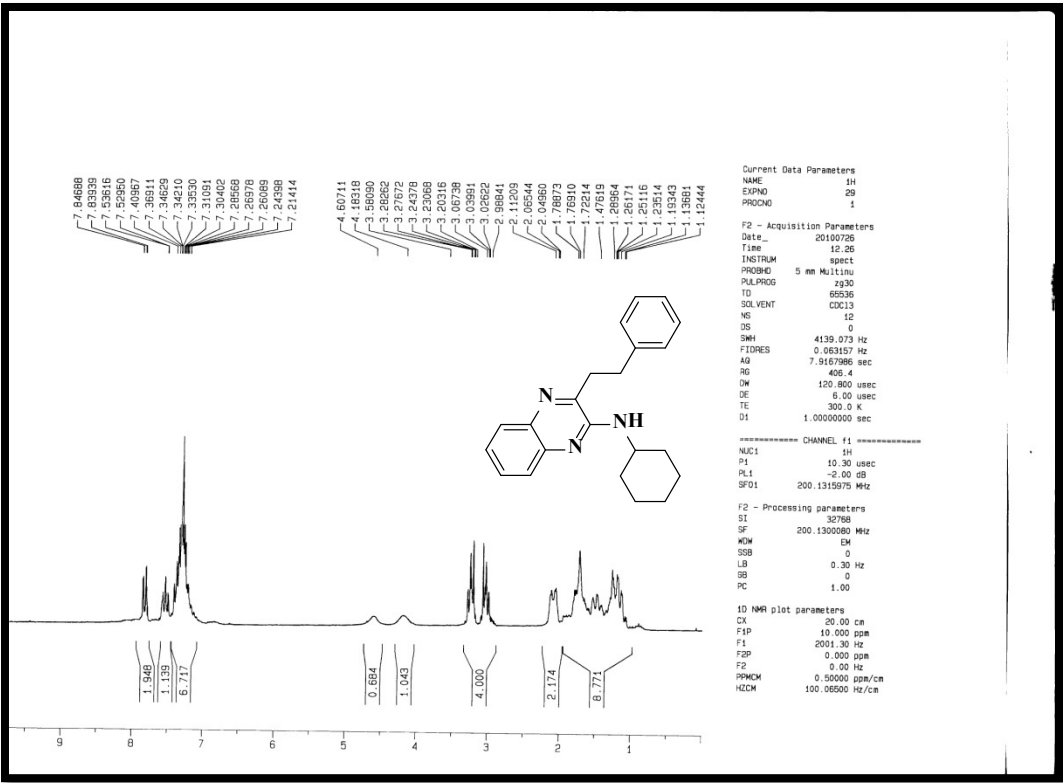


CHN

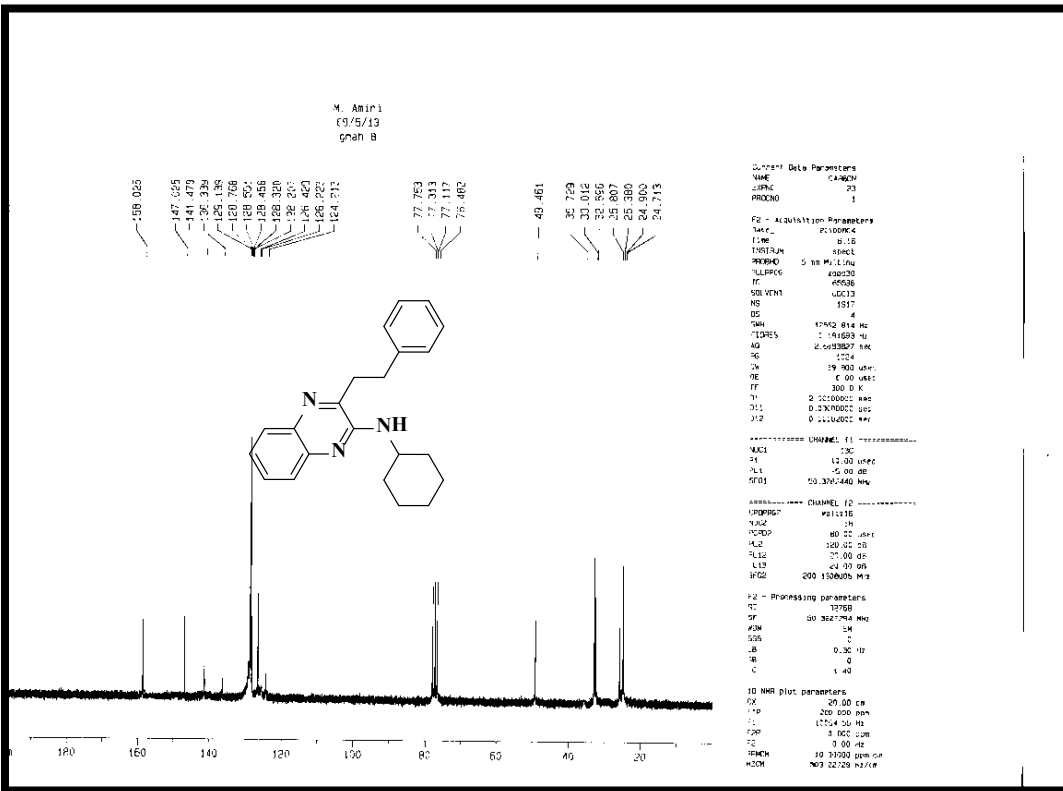
RUN 18	ID DGA31	WEIGHT 2.015	
			SIGNALS
			ZR 2152
			NR 4172
			CR 18518
			HR 22616
CARBON 64.78%			
HYDROGEN 5.12%			
NITROGEN 11.30%			
BLANKS -248 205 148			
KFACTORS 14.234 37.015 5.082			
OXFILL COMB BOOST1 BOOST2			
0 0 0 0			

Chemical structure of compound 1: Clc1ccc(cc1C2=NC(=Nc3ccccc3N2)NC4CCCCC4)c5ccccc5

