Electronic Supplementary Material (ESI) for ChemComm.

Palladium Catalyzed Direct Aliphatic γ C(sp^3)–H Alkenylation with Alkenes and Alkenyl Iodides

Neetipalli Thrimurtulu, Salman Khan, Soham Maity, Chandra M. R. Volla* and Debabrata Maiti*

Department of Chemistry, Indian Institute of Technology Bombay,

Powai, Mumbai 400076, India

E–mail: dmaiti@chem.iitb.ac.in

E–mail: chandra.volla@chem.iitb.ac.in

Supporting Information

Table of Contents

General considerations:

Reagent Information. Unless otherwise stated, all reactions were carried out under air atmosphere in screw cap reaction tubes. All the solvents were bought from Aldrich in sure-seal bottle and were used as received. $Pd(OAc)_2$ and 4,4`-Di-tert-butyl-2,2'-bipyridine, were bought from Aldrich. Oxidants like AgOAc and Ag_2CO_3 were also bought from Aldrich. For column chromatography, silica gel (100–200 mesh) from SRL Co. was used. A gradient elution using petroleum ether and ethyl acetate was performed based on Merck aluminium TLC sheets (silica gel $60F_{254}$).

Analytical Information. All isolated compounds are characterized by ^{1}H NMR, ^{13}C NMR spectroscopy, gas chromatography mass spectra (GC-MS). In addition, all the compounds are further characterized by HRMS. Copies of ^{1}H NMR and ^{13}C NMR can be found in the supporting information. Nuclear magnetic resonance spectra were recorded either on a Bruker 500 or a 400 MHz instrument. All ^{1}H NMR experiments are reported in units, parts per million (ppm), and were measured relative to the signals for residual chloroform (7.26 ppm) in the deuterated solvent, unless otherwise stated. All ^{13}C NMR spectra are reported in ppm relative to deuteron chloroform (77.16 ppm), unless otherwise stated, and all were obtained with ^{1}H decoupling. All GCMS analysis were done by Agilent 7890A GC system connected with 5975C inert XL EI/CI MSD (with triple axis detector).

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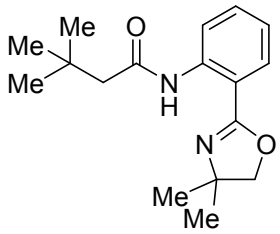
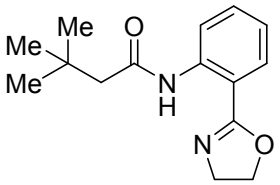
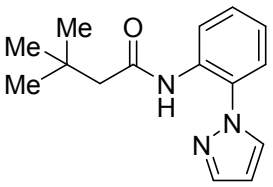
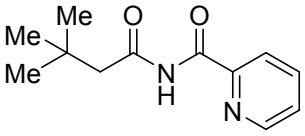
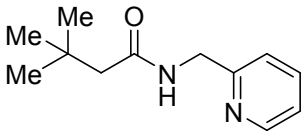
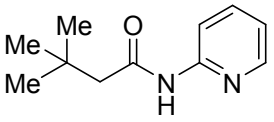
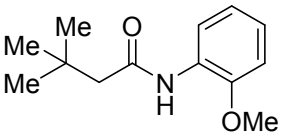
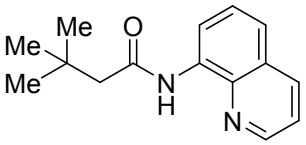
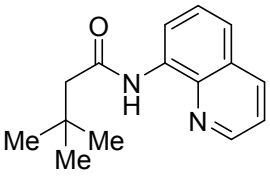









Preparation of different amides.

Preparation of 8-aminoquinolinyl amides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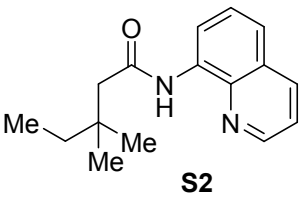
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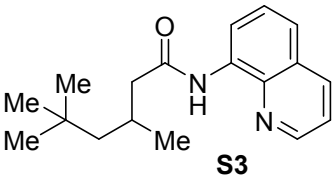
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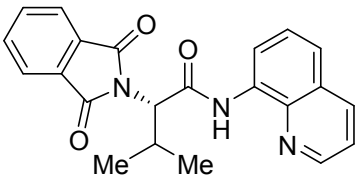
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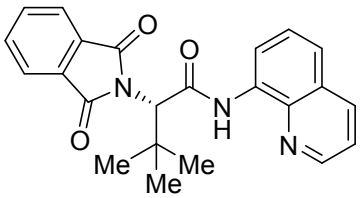
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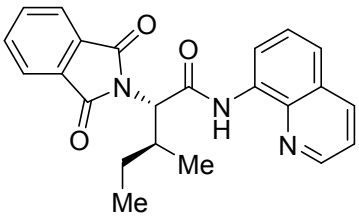
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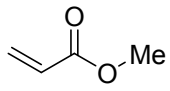
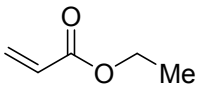
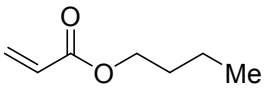
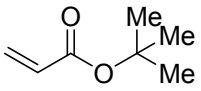
The carboxylic acid derivatives were prepared according to the literature procedure[1-5].

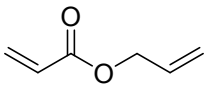
Available alkenes and prepared alkenes:

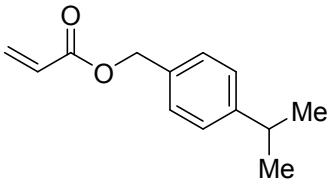


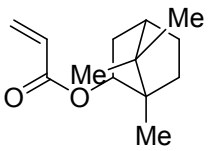


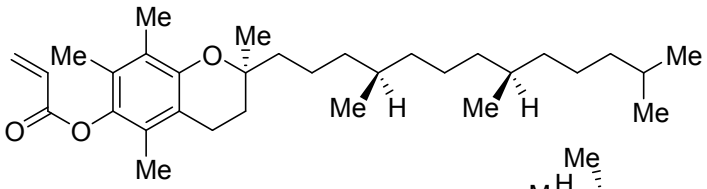


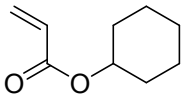


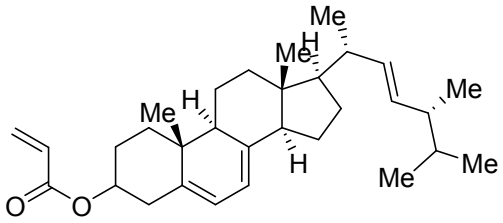




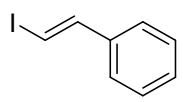








Preparation of Alkenyliodides: Vinyl iodides **13**,[6] **14**,[6] **15**,[6] **11**,[7] **10**,[8] **7**,[9] **9**,[9] **16**,[10] **8**,[11] **12**[12] were prepared as reported in the literature.



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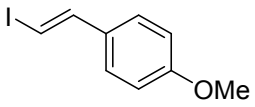

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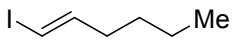

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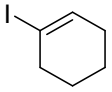

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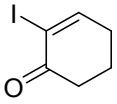

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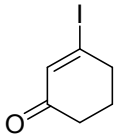

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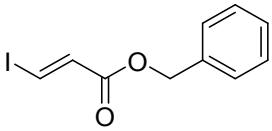

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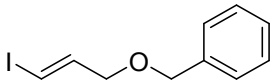

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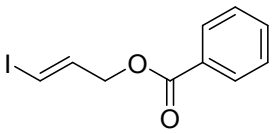

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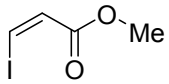

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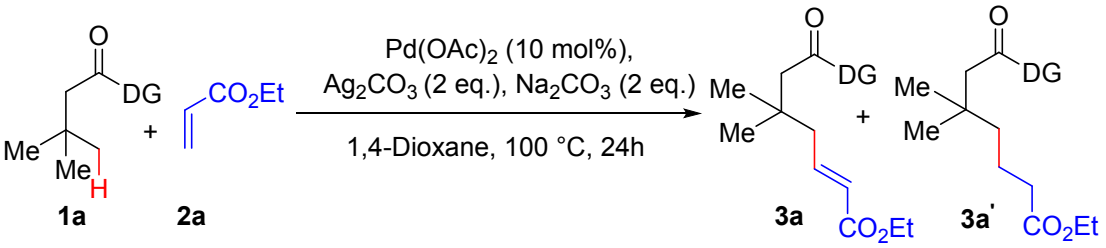
Solvent Optimization Details



Entry	Solvent	Ratio (3a : 3a')	NMR Yield[1]
1	1,2-DCE	4:1	25
2	TCP	4:1	10%
3	1,4-dioxane	5:1	22
4	Toluene	5:1	20
5	Xylene	2:1	18
6	THF	-	-
7	TFT	4:1	32
8	DMF	-	-
9	NMP	-	-
10	1,4-dioxane/140 ˚C	>10:1	22
11	HFIP	-	-

[1] The ratios of products were determined by the 1H NMR analysis of crude reaction mixture

Oxidant optimization:

Entry	Oxidant/additive	NMR Yield[1]
1	Ag_2CO_3(2 eq)	22
2	Ag_2CO_3(3 eq)	29
3	Ag_2CO_3(5 eq)	45
4	Ag_2CO_3(5 eq)/p-TsOH.H_2O	traces

5	Ag_2CO_3(5 eq)/TBAI	traces
6	Ag_2CO_3(5 eq)/ adamantyl acid	48
7	Ag_2CO_3(5 eq)/$CuSO_4$	traces
8	Ag_2CO_3(5 eq)/H_2O	--
9	Ag_2CO_3(5 eq)/pyridine	traces

Palladium catalyst Optimization details:

Entry	**Palladium Catalyst (10mol %)**	**NMR Yield[1]**
1	$Pd(OTf)_2$	40
2	$Pd(PPh_3)_2Cl_2$	45%[2]
3	$Pd(acac)_2$	31%
4	$Pd(COD)_2Cl_2$	14%
5	$Pd(CH_3CN)_2Cl_2$	26%
6	$Pd_2(dba)_3$	trace
7	Pd_2SO_4	trace

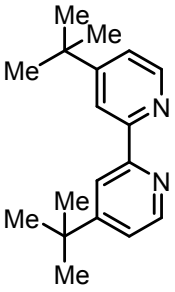
Ligand Optimization: mono protected amino acids (MPAA).

Entry	**Ligand**	**Yield%**
1	Ac-Gly-OH	21
2	Form-Gly-OH	29
3	Ac-Ala-OH	24
4	Ac-DL-Val-OH	5
5	Ac-Phe-OH	30
6	Ac-L-Leu-OH	trace
7	Na-Ac-L-Lys-OH	<5

8	Ac-4-hydroxy-L-Proline	-
9	DL-Proline	-
10	Boc-Ala-OH	trace
11	Boc-L-iso-Leu-OH	24
12	N-acetyl-Ala-OH	trace

Ligand Optimization: Nitrogen containing ligands.

Entry	**Ligand**	**NMR Yield%**
1	L1	64
2	L2	25
3	L3	24
4	L4	5
5	L5	30
6	L6	trace
7	L7	<5
8	L8	-
9	L9	-
10	L10	trace
11	L11	24
12	L12	trace
13	L13	trace
14	L14	-
15	L15	35%



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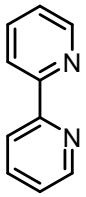

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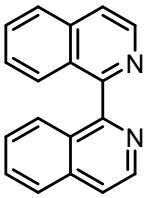

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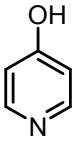

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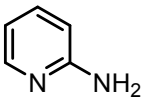

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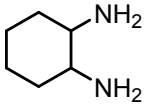

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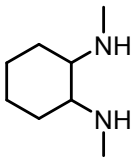

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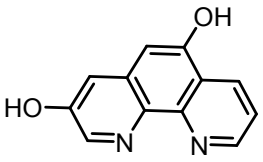

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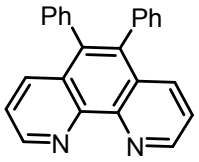

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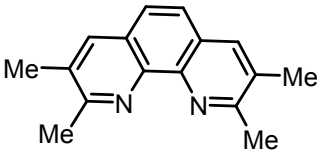

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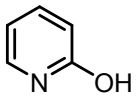

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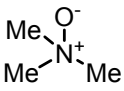

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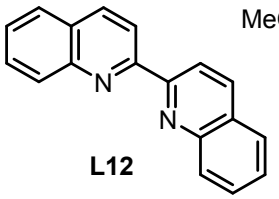

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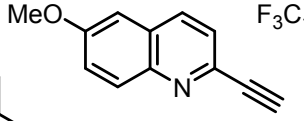
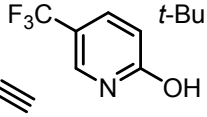
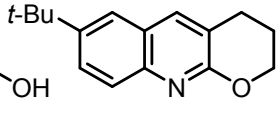


L13



L14



L15

(A). General Procedure for γ-Sp^3 C–H Activation with Alkenes:

In an oven dried reaction tube, charged with magnetic stir-bar, $Pd(OAc)_2$ (10 mol%; 4.6 mg), Ag_2CO_3 (1.0 mmol; 53.6 mg), Na_2CO_3 (0.4 mmol; 49.66 mg), 4,4'-di-tert-butyl-2,2'-dipyridyl (20 mol% DTBD), and aliphatic amide substrate (**1**) (0.2 mmol) were added. Freshly prepared or available alkene (**2**) was added to the reaction mixture followed by 1, 4 dioxane (2 mL). The reaction tube was capped and stirred at 140 °C temperature for 6h hours, then cooled to room temperature again olefin (0.2 mmol) was added. Upon completion, the reaction mixture was evaporated under reduced pressure and passed through the column for purification. Petroleum ether and ethyl acetate mixture was used as an eluent.