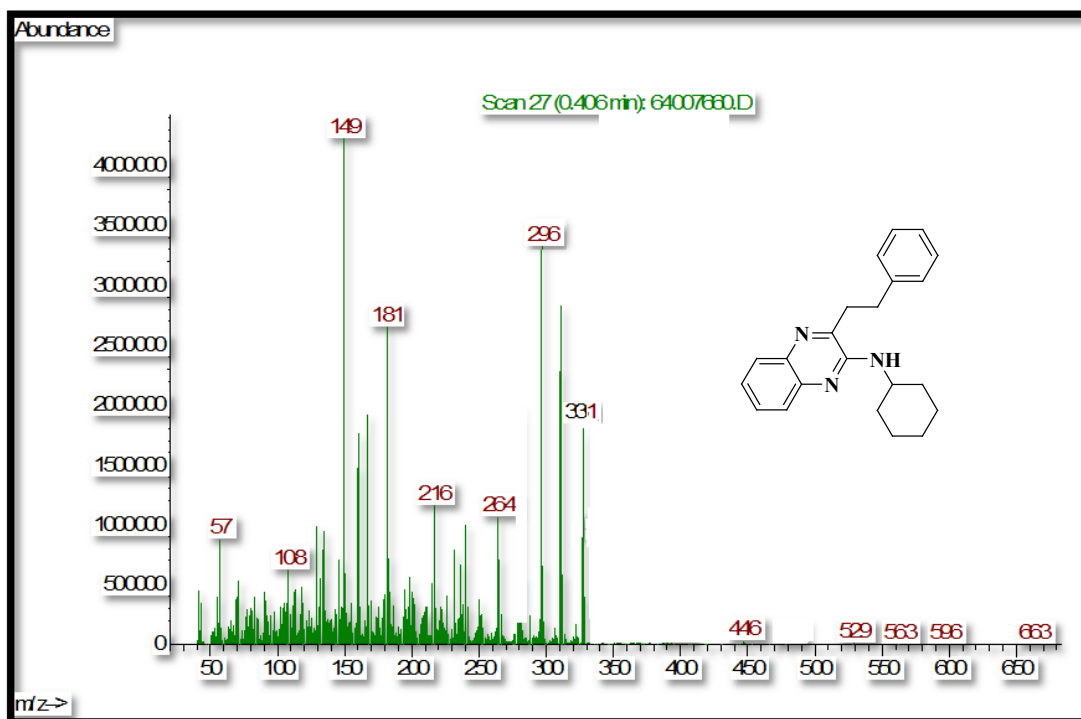
¹H NMR



¹³C NMR



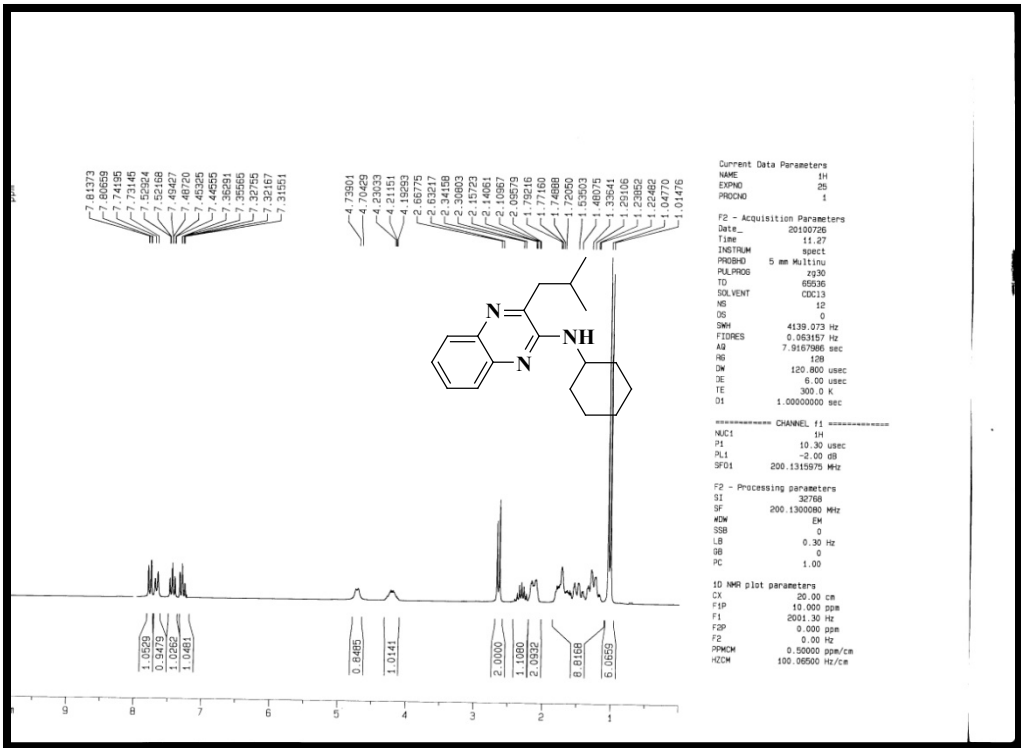
Mass



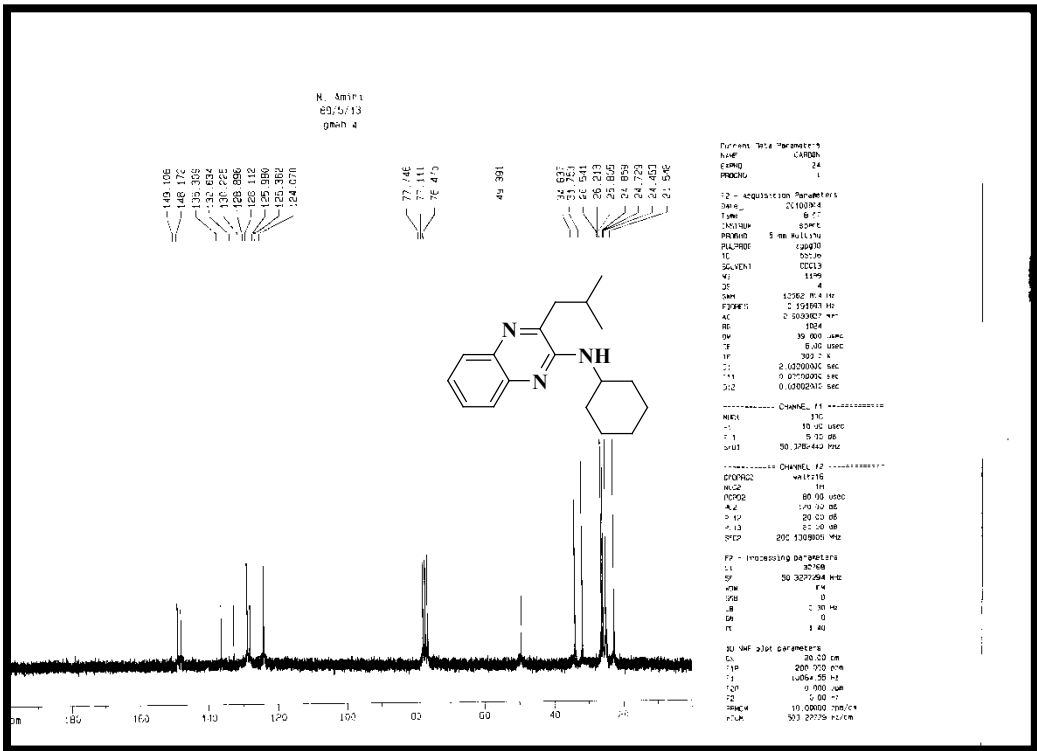
CHN

RUN 77	ID DGA13	WEIGHT 2.316	
		SIGNALS	
		ZR 1682	
		NR 3911	
		CR 29643	
		HR 38161	
			Chemical structure of the compound: <chem>c1ccc(cc1)CCc2nc3ccccc3n2NC4CCCCC4</chem>
		CARBON 80.03%	
		HYDROGEN 7.65%	
		NITROGEN 12.72%	
		BLANKS 24 150 345	
		KFACTORS 14.834 36.697 5.241	
		OXFILL COMB BOOST1 BOOST2	
		0 0 0 0	