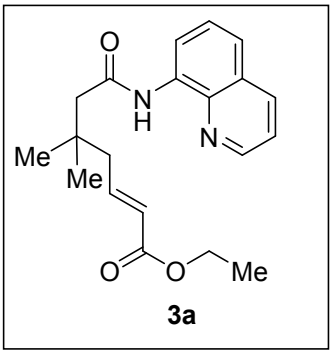
Note: The ratios of products were determined by the 1H NMR analysis of crude reaction mixture. Minor product as in none of the cases was not characterized. Calculated yield is combined products.

(B). General Procedure for γ-Sp^3 C–H Activation with Alkenyliodides:

In an oven dried reaction tube, charged with magnetic stir-bar, $Pd(OAc)_2$ (10 mol%; 4.6 mg), AgOAc (0.2 mmol; 53.6 mg), and aliphatic amide substrate (**1**) (0.2 mmol) were added. Freshly prepared alkenyliodides (**4**) was added to the reaction mixture followed by dry toluene (2 mL). The reaction tube was capped and stirred at 80 °C temperature for 24h hours. Upon completion, the reaction mixture was evaporated under reduced pressure and passed through the column for purification. Petroleum ether and ethyl acetate mixture was used as an eluent.

Note: The ratios of products were determined by the 1H NMR analysis of crude reaction mixture. Minor product as in none of the cases was not characterized. Calculated yield is combined products.

Characterization of substrate:



3a

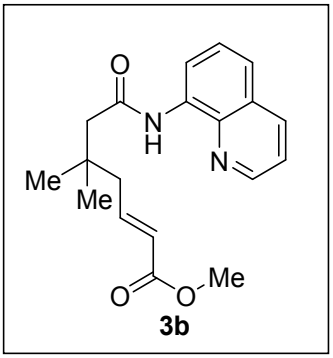
Ethyl (E)-5,5-dimethyl-7-oxo-7-(quinolin-8-ylamino)hept-2-enoate (3a) was synthesized by general procedure **A** with acrylate (0.8 mmol, 80 mg) and amide (0.2 mmol, 48 mg) as the substrates. Pure **3a** was obtained as liquid in 61% (42 mg) yield after column chromatography of the crude reaction mixture (silica gel, mesh 100-200; petroleum ether: ethyl acetate; 19:1). **R_f:** 0.4 (10:90 ethyl acetate:Petroleum ether).

^{1}H NMR (500 MHz, $CDCl_3$) δ 9.81 (s, 1H), 8.82 (ddd, *J* = 8.8, 5.7, 1.6, 2H), 8.20 (d, *J* = 8.2, 1H), 7.64 – 7.43 (m, 3H), 7.16 – 7.01 (m, 1H), 6.02 – 5.90 (m, 1H), 4.21 (q, *J* = 7.1, 2H), 2.50 (d, *J* = 16.4, 2H), 2.44 – 2.35 (m, 2H), 1.31 (t, *J* = 7.1, 3H), 1.20 (s, 6H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 170.97, 170.23, 166.62, 148.21, 145.79, 134.46, 128.15, 127.70, 124.59, 121.72, 121.69, 121.66, 121.50, 60.38, 52.27, 49.82, 44.73, 34.73, 27.75, 14.42.

IR (thin film) 3353, 2967, 2931, 1711, 1686, 1526, 1154, 756. cm^{-1}.

HRMS (ESI, M+Na^+) m/z calcd. for $C_{20}H_{24}N_2O_3Na$ 363.2146, found 363.2149.



3b

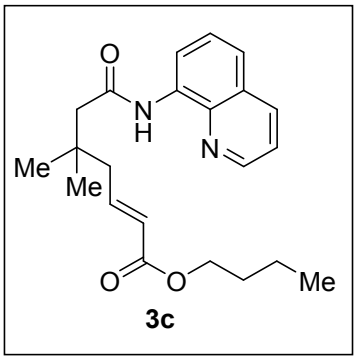
Methyl (E)-5,5-dimethyl-7-oxo-7-(quinolin-8-ylamino)hept-2-enoate (3b) was synthesized by general procedure **A** with methyl acrylate (0.8 mmol, 69 mg) and amide (0.2 mmol, 48

mg) as the substrates. Compound **3b** and **3b**[1] (4:1) was obtained as liquid in 62 %(40 mg) yield after column chromatography of the crude reaction mixture (silica gel, mesh 100-200; petroleum ether: ethyl acetate; 19:1). **R_f :** 0.4 (10:90 ethyl acetate: Petroleum ether).

^{1}H NMR (400 MHz, $CDCl_3$) δ ^{1}H NMR (400 MHz, $CDCl_3$) δ = 9.77 (s, 1H), 8.79 (ddt, *J*=18.0, 10.9, 5.3, 2H), 8.23 – 8.15 (m, 1H), 7.61 – 7.40 (m, 3H), 7.08 (dt, *J*=15.6, 7.9, 1H), 5.94 (ddd, *J*=13.0, 7.1, 1.3, 1H), 3.73 (s, 2H), 2.45 (s, 2H), 2.40 (dd, *J*=7.9, 1.3, 2H), 1.18 (s, 5H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 170.03, 166.98, 148.27, 146.03, 138.41, 136.60, 134.50, 128.10, 127.56, 124.07, 121.73, 121.65, 116.65, 51.57, 49.82, 44.69, 34.65, 27.76, 27.43.

IR (thin film) 3353, 3016, 2968, 1721, 1693, 1593, 1526, 1216, 1152,758 cm^{-1}



3c

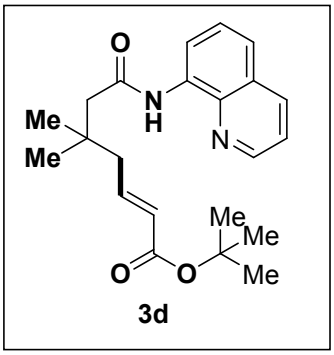
Butyl-(E)-5,5-dimethyl-7-oxo-7-(quinolin-8-ylamino)hept-2-enoate (3c) was synthesized by general procedure **A** with acrylate (0.8 mmol, 102 mg) and amide (0.2 mmol, 48 mg) as the substrates. Pure **3c** was obtained as liquid in 58% (43 mg) yield after column chromatography of the crude reaction mixture (silica gel, mesh 100-200; petroleum ether: ethyl acetate; 19:1). Ratio 5:1

R_f: 0.4 (10:90 ethyl acetate:Petroleum ether).

^{1}H NMR (500 MHz, $CDCl_3$) δ = 9.78 (s, 1H), 8.84 – 8.76 (m, 2H), 8.17 (d, *J* =7.7, 1H), 7.50 (ddt, *J* =12.4, 8.2, 6.2, 4H), 7.07 (dt, *J* =15.6, 7.9, 1H), 5.96 (d, *J* =15.5, 1H), 4.17 – 4.11 (m, 3H), 2.47 (d, *J* =16.6, 2H), 2.43 – 2.35 (m, 2H), 1.69 – 1.60 (m, 3H), 1.45 – 1.35 (m, 3H), 1.18 (s, 6H), 0.93 (t, *J* =5.6, 3H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 170.12, 166.71, 149.90, 148.19, 145.64, 134.40, 131.17, 129.07, 128.14, 127.64, 124.52, 121.73, 121.68, 64.33, 49.84, 44.73, 34.67, 30.86, 29.85, 27.75, 19.33, 13.89.

HRMS (ESI, M+Na$^+$) m/z calcd. for $C_{22}H_{28}N_2NaO_3$ 391.1992, found 391.1991.

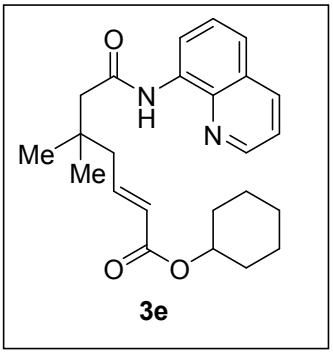


3d

tert-butyl (E)-5,5-dimethyl-7-oxo-7-(quinolin-8-ylamino)hept-2-enoate (3d) was synthesized by general procedure **A** with acrylate (0.8 mmol, 102 mg) and amide (0.2 mmol, 48 mg) as the substrates. Pure **3d** was obtained as liquid in 66% (major isomer) (49 mg) yield after column chromatography of the crude reaction mixture (silica gel, mesh 100-200; petroleum ether: ethyl acetate; 19:1). ratio 10:1, **R_f :** 0.4 (10:90 ethyl acetate:Petroleum ether).

^{1}H NMR (400 MHz, $CDCl_3$) δ 9.77 (s, 1H), 8.83 – 8.75 (m, 2H), 8.17 (dd, *J* = 8.3, 1.6, 1H), 7.57 – 7.42 (m, 3H), 6.96 (dt, *J* = 15.6, 7.9, 1H), 5.88 (dt, *J* = 15.5, 1.3, 1H), 2.45 (s, 2H), 2.35 (dt, *J* = 18.6, 9.3, 2H), 1.48 (s, 9H), 1.16 (s, 6H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 170.15, 166.02, 148.25, 144.32, 136.62, 134.53, 128.10, 127.58, 126.19, 121.71, 121.61, 116.66, 80.30, 49.87, 44.67, 34.63, 28.31, 27.70.



3e

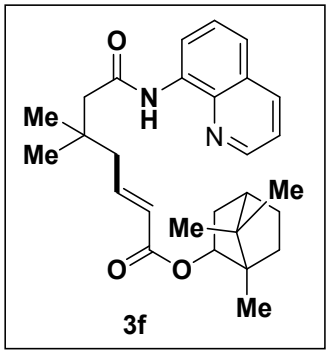
cyclohexyl (E)-5,5-dimethyl-7-oxo-7-(quinolin-8-ylamino)hept-2-enoate (3e) was synthesized by general procedure **A** with acrylate (0.8 mmol, 123 mg) and amide (0.2 mmol, 48 mg) as the substrates. Pure **3e** was obtained as liquid in 61% (48 mg) yield after column chromatography of the crude reaction mixture (silica gel, mesh 100-200; petroleum ether: ethyl acetate; 19:1). **R_f:** 0.4 (10:90 ethyl acetate: Petroleum ether).

^{1}H NMR (400 MHz, $CDCl_3$) δ 9.77 (s, 1H), 8.80 (dd, *J* = 13.6, 5.5, 2H), 8.16 (d, *J* = 8.2, 1H), 7.64 – 7.42 (m, 3H), 7.05 (dt, *J* = 15.6, 7.8, 1H), 5.95 (d, *J* = 15.5, 1H), 4.89 – 4.72 (m, 1H), 2.45 (s, 2H), 2.39 (d, *J* = 7.8, 2H), 1.87 (d, *J* = 10.8, 2H), 1.77 – 1.69 (m, 3H), 1.55 (d, *J* = 11.5, 1H), 1.39 (dt, *J* = 23.0, 9.8, 6H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 170.09, 166.05, 148.31, 145.23, 138.46, 136.53, 134.54, 128.08, 127.54, 125.06, 121.73, 116.57, 72.82, 49.87, 44.74, 34.66, 31.83, 27.73, 25.56, 23.93.

IR (thin film) 3356, 3016, 2938, 2860, 1711, 1687, 1596, 1578, 1196, 756 cm^{-1}.

HRMS (ESI, M+Na^+) m/z calcd. for $C_{24}H_{30}N_2NaO_3$ 417.2144, found 417.2149.



3f

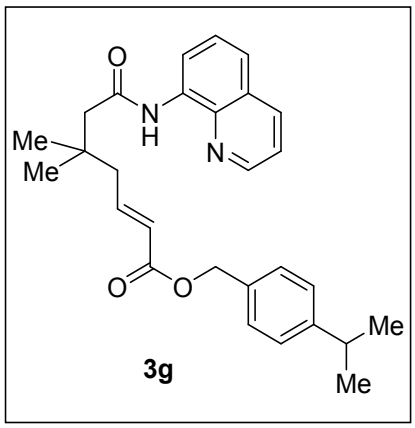
(E)-1,7,7-trimethylbicyclo[2.2.1]heptan-2-yl-5,5-dimethyl-7-oxo-7-(quinolin-8-ylamino)hept-2-enoate (3f) was synthesized by general procedure **A** with acrylate (0.8 mmol, 167 mg) and amide (0.2 mmol, 48 mg) as the substrates. Pure **3f** was obtained as liquid in 59% (53 mg) yield after column chromatography of the crude reaction mixture (silica gel,

mesh 100-200; petroleum ether: ethyl acetate; 19:1). **R_f:** 0.4 (10:90 ethyl acetate:Petroleum ether).

^{1}H NMR (500 MHz, $CDCl_3$) δ 9.76 (s, 1H), 8.87 – 8.72 (m, 2H), 8.16 (dd, *J* = 8.3, 1.6, 1H), 7.57 – 7.41 (m, 3H), 7.10 – 6.96 (m, 1H), 5.98 – 5.88 (m, 1H), 4.76 (dd, J = 7.7, 3.7, 1H), 2.44 (s, 2H), 2.39 (dd, *J* = 7.9, 1.2, 2H), 1.84 – 1.72 (m, 6H), 1.00 – 0.97 (m, 3H), 0.83 (t, *J* = 6.1, 13H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 170.05, 166.07, 148.36, 145.23, 138.54, 136.50, 128.11, 127.55, 124.97, 121.75, 121.63, 116.58, 80.92, 49.96, 48.97, 47.09, 45.23, 44.66, 38.98, 34.62, 33.88, 27.69, 27.21, 20.26, 20.05, 11.61.

HRMS (ESI, M+Na^+) m/z calcd. for $C_{28}H_{36}N_2NaO_3$ 471.2618, found 471.2618.



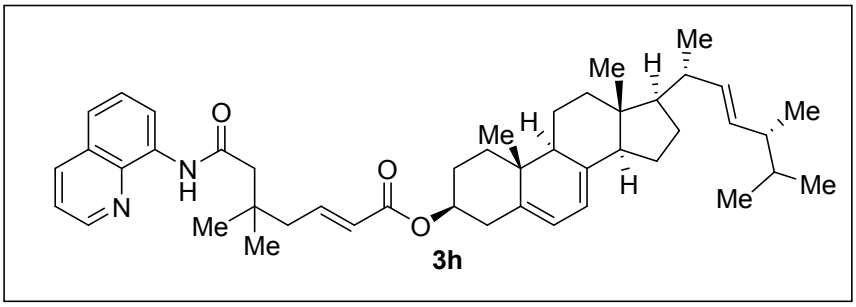
3g

4-isopropylbenzyl (E)-5,5-dimethyl-7-oxo-7-(quinolin-8-ylamino)hept-2-enoate (3g) was synthesized by general procedure **A** with acrylate (0.8 mmol, 163 mg) and amide (0.2 mmol, 48 mg) as the substrates. Pure **3g** was obtained as liquid in 56% (50 mg) yield after column chromatography of the crude reaction mixture (silica gel, mesh 100-200; petroleum ether: ethyl acetate; 19:1). **R_f:** 0.4 (10:90 ethyl acetate: Petroleum ether).

^{1}H NMR (500 MHz, $CDCl_3$) δ 9.76 (s, 1H), 8.80 – 8.75 (m, 2H), 8.17 – 8.14 (m, 1H), 7.55 – 7.48 (m, 3H), 7.42 (dd, *J* = 8.2, 4.2, 1H), 7.31 (d, *J* = 8.1, 2H), 7.25 – 7.19 (m, 4H), 7.17 – 7.06 (m, 2H), 6.04 – 5.98 (m, 1H), 5.15 (s, 2H), 2.95 – 2.87 (m, 1H), 2.45 (s, 2H), 2.40 (dd, *J* = 7.9, 1.2, 2H), 1.25 (d, *J* = 6.9, 6H), 1.18 (s, 6H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 169.75, 166.18, 148.88, 148.11, 146.01, 138.23, 136.21, 134.28, 133.31, 128.34, 127.81, 127.27, 126.51, 124.02, 121.48, 121.37, 116.29, 65.96, 49.59, 44.49, 34.43, 33.78, 27.52, 23.84.

HRMS (ESI, M+Na^+) m/z calcd. for $C_{28}H_{32}N_2NaO_3$ 467.2305, found 467.2307.

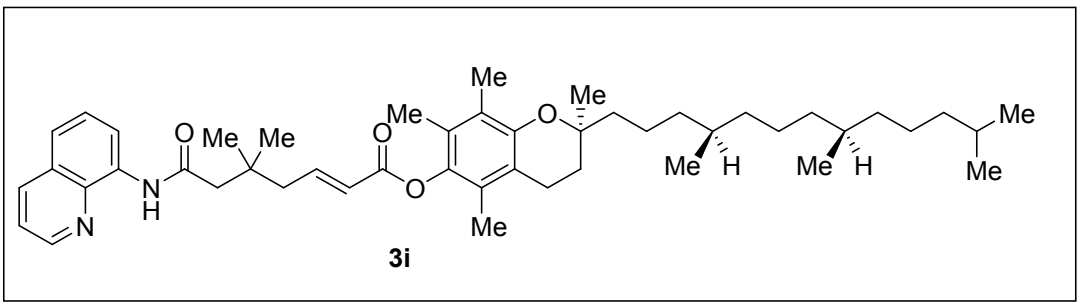


3h

(3S,9S,10R,13R,14R,17R)-17-((2R,5R,E)-5,6-dimethylhept-3-en-2-yl)-10,13-dimethyl-2,3,4,9,10,11,12,13,14,15,16,17-dodecahydro-1H-cyclopenta[a]phenanthren-3-yl (E)-5,5-dimethyl-7-oxo-7-(quinolin-8-ylamino)hept-2-enoate (3h) was synthesized by general procedure **A** with acrylate (0.8 mmol, 360 mg) and amide (0.2 mmol, 48 mg) as the substrates. Pure **3h** was obtained as liquid in 40 % (55 mg) yield after column chromatography of the crude reaction mixture (silica gel, mesh 100-200; petroleum ether: ethyl acetate; 19:1). Ratio 4:1. **R_f:** 0.4 (10:90 ethyl acetate: Petroleum ether).

^{1}H NMR (400 MHz, $CDCl_3$) δ 9.80 (s, 1H), 8.81 (ddd, *J* = 8.9, 5.7, 1.7, 2H), 8.19 (d, *J* = 7.4, 1H), 7.59 – 7.44 (m, 4H), 7.17 – 6.84 (m, 2H), 6.03 – 5.86 (m, 1H), 5.25 – 5.15 (m, 3H), 4.14 – 3.91 (m, 1H), 2.46 (s, 2H), 2.42 – 2.37 (m, 3H), 2.14 – 1.54 (m, 21H), 1.52 – 1.23 (m, 14H), 1.06 (dd, *J* = 15.9, 4.6, 4H), 0.98 – 0.90 (m, 7H), 0.86 – 0.78 (m, 11H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 169.92, 165.84, 148.16, 145.38, 141.49, 138.70, 138.34, 136.43, 135.58, 134.41, 132.00, 129.53, 127.98, 127.43, 126.60, 124.73, 123.85, 121.59, 121.49, 121.15, 120.16, 116.53, 116.33, 114.60, 72.67, 69.11, 61.52, 55.76, 54.55, 51.79, 49.71, 46.09, 44.62, 42.83, 41.74, 40.39, 39.06, 37.96, 37.14, 36.74, 34.53, 33.10, 30.88, 29.69, 29.32, 28.26, 28.18, 27.63, 25.03, 24.18, 23.00, 22.67, 21.10, 21.05, 19.94, 19.64, 17.59, 16.22, 12.06, 11.34.



3i

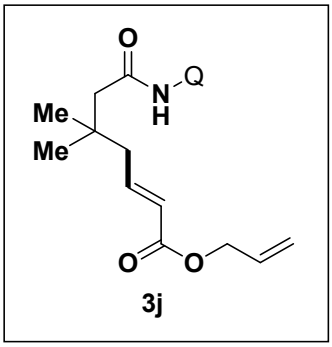
(S)-2,5,7,8-tetramethyl-2-((4R,8R)-4,8,12-trimethyltridecyl)chroman-6-yl (E)-5,5-dimethyl-7-oxo-7-(quinolin-8-ylamino)hept-2-enoate (3i) was synthesized by general procedure **A** with acrylate (0.8 mmol, 388 mg) and amide (0.2 mmol, 48 mg) as the substrates. Pure **3i** was obtained as liquid in 52 % (major isomer) (75 mg) yield after column chromatography of

the crude reaction mixture (silica gel, mesh 100-200; petroleum ether: ethyl acetate; 19:1). **R_f:** 0.4 (10:90 ethyl acetate: Petroleum ether).

^{1}H NMR (400 MHz, $CDCl_3$) δ = 9.84 (s, 1H), 8.89 – 8.75 (m, 2H), 8.28 – 8.11 (m, 1H), 7.61 – 7.44 (m, 3H), 7.40 – 7.28 (m, 1H), 6.24 (d, *J* = 15.5, 1H), 2.59 (t, *J* = 6.7, 2H), 2.51 (d, *J* = 5.4, 4H), 2.10 (s, 3H), 2.02 (s, 3H), 1.98 (s, 3H), 1.87 – 1.72 (m, 3H), 1.53 (ddd, *J* = 19.8, 13.3, 6.7, 4H), 1.44 – 1.19 (m, 26H), 1.17 – 1.05 (m, 7H), 0.86 (dd, *J* = 9.2, 5.5, 16H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 170.06, 165.02, 149.49, 148.28, 147.63, 140.53, 134.40, 128.14, 127.64, 126.98, 125.20, 123.66, 123.12, 121.73, 117.49, 75.16, 49.84, 44.83, 39.50, 37.52, 37.42, 34.71, 32.91, 28.11, 27.81, 24.95, 24.58, 22.86, 22.77, 21.17, 20.74, 19.89, 19.83, 13.13, 12.29, 11.97.

HRMS (ESI, M+H$^+$) m/z calcd. for $C_{47}H_{69}N_2O_4$ 725.5255, found 725.5252.

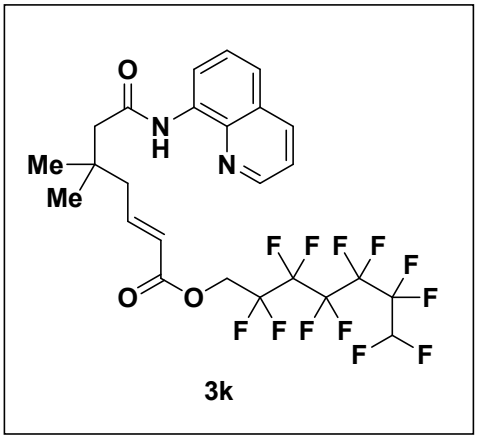


3j

allyl (E)-5,5-dimethyl-7-oxo-7-(quinolin-8-ylamino)hept-2-enoate (3j) was synthesized by general procedure **A** with acrylate (0.8 mmol, 90 mg) and amide (0.2 mmol, 48 mg) as the substrates. Pure **3j** was obtained as liquid in 41% (29 mg) yield after column chromatography of the crude reaction mixture (silica gel, mesh 100-200; petroleum ether: ethyl acetate; 19:1). **R_f:** 0.4 (10:90 ethyl acetate:Petroleum ether).

^{1}H NMR (500 MHz, $CDCl_3$) δ 9.79 (s, 1H), 8.86 – 8.78 (m, 2H), 8.19 (dt, *J* = 8.2, 1.9, 1H), 7.60 – 7.43 (m, 4H), 7.14 (dt, *J* = 15.6, 7.9, 1H), 6.04 – 5.91 (m, 2H), 5.36 (ddd, *J* = 17.2, 3.0, 1.5, 1H), 5.26 (dt, *J* = 6.1, 3.1, 1H), 4.67 (dt, *J* = 5.7, 1.3, 2H), 2.49 – 2.39 (m, 4H), 1.41 (s, 3H), 1.19 (s, 3H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 169.89, 149.04, 148.23, 146.15, 136.38, 134.46, 132.33, 128.02, 127.40, 127.06, 124.02, 121.63, 121.52, 121.31, 118.14, 116.42, 65.00, 49.73, 44.59, 34.55, 30.63, 27.64.



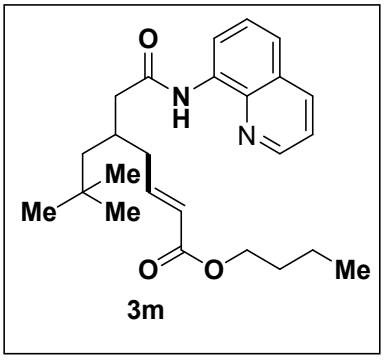
3k

2,2,3,3,4,4,5,5,6,6,7,7-dodecafluoroheptyl (E)-5,5-dimethyl-7-oxo-7-(quinolin-8-ylamino)hept-2-enoate (3) was synthesized by general procedure **A** with acrylate (0.8 mmol, 80 mg) and amide (0.2 mmol, 51 mg) as the substrates. Compound **3k and 3k[1] (4:1)** was obtained as liquid in 12% (8 mg) yield after column chromatography of the crude reaction mixture (silica gel, mesh 100-200; petroleum ether: ethyl acetate; 19:1). **R_f :** 0.4 (10:90 ethyl acetate: Petroleum ether).