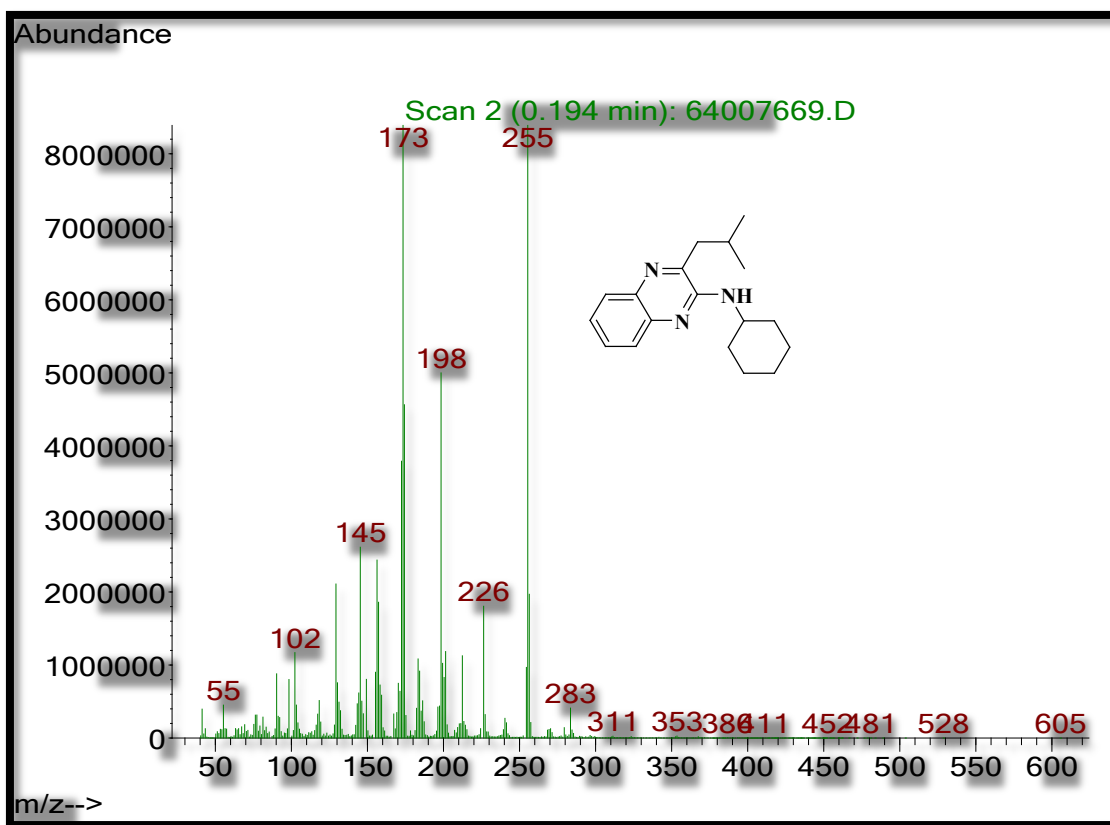
¹H NMR



¹³C NMR



Mass



CHN

RUN 21 ID DGA3

WEIGHT 2.386

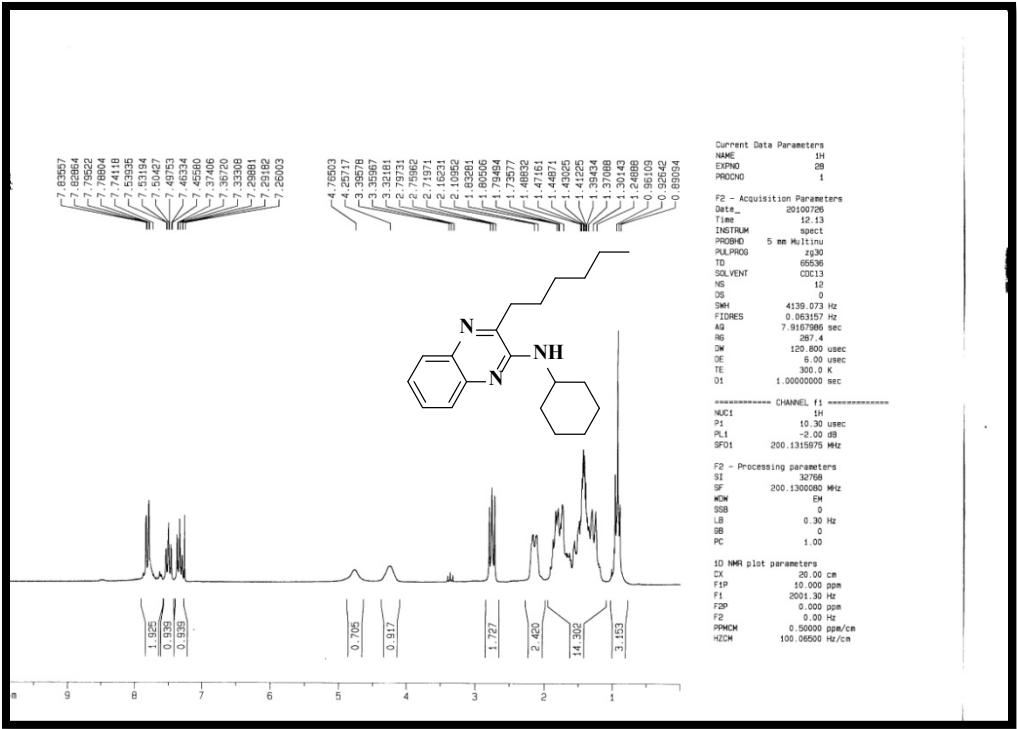
SIGNALS

CARBON 76.48%
HYDROGEN 8.92%
NITROGEN 14.94%

ZR 2168
NR 5853
CR 26157
HR 32580

BLANKS -248 205 148
KFACTORS 14.234 37.015 5.082

¹H NMR



¹³C NMR