^{1}H NMR (400 MHz, $CDCl_3$) δ = 9.78 (s, 1H), 8.79 (ddd, *J*=8.8, 5.5, 1.7, 2H), 8.17 (dd, *J*=8.3, 1.5, 1H), 7.57 – 7.44 (m, 3H), 7.21 (dt, *J*=15.7, 7.9, 1H), 6.21 – 5.90 (m, 2H), 4.64 (t, *J*=13.6, 2H), 2.46 (d, *J*=4.8, 4H), 1.19 (s, 6H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 169.88, 164.61, 149.15, 148.36, 138.47, 136.54, 134.46, 128.09, 127.52, 122.35, 121.78, 121.72, 116.56, 59.58, 49.81, 44.65, 34.73, 30.75, 27.78.

HRMS (ESI, M+H$^+$) m/z calcd. for $C_{47}H_{69}N_2O_4$ 627.1510, found 627.1512.



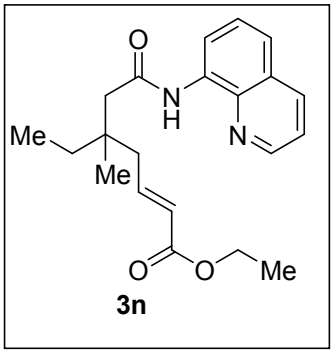
3m

allyl (E)-5,5-dimethyl-7-oxo-7-(quinolin-8-ylamino)hept-2-enoate (3k) was synthesized by general procedure **A** with acrylate (0.8 mmol, 102 mg) and amide (0.2 mmol, 57 mg) as the substrates. Pure **3k** was obtained as liquid in 37 % (major isomer) (30 mg) yield after column

chromatography of the crude reaction mixture (silica gel, mesh 100-200; petroleum ether: ethyl acetate; 19:1). **R_f:** 0.4 (10:90 ethyl acetate:Petroleum ether).

^{1}H NMR (400 MHz, $CDCl_3$) δ 9.78 (s, 1H), 8.78 (ddd, *J* = 8.9, 5.6, 1.7, 2H), 8.17 (dd, *J* = 8.3, 1.5, 1H), 7.58 – 7.42 (m, 3H), 7.05 – 6.93 (m, 1H), 5.90 (d, *J* = 15.5, 1H), 4.08 (t, *J* = 5.4, 2H), 2.62 – 2.45 (m, 2H), 2.37 (d, *J* = 6.3, 3H), 1.60 (dt, *J* = 14.6, 6.9, 1H), 1.40 – 1.33 (m, 2H), 0.95 (s, 9H), 0.92 (t, *J* = 3.5, 3H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 170.78, 166.65, 148.28, 146.99, 136.59, 134.58, 128.09, 127.58, 123.74, 121.74, 121.63, 116.93, 64.27, 47.35, 44.72, 38.96, 31.45, 31.38, 30.82, 30.00, 19.29, 13.87.

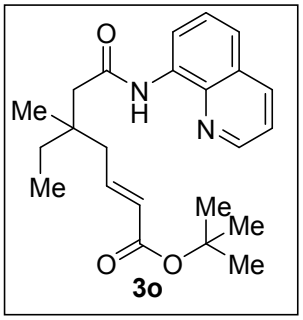


3n

ethyl (E)-5-ethyl-5-methyl-7-oxo-7-(quinolin-8-ylamino)hept-2-enoate (3l) was synthesized by general procedure **A** with acrylate (0.8 mmol, 80 mg) and amide (0.2 mmol, 51 mg) as the substrates. Pure **3l** was obtained as liquid in 56% (40 mg) yield after column chromatography of the crude reaction mixture (silica gel, mesh 100-200; petroleum ether: ethyl acetate; 19:1). **R_f :** 0.4 (10:90 ethyl acetate: Petroleum ether).

^{1}H NMR (500 MHz, $CDCl_3$) δ 9.78 (s, 1H), 8.86 – 8.73 (m, 2H), 8.16 (dd, *J* = 8.3, 1.6, 1H), 7.58 – 7.41 (m, 3H), 7.11 – 6.98 (m, 1H), 6.05 – 5.90 (m, 1H), 4.18 (dt, *J* = 11.0, 5.2, 1H), 2.45 (s, 1H), 2.43 – 2.39 (m, 1H), 1.57 – 1.52 (m, 1H), 1.30 – 1.27 (m, 1H), 1.14 (s, 3H), 0.96 (dd, *J* = 9.9, 5.1, 6H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 170.16, 166.63, 148.34, 145.71, 138.51, 136.50, 134.57, 128.09, 127.54, 124.47, 121.74, 121.61, 116.54, 60.36, 47.33, 41.80, 37.44, 32.43, 24.78, 14.41, 8.35.



3o

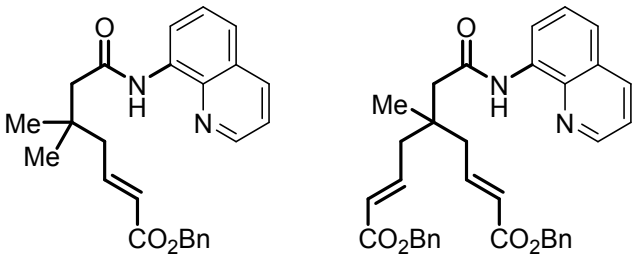
tert-butyl (E)-5-ethyl-5-methyl-7-oxo-7-(quinolin-8-ylamino)hept-2-enoate (3m) was synthesized by general procedure **A** with acrylate (0.8 mmol, 102 mg) and amide (0.2 mmol, 51 mg) as the substrates. Pure **3m** was obtained as liquid in 60% (46 mg) yield after column chromatography of the crude reaction mixture (silica gel, mesh 100-200; petroleum ether: ethyl acetate; 19:1). **R_f:** 0.4 (10:90 ethyl acetate: Petroleum ether).

^{1}H NMR (400 MHz, $CDCl_3$) δ 9.78 (s, 1H), 8.80 (ddd, *J* = 8.7, 5.6, 1.5, 2H), 8.16 (dd, *J* = 8.2, 1.3, 1H), 7.57 – 7.41 (m, 3H), 6.96 (ddd, *J* = 20.1, 10.1, 5.6, 1H), 5.89 (dd, *J* = 15.5, 6.2, 1H), 2.44 (s, 2H), 2.38 (d, *J* = 7.8, 2H), 1.55 – 1.51 (m, 2H), 1.48 (s, 9H), 1.14 (s, 3H), 0.96 (t, *J* = 7.5, 3H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 170.22, 166.06, 148.34, 144.38, 138.53, 136.49, 134.62, 128.09, 127.55, 126.15, 121.73, 121.57, 116.54, 80.28, 47.50, 41.67, 37.45, 32.36, 30.76, 28.32, 24.76, 8.37.

IR (thin film) 3353, 3018, 2970, 1724, 1693, 1593, 1526, 1216, 1152,758 cm^{-1}.

HRMS (ESI, M+Na^+) m/z calcd. for $C_{23}H_{30}N_2O_4Na$ 405.2148, found 405.2149.



5a **5a'**

benzyl (E)-5,5-dimethyl-7-oxo-7-(quinolin-8-ylamino)hept-2-enoate (5a) was synthesized by general procedure **B** with acerylate (0.8 mmol, 130 mg) and amide (0.2 mmol, 48 mg) as the substrates. Pure **5a** was obtained as liquid in 60% (major isomer) (45 mg) yield after column chromatography of the crude reaction mixture (silica gel, mesh 100-200; petroleum ether: ethyl acetate; 19:1). **R_f:** 0.4 (10:90 ethyl acetate: Petroleum ether).

^{1}H NMR (400 MHz, $CDCl_3$) δ 9.76 (s, 1H), 8.80 – 8.73 (m, 2H), 8.15 (dd, *J* = 8.3, 1.7, 1H), 7.57 – 7.48 (m, 2H), 7.43 (dd, *J* = 8.3, 4.2, 1H), 7.38 – 7.36 (m, 4H), 7.35 – 7.32 (m, 1H), 7.19 – 7.08 (m, 1H), 6.02 (dt, *J* = 15.5, 1.3, 1H), 5.18 (s, 2H), 2.45 (s, 1H), 2.40 (dd, *J* =7.9, 1.3, 2H), 1.19 (s, 6H).

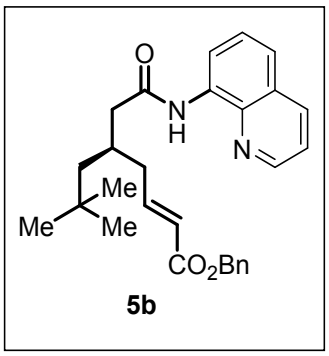
^{13}C NMR (126 MHz, $CDCl_3$) δ 170.01, 166.38, 148.37, 146.44, 138.49, 136.48, 136.23, 134.53, 128.69, 128.07, 127.53, 124.17, 121.74, 121.64, 116.55, 66.26, 49.84, 44.73, 34.70, 27.80.

HRMS (ESI, M+Na^+) m/z calcd. for $C_{25}H_{26}N_2NaO_3$ 425.1834, found 425.1836.

(2E,7E)-dibenzyl-5-methyl-5-(2-oxo-2-(quinolin-8-ylamino)ethyl)nona-2,7-dienedioate (5a')

^{1}H NMR (400 MHz, $CDCl_3$) δ 9.78 (s, 1H), 8.73 (ddd, *J* = 5.9, 5.3, 2.1, 2H), 8.14 (dd, *J* = 8.3, 1.6, 1H), 7.56 – 7.47 (m, 2H), 7.45 – 7.29 (m, 13H), 7.11 (dt, *J* = 15.6, 7.8, 3H), 6.03 (d, *J* = 15.5, 2H), 5.17 (s, 4H), 2.54 – 2.38 (m, 6H), 1.20 (s, 3H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 169.29, 166.16, 148.42, 145.23, 138.43, 136.11, 134.34, 128.69, 128.04, 127.45, 124.83, 121.82, 121.78, 116.61, 66.33, 46.95, 42.47, 37.89, 25.26.



5b

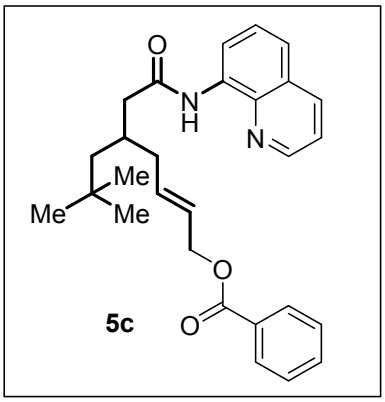
Benzyl (S,E)-7,7-dimethyl-5-(2-oxo-2-(quinolin-8-ylamino)ethyl)oct-2-enoate (5b) was synthesized by general procedure **B** with vinyl iodides (0.4 mmol, 114 mg) and amide (0.2 mmol, 57 mg) as the substrates. Pure **5b** was obtained as liquid in 76 % (68 mg) yield after column chromatography of the crude reaction mixture (silica gel, mesh 100-200; petroleum ether: ethyl acetate; 19:1). **R_f:** 0.4 (10:90 ethyl acetate: Petroleum ether).

^{1}H NMR (400 MHz, $CDCl_3$) δ 9.78 (s, 1H), 8.79 – 8.73 (m, 2H), 8.15 (dd, *J* = 8.3, 1.6, 1H), 7.57 – 7.47 (m, 2H), 7.42 (dd, *J* = 8.3, 4.2, 1H), 7.39 – 7.30 (m, 6H), 7.12 – 7.01 (m, 1H), 5.96 (d, *J* = 15.6, 1H), 5.14 (s, 2H), 2.63 – 2.42 (m, 3H), 2.37 (t, *J* = 6.8, 2H), 1.37 – 1.32 (m, 2H), 0.95 (s, 9H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 170.69, 166.29, 148.34, 147.75, 138.43, 136.45, 134.49, 128.66, 128.05, 127.52, 123.41, 121.73, 121.61, 116.59, 66.19, 47.35, 44.68, 38.97, 31.45, 31.38, 29.99.

IR (thin film) 3022, 1722, 1647, 1527, 1442, 1375, 1220, 1038, 918, 759, 668 cm^{-1}.

HRMS (ESI, M+H$^+$) m/z calcd. for $C_{35}H_{35}N_2O_5$ 563.2538, found 563.2540.



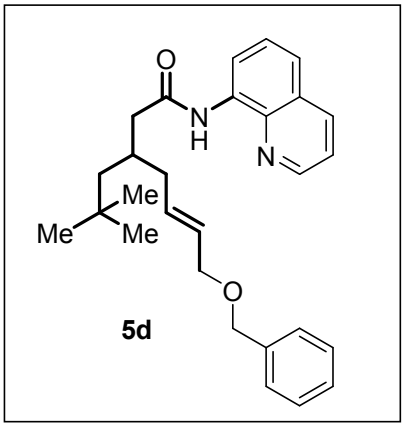
5c

(E)-7,7-dimethyl-5-(2-oxo-2-(quinolin-8-ylamino)ethyl)oct-2-en-1-yl benzoate (5c) was synthesized by general procedure **B** with vinyl iodide (0.4 mmol, 114 mg) and amide (0.2 mmol, 57 mg) as the substrates. Pure **5c** was obtained as liquid in 71% (63 mg) yield after column chromatography of the crude reaction mixture (silica gel, mesh 100-200; petroleum ether: ethyl acetate; 19:1). **R_f:** 0.4 (10:90 ethyl acetate: petroleum ether).

^{1}H NMR (500 MHz, $CDCl_3$) δ 9.78 (s, 1H), 8.78 (dd, *J* = 4.5, 1.5, 1H), 8.22 – 8.10 (m, 1H), 8.08 – 7.95 (m, 2H), 7.58 – 7.34 (m, 6H), 5.90 (dt, *J* = 13.8, 6.8, 1H), 5.80 – 5.68 (m, 1H), 4.76 (d, *J* = 6.1, 2H), 2.53 (ddd, *J* = 21.7, 14.5, 6.3, 2H), 2.25 (dt, *J* = 14.3, 7.5, 3H), 1.40 – 1.28 (m, 3H), 0.95 (s, 9H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 171.20, 166.51, 148.28, 138.48, 136.48, 134.64, 132.94, 130.49, 129.73, 128.53, 128.42, 128.09, 127.58, 126.64, 121.71, 121.51, 116.58, 65.57, 47.44, 44.90, 39.25, 31.82, 31.35, 30.06. **IR** (thin film) 2927, 1719, 1684, 1526, 1486, 1385, 1273, 1217, 762, 713 cm^{-1}.

HRMS (ESI, M+Na$^+$) m/z calcd. for $C_{28}H_{32}N_2NaO_3$ 467.2305, found 467.2305.



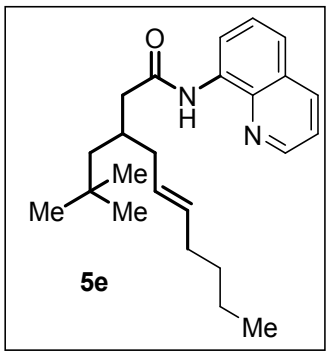
(E)-7-(benzyloxy)-3-neopentyl-N-(quinolin-8-yl)hept-5-enamide (5d) was synthesized by general procedure **B** with vinyl iodide (0.4 mmol, 120 mg) and amide (0.2 mmol, 57 mg) as the substrates. Pure **5d** was obtained as liquid in 68% (64 mg) yield after column chromatography of the crude reaction mixture (silica gel, mesh 100-200; petroleum ether: ethyl acetate; 19:1). **R_f:** 0.4 (10:90 ethyl acetate:Petroleum ether).

^{1}H NMR (400 MHz, $CDCl_3$) δ = 9.79 (s, 1H), 8.88 – 8.73 (m, 2H), 8.15 (dd, *J* = 8.3, 1.6, 1H), 7.58 – 7.48 (m, 2H), 7.44 (dd, *J* = 8.3, 4.2, 1H), 7.38 – 7.32 (m, 4H), 7.30 – 7.24 (m, 3H), 5.82 – 5.72 (m, 1H), 5.67 (dt, *J* = 15.3, 5.9, 1H), 4.47 (s, 2H), 3.98 (dd, *J* = 5.8, 1.5, 2H), 2.52 (dd, *J* = 6.2, 2.7, 2H), 2.30 – 2.22 (m, 1H), 1.34 (dddd, *J* = 25.5, 21.0, 10.4, 4.6, 2H), 0.95 (s, 9H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 171.31, 148.25, 138.55, 138.44, 136.46, 135.04, 134.65, 132.24, 129.16, 128.52, 128.02, 127.87, 124.10, 121.70, 121.47, 116.52, 71.98, 70.91, 47.43, 44.88, 39.29, 31.85, 31.34, 30.06.

IR (thin film) 3022, 1720, 1530, 1374, 1038, 757 cm^{-1}.

HRMS (ESI, M+Na^+) m/z calcd. for $C_{28}H_{34}N_2NaO_2$ 453.2518, found 453.2512.



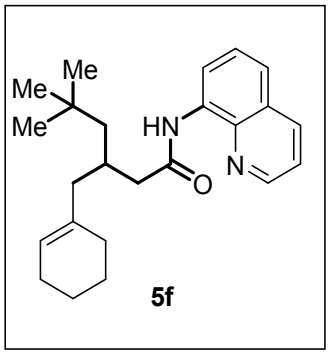
(E)-3-neopentyl-N-(quinolin-8-yl)dec-5-enamide (5e) was synthesized by general procedure **B** with vinyl iodide (0.4 mmol, 84 mg) and amide (0.2 mmol, 57 mg) as the substrates. Pure **5e** was obtained as liquid in 66% (48 mg) yield after column chromatography of the crude reaction mixture (silica gel, mesh 100-200; petroleum ether: ethyl acetate; 19:1). **R_f:** 0.4 (10:90 ethyl acetate: Petroleum ether).

^{1}H NMR (400 MHz, $CDCl_3$) δ 9.77 (s, 1H), 8.83 – 8.76 (m, 2H), 8.16 (dd, *J* = 8.3, 1.5, 1H), 7.59 – 7.38 (m, 3H), 5.51 – 5.37 (m, 2H), 2.50 (d, *J* = 6.6, 2H), 2.27 – 2.06 (m, 5H), 1.97 (dd, *J* = 12.4, 6.2, 2H), 1.31 (ddt, *J* = 4.6, 7.5, 4.9, 7H), 0.94 (s, 3H), 0.84 (t, *J* =7.0, 4H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 171.65, 148.20, 138.50, 136.47, 134.75, 133.41, 128.08, 127.74, 127.61, 121.67, 121.39, 116.52, 47.36, 44.97, 39.58, 32.46, 32.18, 31.80, 31.34, 30.09, 22.38, 14.06.

IR (thin film) 2944, 2633, 1655, 1420, 1375, 1039, 921, 770 cm^{-1}.

HRMS (ESI, M+K^+) m/z calcd. for $C_{24}H_{34}KN_2O$ 405.2309, found 405.2303.



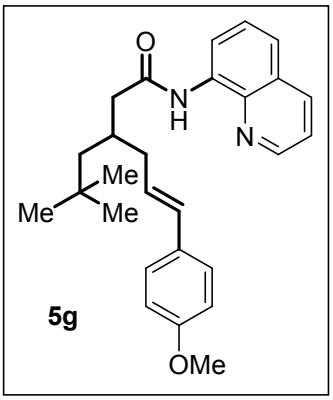
5f

3-(cyclohex-1-en-1-ylmethyl)-5,5-dimethyl-N-(quinolin-8-yl)hexanamide (5f) was synthesized by general procedure **B** with vinyl iodide (0.4 mmol, 83 mg) and amide (0.2 mmol, 57 mg) as the substrates. Pure **5f** was obtained as liquid in 70% (51 mg) yield after column chromatography of the crude reaction mixture (silica gel, mesh 100-200; petroleum ether: ethyl acetate; 19:1). **R_f:** 0.4 (10:90 ethyl acetate: Petroleum ether).

^{1}H NMR (500 MHz, $CDCl_3$) δ 9.78 (s, 1H), 8.90 – 8.73 (m, 2H), 8.18 (dd, *J* = 8.3, 1.7, 1H), 7.64 – 7.40 (m, 3H), 5.49 (s, 1H), 2.55 – 2.46 (m, 2H), 2.35 – 2.26 (m, 1H), 2.11 (dd, *J* = 13.4, 6.0, 2H), 2.02 – 1.90 (m, 4H), 1.66 – 1.57 (m, 2H), 1.55 – 1.49 (m, 2H), 1.33 (tdd, *J* = 14.1, 9.5, 4.9, 3H), 0.96 (s, 9H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 171.74, 148.19, 138.45, 136.47, 136.38, 134.79, 128.05, 127.60, 123.93, 121.66, 121.29, 116.42, 48.15, 46.45, 45.22, 31.29, 30.14, 29.90, 28.26, 25.43, 23.06, 22.57. **IR** (thin film) 2925, 2861, 1690, 1525, 1485, 1386, 793 cm^{-1}.

HRMS (ESI, M+Na$^+$) m/z calcd. for $C_{24}H_{32}N_2NaO$ 387.2405, found 387.2407.

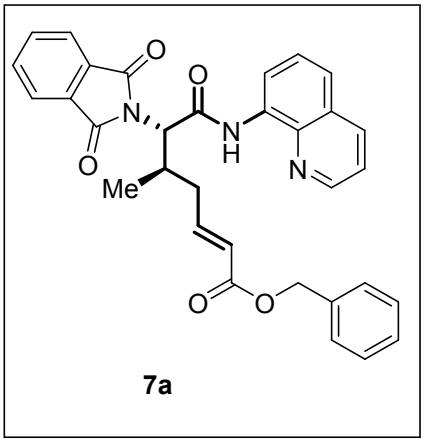


(E)-6-(4-methoxyphenyl)-3-neopentyl-N-(quinolin-8-yl)hex-5-enamide (5g) was synthesized by general procedure **B** with vinyl iodide (0.4 mmol, 104 mg) and amide (0.2 mmol, 57 mg) as the substrates. Pure **5g** was obtained as liquid in 76 % (63 mg) yield after column chromatography of the crude reaction mixture (silica gel, mesh 100-200; petroleum ether: ethyl acetate; 19:1). **R_f:** 0.4 (10:90 ethyl acetate: Petroleum ether).

^{1}H NMR (400 MHz, $CDCl_3$) δ 9.79 (s, 1H), 8.85 – 8.73 (m, 2H), 8.14 (dd, *J* = 8.3, 1.6, 1H), 7.58 – 7.38 (m, 3H), 7.23 – 7.16 (m, 3H), 6.79 – 6.71 (m, 1H), 6.37 (d, *J* = 15.8, 1H), 6.11 (dt, *J* = 15.7, 7.0, 1H), 3.78 (s, 3H), 2.60 – 2.51 (m, 2H), 2.41 – 2.29 (m, 2H), 1.48 – 1.29 (m, 3H), 0.97 (s, 9H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 171.47, 158.80, 148.18, 138.46, 136.45, 134.70, 131.68, 130.63, 128.07, 127.59, 127.23, 126.35, 121.65, 121.42, 116.56, 113.91, 55.41, 47.60, 45.07, 40.06, 32.35, 31.45, 30.10.

IR (thin film) 3390, 1677, 1526, 1279, 1216, 757, 668. cm^{-1}.



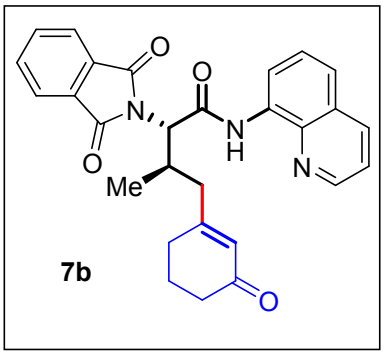
7a

Benzyl (5R,6S,E)-6-(1,3-dioxoisoindolin-2-yl)-5-methyl-7-oxo-7-(quinolin-8-ylamino)hept-2-enoate (7a) was synthesized by general procedure **B** with vinyl iodide (0.4 mmol, 114 mg) and amide (0.2 mmol, 73 mg) as the substrates. Pure **7a** was obtained as liquid in 76% (79 mg) yield after column chromatography of the crude reaction mixture (silica gel, mesh 100-200; petroleum ether: ethyl acetate; 10:1). **R_f:** 0.4 (20:80 ethyl acetate: Petroleum ether).

^{1}H NMR (500 MHz, $CDCl_3$) δ 10.51 (s, 1H), 8.76 (dd, *J* = 4.2, 1.6, 1H), 8.71 (dt, *J* = 8.4, 4.2, 1H), 8.12 (dd, *J* = 8.3, 1.6, 1H), 7.92 – 7.86 (m, 2H), 7.77 – 7.71 (m, 2H), 7.53 – 7.49 (m, 2H), 7.40 (dt, *J* = 8.5, 4.2, 1H), 7.37 – 7.30 (m, 5H), 7.15 – 7.02 (m, 1H), 5.98 (d, *J* = 15.6, 1H), 5.14 (s, 2H), 4.81 (d, *J* = 10.5, 1H), 3.35 – 3.23 (m, 1H), 2.78 – 2.67 (m, 1H), 2.24 (dt, *J* = 4.5, 8.7, 1H), 0.99 (d, *J*=6.7, 3H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 168.12, 166.29, 166.12, 148.72, 146.54, 138.76, 136.32, 136.15, 134.54, 134.08, 131.64, 128.67, 128.30, 128.00, 127.33, 123.91, 123.63, 122.30, 121.81, 117.18, 66.23, 60.96, 37.12, 31.81, 16.48. **IR** (thin film) 3019, 2969, 1720, 1678, 1593, 1526, 1485, 1216, 844, 758, 668 cm^{-1}.

HRMS (ESI, M+Na^+) m/z calcd. for $C_{32}H_{27}N_3NaO_5$ 556.1845, found 556.1843.



7b

(2S,3R)-2-(1,3-dioxoisoindolin-2-yl)-3-methyl-4-(3-oxocyclohex-1-en-1-yl)-N-(quinolin-8-yl)butanamide (7b) was synthesized by general procedure **B** with vinyl iodide (0.4 mmol,

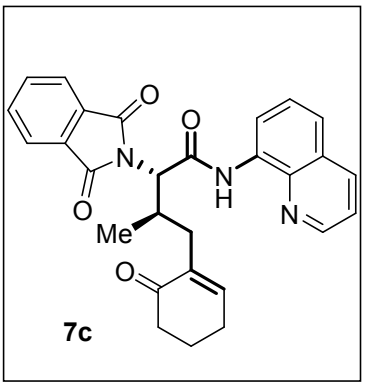
93mg) and amide (0.2 mmol, 73 mg) as the substrates. Pure **7b** was obtained as liquid in 58% (53 mg) yield after column chromatography of the crude reaction mixture (silica gel, mesh 100-200; petroleum ether: ethyl acetate; 10:1). **R_f :** 0.4 (20:80 ethyl acetate: Petroleum ether). **R_f:** 0.4 (10:90 ethyl acetate: Petroleum ether).

^{1}H NMR (400 MHz, $CDCl_3$) δ 10.48 (s, 1H), 8.77 (dd, *J* = 4.2, 1.6, 1H), 8.75 – 8.68 (m, 1H), 8.13 (dd, *J* = 8.3, 1.6, 1H), 7.93 – 7.86 (m, 2H), 7.78 – 7.71 (m, 2H), 7.53 – 7.49 (m, 2H), 7.43 (dd, *J* = 8.3, 4.2, 1H), 5.94 (s, 1H), 4.80 (d, *J* = 10.5, 1H), 3.46 – 3.27 (m, 1H), 2.76 (dd, *J* = 13.4, 2.5, 1H), 2.49 (dt, *J* =17.9, 5.9, 1H), 2.40 – 2.29 (m, 3H), 2.12 (dd, *J* = 13.4, 10.5, 1H), 2.01 – 1.92 (m, 2H), 0.91 (d, *J* = 6.6, 3H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 199.82, 168.05, 166.18, 163.76, 148.68, 138.71, 136.40, 134.61, 133.99, 131.58, 128.02, 127.96, 127.32, 123.94, 122.38, 121.86, 117.20, 60.99, 43.47, 37.45, 30.18, 29.39, 22.84, 16.26.

IR (thin film) 3332, 2926, 1769, 1718, 1672, 1530, 1487, 1381, 1326, 1071, 883, 722,331 cm^{-1}.

HRMS (ESI, M+Na^+) m/z calcd. for $C_{28}H_{25}N_3NaO_4$ 490.1741, found 490.1737.



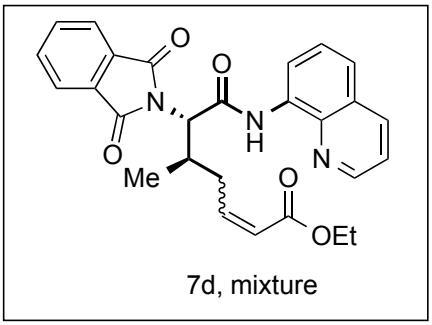
7c

(2S,3R)-2-(1,3-dioxoisoindolin-2-yl)-3-methyl-4-(6-oxocyclohex-1-en-1-yl)-N-(quinolin-8-yl)butanamide (7c) was synthesized by general procedure **B** with vinyl iodide (0.4 mmol, 93mg) and amide (0.2 mmol, 73 mg) as the substrates. Pure **7c** was obtained as liquid in 32 % (major isomer, dr 10:1) (29 mg) yield after column chromatography of the crude reaction mixture (silica gel, mesh 100-200; petroleum ether: ethyl acetate; 10:1). **R_f:** 0.4 (20:80 ethyl acetate: Petroleum ether). **R_f:** 0.4 (10:90 ethyl acetate: Petroleum ether).

^{1}H NMR (400 MHz, $CDCl_3$) δ 10.58 (s, 1H), 8.83 (dd, *J* = 4.2, 1.5, 1H), 8.79 – 8.70 (m, 1H), 8.12 (dt, *J* = 6.9, 3.4, 1H), 7.92 – 7.85 (m, 2H), 7.72 (dd, *J* = 5.4, 3.0, 2H), 7.53 – 7.47 (m, 3H), 7.42 (dt, *J* = 13.6, 6.8, 1H), 6.92 (t, *J* = 4.0, 1H), 4.83 (d, *J* = 10.2, 1H), 3.32 – 3.16 (m, 1H), 2.61 – 2.19 (m, 4H), 1.86 (qd, *J* = 13.0, 6.7, 2H), 1.69 (s, 2H), 0.91 (d, *J* = 6.7, 3H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 199.20, 168.20, 166.74, 148.69, 147.50, 138.87, 137.40, 136.24, 134.39, 131.78, 128.04, 127.32, 123.80, 122.11, 121.78, 117.14, 61.54, 38.44, 33.89, 32.28, 26.23, 23.02, 16.72.

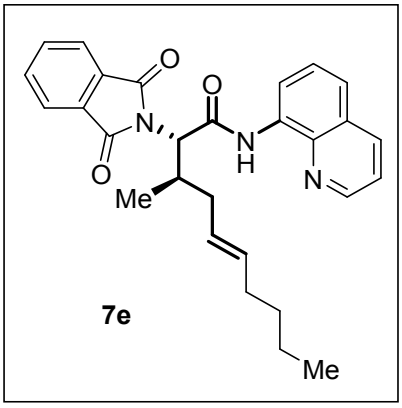
IR (thin film) 3021, 1720, 1663, 1532, 1487, 1218, 756, 668, 531 cm^{-1}.



7d, mixture

Methyl (6S)-6-(1,3-dioxoisoindolin-2-yl)-5-methyl-7-oxo-7-(quinolin-8-ylamino)hept-2-enoate (7d) was synthesized by general procedure **A** with vinyl iodide (0.4 mmol, 93mg) and amide (0.2 mmol, 73 mg) as the substrates. Compound **7d** was obtained as liquid in 24% (mixture of isomers) (21 mg) yield after column chromatography of the crude reaction mixture (silica gel, mesh 100-200; petroleum ether: ethyl acetate; 10:1). **R_f:** 0.4 (10:90 ethyl acetate: Petroleum ether).

^{1}H NMR (500 MHz, $CDCl_3$) δ = 10.54 (s, 1H), 8.81 (d, *J*=29.2, 3H), 8.21 (d, *J*=8.0, 2H), 8.03 – 7.77 (m, 2H), 7.77 (s, 3H), 7.65 – 7.40 (m, 3H), 6.37 (s, 1H), 5.87 (d, *J*=12.8, 1H), 5.15 – 4.81 (m, 1H), 4.07 (d, *J*=7.1, 2H), 3.30 (s, 1H), 3.04 (s, 1H), 2.92 (s, 1H), 1.03 (d, *J*=6.5, 3H).

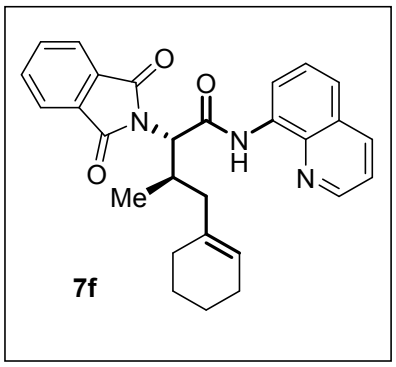


7e

(2S,3R,E)-2-(1,3-dioxoisoindolin-2-yl)-3-methyl-N-(quinolin-8-yl)dec-5-enamide (7e) was synthesized by general procedure **A** with vinyl iodide (0.4 mmol, 84 mg) and amide (0.2 mmol, 73 mg) as the substrates. Pure **7e** was obtained as liquid in 52 % (major isomer) (46 mg) yield after column chromatography of the crude reaction mixture (silica gel, mesh 100-200; petroleum ether: ethyl acetate; 10:1). **R_f:** 0.4 (20:80 ethyl acetate: Petroleum ether).

^{1}H NMR (400 MHz, $CDCl_3$) δ 10.54 (s, 1H), 8.88 – 8.82 (m, 1H), 8.79 – 8.71 (m, 1H), 8.13 (dd, *J* = 8.3, 1.7, 1H), 7.92 – 7.80 (m, 2H), 7.76 – 7.71 (m, 2H), 7.52 – 7.48 (m, 2H), 7.48 – 7.40 (m, 1H), 5.52 – 5.47 (m, 2H), 4.80 (d, *J* = 10.7, 1H), 3.26 – 3.05 (m, 1H), 2.43 (dt, *J* = 5.9, 3.6, 1H), 2.11 – 1.91 (m, 4H), 0.95 (d, *J* = 6.7, 4H), 0.87 (dd, *J* = 8.6, 4.3, 5H).

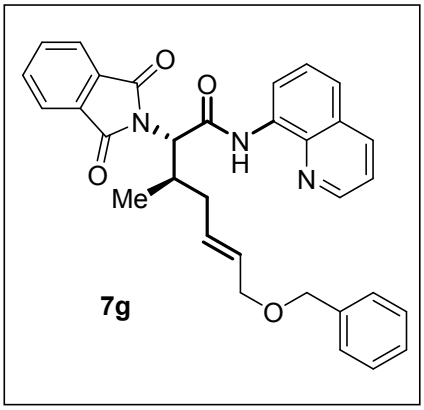
^{13}C NMR (101 MHz, $CDCl_3$) δ 168.28, 168.26, 166.84, 148.62, 138.87, 136.30, 134.38, 134.01, 131.79, 128.05, 127.39, 126.38, 123.78, 122.08, 121.73, 117.15, 61.36, 37.34, 32.35, 31.70, 29.50, 22.83, 16.26, 14.24.



(2S,3R)-4-(cyclohex-1-en-1-yl)-2-(1,3-dioxoisoindolin-2-yl)-3-methyl-N-(quinolin-8-yl)butanamide (7f) was synthesized by general procedure **B** with vinyl iodide (0.4 mmol, 83 mg) and amide (0.2 mmol, 73 mg) as the substrates. Pure **7f** was obtained as liquid in 61% (54 mg, dr 10:1) yield after column chromatography of the crude reaction mixture (silica gel, mesh 100-200; petroleum ether: ethyl acetate; 10:1). **R_f:** 0.4 (20:80 ethyl acetate: Petroleum ether).

^{1}H NMR (400 MHz, $CDCl_3$) δ 10.58 (s, 1H), 8.82 (dt, *J* = 14.6, 7.3, 1H), 8.74 (dd, *J* = 9.0, 4.4, 1H), 8.14 (dd, *J* = 8.3, 1.6, 1H), 7.92 – 7.85 (m, 1H), 7.77 – 7.69 (m, 3H), 7.50 (t, *J* = 3.7, 2H), 7.44 (dd, *J* = 8.2, 4.2, 2H), 5.47 (s, 1H), 4.74 (t, *J* = 9.2, 1H), 3.35 – 3.17 (m, 1H), 2.41 (d, *J* = 12.2, 1H), 2.17 – 2.02 (m, 2H), 2.02 – 1.79 (m, 3H), 1.71 – 1.46 (m, 5H), 0.94 – 0.88 (m, 3H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 168.26, 166.88, 148.53, 138.75, 136.36, 135.18, 134.39, 131.82, 128.07, 127.44, 124.03, 123.80, 122.08, 121.75, 117.28, 62.20, 43.50, 30.27, 28.26, 25.44, 23.08, 22.55, 16.31.



7g

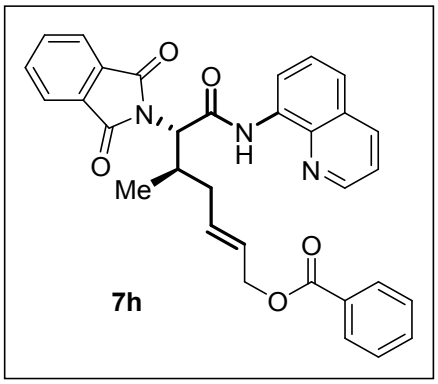
(2S,3R,E)-7-(benzyloxy)-2-(1,3-dioxoisoindolin-2-yl)-3-methyl-N-(quinolin-8-yl)hept-5-enamide (7g) was synthesized by general procedure **B** with vinyl iodide (0.4 mmol, 93mg) and amide (0.2 mmol, 73 mg) as the substrates. Pure **7g** was obtained as liquid in 63% (63 mg) yield after column chromatography of the crude reaction mixture (silica gel, mesh 100-200; petroleum ether: ethyl acetate; 10:1). **R_f:** 0.4 (20:80 ethyl acetate:Petroleum ether).

^{1}H NMR (400 MHz, $CDCl_3$) δ 8.79 (dd, *J* = 4.2, 1.6, 1H), 8.77 – 8.72 (m, 1H), 8.13 (dd, *J* = 8.3, 1.6, 1H), 7.92 – 7.86 (m, 2H), 7.76 – 7.71 (m, 2H), 7.51 (dd, *J* = 8.5, 4.5, 2H), 7.42 (dd, *J* = 8.3, 4.2, 1H), 7.35 – 7.30 (m, 4H), 7.29 – 7.20 (m, 2H), 5.91 – 5.77 (m, 1H), 5.70 (dt, *J* = 15.4, 5.9, 1H), 4.82 (d, *J* = 10.7, 1H), 4.47 (s, 2H), 3.97 (d, *J* = 5.9, 2H), 3.31 – 3.14 (m, 1H), 2.54 (dt, *J* = 13.9, 4.4, 1H), 2.15 (dt, *J* = 14.3, 8.3, 1H), 0.99 (d, *J* = 6.7, 3H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 168.22, 166.66, 148.66, 138.78, 138.50, 136.30, 134.43, 134.25, 131.71, 130.88, 129.68, 128.47, 128.01, 127.90, 127.63, 127.35, 123.82, 122.17, 121.77, 117.13, 71.95, 70.71, 61.24, 37.14, 32.10, 16.35.

IR (thin film) 3337, 3018, 2931, 1772, 1720, 1529, 1487, 1378, 1328, 1216, 1099, 826, 791, 756, 721, 531 cm^{-1}.

HRMS (ESI, M+Na^+) m/z calcd. for $C_{32}H_{29}N_3NaO_4$ 542.2053, found 542.2050.



7h

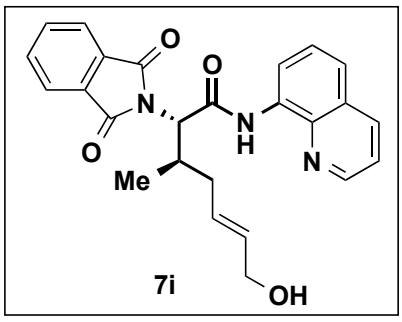
(5R,6S,E)-6-(1,3-dioxoisoindolin-2-yl)-5-methyl-7-oxo-7-(quinolin-8-ylamino)hept-2-en-1-yl benzoate (7h) was synthesized by general procedure **B** with vinyl iodide (0.4 mmol, 120 mg) and amide (0.2 mmol, 73 mg) as the substrates. Pure **7h** was obtained as liquid in 71% (74 mg) yield after column chromatography of the crude reaction mixture (silica gel, mesh 100-200; petroleum ether: ethyl acetate; 10:1). **R_f:** 0.4 (20:80 ethyl acetate: Petroleum ether).

^{1}H NMR (500 MHz, $CDCl_3$) δ 10.54 (s, 1H), 8.79 (dd, *J* = 4.2, 1.6, 1H), 8.77 – 8.71 (m, 1H), 8.12 (dt, *J* = 8.3, 4.1, 1H), 8.04 – 7.99 (m, 1H), 7.91 – 7.86 (m, 1H), 7.76 – 7.69 (m, 1H), 7.56 – 7.51 (m, 1H), 7.50 (t, *J* = 4.2, 1H), 7.45 – 7.37 (m, 1H), 6.00 – 5.90 (m, 1H), 5.79 (dt, *J* = 15.3, 6.1, 1H), 4.82 (d, *J* = 10.6, 1H), 4.74 (t, *J* = 6.6, 1H), 3.30 – 3.15 (m, 1H), 2.62 – 2.51 (m, 1H), 2.16 (dt, *J* = 14.4, 8.3, 1H), 0.99 (d, *J* = 6.7, 3H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 168.19, 166.60, 166.46, 148.65, 138.81, 136.31, 134.44, 134.25, 132.96, 132.52, 131.73, 130.44, 129.75, 128.43, 128.03, 127.36, 127.06, 123.83, 122.19, 121.76, 117.17, 65.36, 61.25, 37.20, 32.11, 16.38.

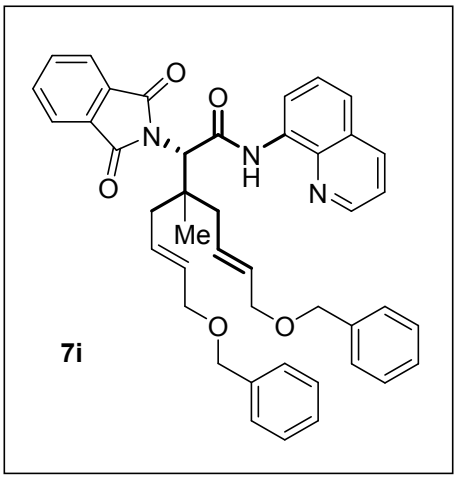
IR (thin film) 3354, 3025, 2958, 1716, 1682, 1526, 1486, 1424, 791, 756, 697 cm^{-1}.

HRMS (ESI, M+H$^+$) m/z calcd. for $C_{32}H_{28}N_3O_5$ 534.2020, found 534.2023.



(2S,3R,E)-2-(1,3-dioxoisoindolin-2-yl)-7-hydroxy-3-methyl-N-(quinolin-8-yl)hept-5-enamide, was synthesized by general procedure **A** with acrylate (0.8 mmol, 80 mg) and amide (0.2 mmol, 51 mg) as the substrates. compound **7i** was obtained as liquid in 10% (12 mg) yield after column chromatography of the crude reaction mixture (silica gel, mesh 100-200; petroleum ether: ethyl acetate; 19:1). **R_f :** 0.4 (10:90 ethyl acetate: Petroleum ether).

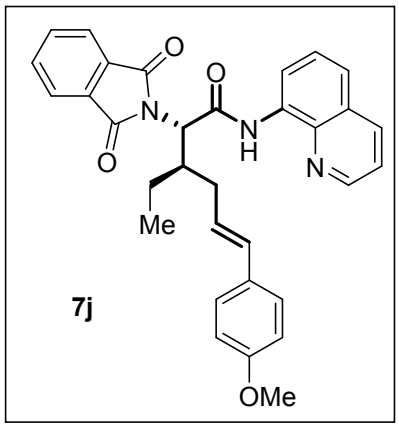
^{1}H NMR (400 MHz, $CDCl_3$) δ = 10.53 (s, 1H), 8.94 – 8.59 (m, 2H), 8.15 (dd, *J*=8.3, 1.6, 1H), 7.95 – 7.85 (m, 2H), 7.82 – 7.68 (m, 2H), 7.58 – 7.35 (m, 4H), 5.91 – 5.69 (m, 2H), 4.78 (dd, *J*=30.6, 17.2, 1H), 4.15 – 4.00 (m, 2H), 3.95 (s, 1H), 3.41 – 3.15 (m, 1H), 2.48 (dt, *J*=9.7, 4.7, 1H), 2.29 – 2.02 (m, 2H), 1.09 – 0.95 (m, 3H).



(S,E)-7-(benzyloxy)-3-((E)-4-(benzyloxy)but-2-en-1-yl)-2-(1,3-dioxoisoindolin-2-yl)-3-methyl-N-(quinolin-8-yl)hept-5-enamide (7i) was synthesized by general procedure **B** with vinyl iodide (0.4 mmol, 93mg) and amide (0.2 mmol, 75 mg) as the substrates. Pure **7i** was obtained as liquid in 78% (103 mg) yield after column chromatography of the crude reaction mixture (silica gel, mesh 100-200; petroleum ether: ethyl acetate; 10:1). **R_f:** 0.4 (20:80 ethyl acetate: Petroleum ether).

^{1}H NMR (400 MHz, $CDCl_3$) δ 10.27 (s, 1H), 8.71 (dd, *J* = 6.7, 2.3, 1H), 8.58 (dd, *J* = 4.2, 1.6, 1H), 8.10 (dd, *J* = 8.3, 1.6, 1H), 7.89 (dd, *J* = 5.5, 3.0, 2H), 7.74 (dd, *J* = 5.5, 3.1, 2H), 7.54 – 7.47 (m, 2H), 7.36 (dd, *J* = 8.3, 4.2, 1H), 7.33 – 7.23 (m, 10H), 5.89 – 5.67 (m, 4H), 5.25 (s, 1H), 4.47 (d, *J* = 9.9, 4H), 3.98 (d, *J* = 5.4, 2H), 3.92 (d, *J* = 5.7, 2H), 2.81 (dd, *J* = 14.1, 7.7, 1H), 2.58 – 2.45 (m, 2H), 2.39 (dd, *J* = 13.9, 6.5, 1H), 1.35 (s, 3H).

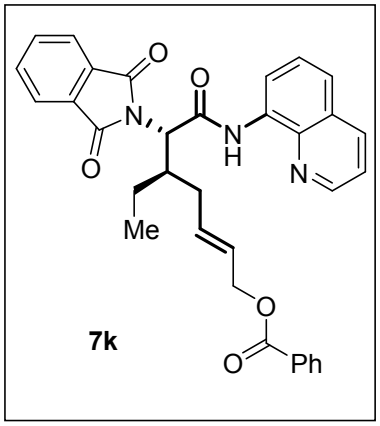
^{13}C NMR (126 MHz, $CDCl_3$) δ 168.67, 166.00, 148.38, 138.77, 138.61, 138.57, 136.30, 134.44, 131.82, 130.86, 129.46, 129.40, 128.01, 127.89, 127.61, 127.43, 123.81, 121.97, 121.67, 117.10, 71.90, 71.89, 70.80, 70.70, 61.00, 41.75, 41.12, 40.44, 23.17.



(2S,3R,E)-2-(1,3-dioxoisoindolin-2-yl)-3-ethyl-6-(4-methoxyphenyl)-N-(quinolin-8-yl)hex-5-enamide (7j) was synthesized by general procedure **B** with vinyl iodide (0.4 mmol, 104 mg) and amide (0.2 mmol, 75 mg) as the substrates. Pure **7j** was obtained as liquid in 75% (86 mg) yield after column chromatography of the crude reaction mixture (silica gel, mesh 100-200; petroleum ether: ethyl acetate; 19:1). **R_f:** 0.4 (20:80 ethyl acetate: Petroleum ether).

^{1}H NMR (400 MHz, $CDCl_3$) δ 10.59 (s, 1H), 8.81 (dt, *J* = 7.5, 3.7, 1H), 8.77 – 8.70 (m, 1H), 8.16 – 8.10 (m, 1H), 7.91 – 7.85 (m, 2H), 7.77 – 7.71 (m, 2H), 7.50 – 7.45 (m, 2H), 7.43 (dd, *J* = 8.3, 4.2, 1H), 7.18 – 7.12 (m, 2H), 6.77 – 6.69 (m, 2H), 6.38 (d, *J* = 15.8, 1H), 6.13 (dt, *J* = 7.7, 7.3, 1H), 4.98 (dd, *J* = 11.0, 4.5, 1H), 3.78 (s, 3H), 3.23 (qd, *J* = 10.9, 8.1, 1H), 2.62 – 2.41 (m, 2H), 1.59 (dtd, *J* = 18.5, 7.4, 3.7, 3H), 0.95 (t, *J* = 7.4, 3H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 168.30, 167.02, 158.83, 148.57, 138.78, 136.33, 134.39, 131.98, 131.80, 130.43, 128.03, 127.36, 127.25, 124.72, 123.80, 122.13, 121.70, 117.32, 113.87, 59.83, 55.41, 37.68, 33.29, 22.30, 9.95.

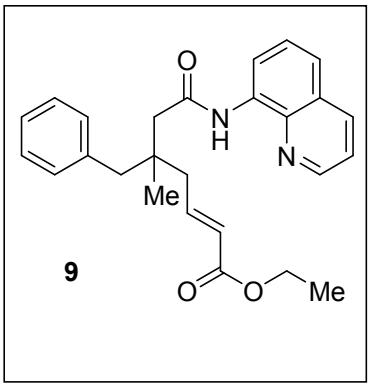


7k

(5R,6S,E)-6-(1,3-dioxoisoindolin-2-yl)-5-ethyl-7-oxo-7-(quinolin-8-ylamino)hept-2-en-1-yl benzoate (7k) was synthesized by general procedure **B** with vinyl iodide (0.4 mmol, 93mg) and amide (0.2 mmol, 75 mg) as the substrates. Pure **7k** was obtained as liquid in 66% (71 mg) yield after column chromatography of the crude reaction mixture (silica gel, mesh 100-200; petroleum ether: ethyl acetate; 19:1). **R_f:** 0.3 (20:80 ethyl acetate:Petroleum ether).

^{1}H NMR (400 MHz, $CDCl_3$) δ 10.59 (s, 1H), 8.85 – 8.80 (m, 1H), 8.77 – 8.71 (m, 1H), 8.13 (td, *J* = 8.0, 1.7, 1H), 8.02 – 7.97 (m, 1H), 7.91 – 7.85 (m, 1H), 7.78 – 7.70 (m, 1H), 7.56 – 7.47 (m, 1H), 7.45 – 7.36 (m, 1H), 5.94 (ddd, *J* = 14.4, 7.6, 6.7, 1H), 5.78 (dt, *J* = 15.4, 6.1, 1H), 4.95 (d, *J* = 11.0, 1H), 4.67 (d, *J* = 6.0, 1H), 3.18 (qd, *J* =11.0, 8.0, 1H), 2.53 – 2.33 (m, 1H), 1.57 (ddd, *J* = 14.2, 7.5, 3.6, 1H), 1.34 (dt, *J* = 21.6, 7.4, 1H), 0.92 (t, *J* = 7.4, 3H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 168.24, 166.85, 166.41, 148.62, 138.71, 136.38, 134.42, 134.24, 132.93, 132.26, 131.72, 130.40, 129.72, 128.40, 128.02, 127.35, 126.97, 123.81, 122.22, 121.75, 117.28, 65.35, 59.60, 37.14, 32.62, 22.15, 9.79.

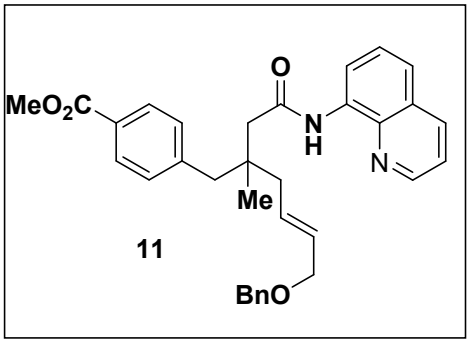


9

Ethyl (E)-5-benzyl-5-methyl-7-oxo-7-(quinolin-8-ylamino)hept-2-enoate (9) was synthesized by general procedure **A** with acrylates (0.8 mmol, 40 mg) and amide (0.1 mmol, 31.8 mg) as the substrates. Compound **9** and 9[1] (4:1) was obtained as liquid in 44% (18.3 mg) yield after column chromatography of the crude reaction mixture (silica gel, mesh 100-200; petroleum ether: ethyl acetate; 19:1). **R_f:** 0.4(10:90 ethyl acetate: Petroleum ether).

^{1}H NMR (500 MHz, $CDCl_3$) δ 9.81 (s, 1H), 8.87 – 8.81 (m, 3H), 8.20 (dd, *J* = 8.2, 1.3, 1H), 7.62 – 7.52 (m, 3H), 7.48 (dt, *J* = 13.2, 6.6, 2H), 7.33 – 7.24 (m, 8H), 7.18 (dt, *J* = 15.5, 7.8, 2H), 5.98 (d, *J* = 15.5, 1H), 4.23 – 4.18 (m, 2H), 3.01 – 2.82 (m, 2H), 2.59 – 2.39 (m, 4H), 1.31 – 1.26 (t, 3H), 1.16 (s, 3H).

^{13}C NMR (126 MHz, $CDCl_3$) δ 170.12, 166.55, 148.21, 145.51, 137.95, 131.07, 128.13, 127.57, 126.45, 124.82, 121.73, 121.72, 60.37, 46.44, 45.92, 42.22, 38.24, 25.15, 14.38.



11

methyl (E)-4-(6-(benzyloxy)-2-methyl-2-(2-oxo-2-(quinolin-8-ylamino)ethyl)hex-4-en-1-yl)benzoate (**11**) was synthesized by general procedure **B** with vinyl iodide (0.23 mmol, 62

mg) and amide (0.11 mmol, 45 mg) as the substrates. Pure **11** was obtained as liquid in 62 % (38 mg) yield after column chromatography of the crude reaction mixture (silica gel, mesh 100-200; petroleum ether: ethyl acetate; 19:1). **R_f :** 0.3 (10:90 ethyl acetate: Petroleum ether).

^{1}H NMR (400 MHz, $CDCl_3$) δ 9.86 (s, 1H), 8.84 (d, *J* = 7.2, 1H), 8.77 (dd, *J* = 4.2, 1.5, 1H), 8.23 (d, *J* = 6.8, 1H), 7.95 (d, *J* = 8.3, 2H), 7.63 – 7.44 (m, 3H), 7.40 – 7.27 (m, 6H), 5.90 (dt, *J* = 15.0, 7.3, 1H), 5.77 – 5.67 (m, 1H), 4.50 (s, 2H), 4.03 (d, *J* = 5.7, 2H), 3.90 (s, 3H), 3.03 (d, *J* = 13.0, 1H), 2.87 (d, *J* = 13.0, 1H), 2.40 (ddd, *J* = 21.6, 18.8, 10.9, 3H), 2.23 (dd, *J* = 13.9, 7.1, 1H), 1.09 (s, 3H).

^{13}C NMR (101 MHz, $CDCl_3$) δ 176.92, 170.57, 167.36, 146.55, 138.53, 137.73, 131.18, 130.78, 129.87, 129.32, 128.33, 128.31, 128.29, 127.89, 127.74, 127.70, 123.92, 121.85, 121.67, 77.16, 72.11, 70.88, 52.14, 46.21, 45.62, 42.73, 38.13, 25.14.

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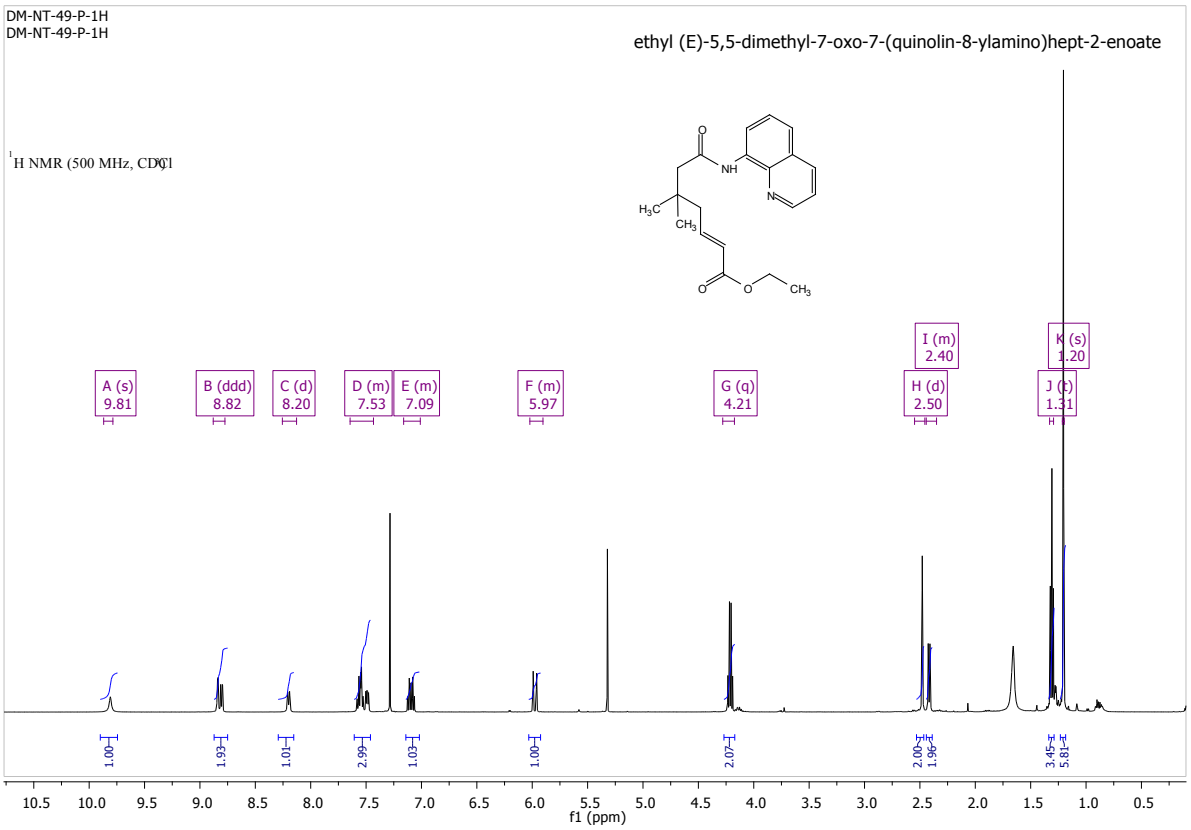
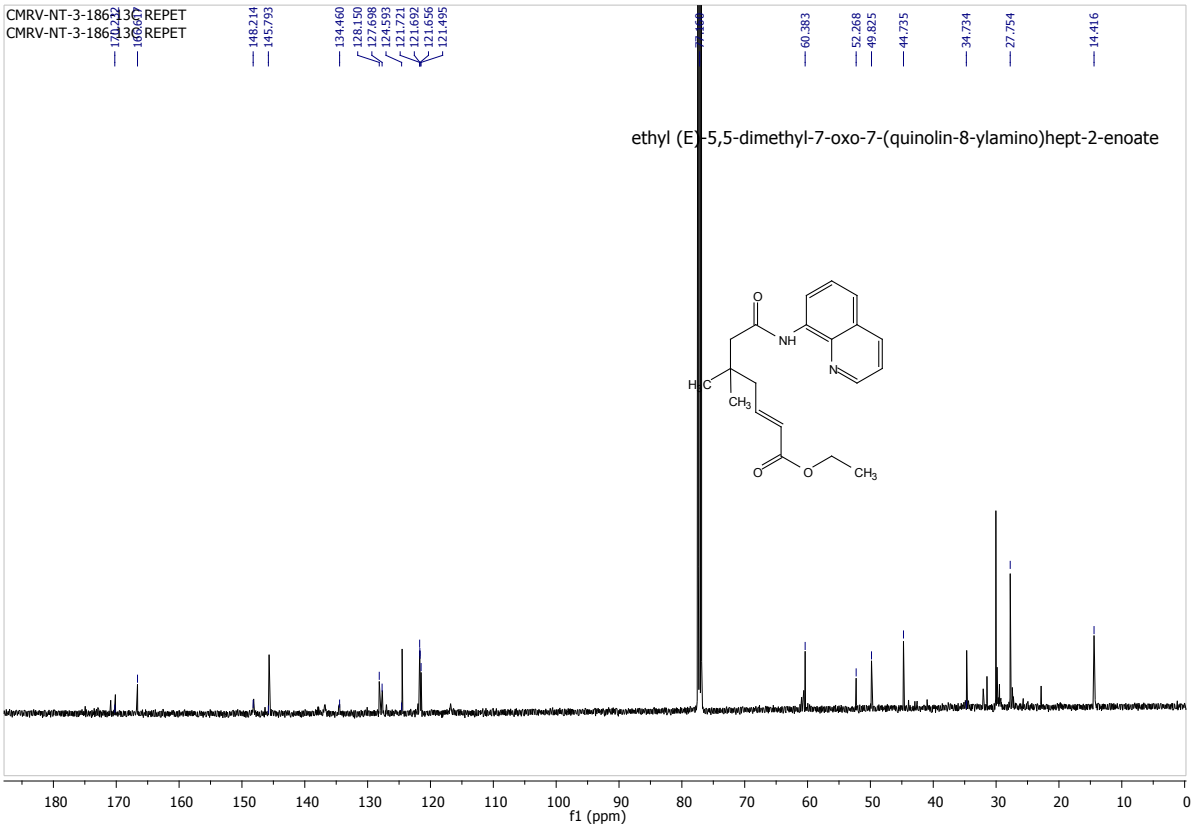
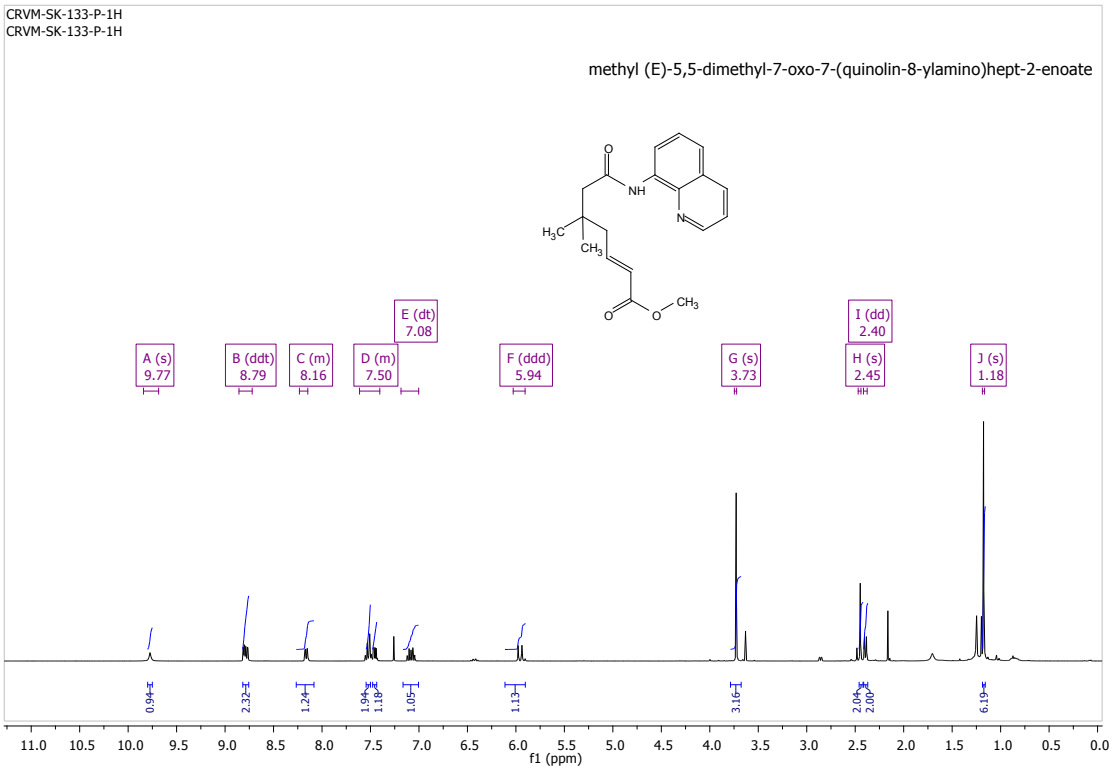
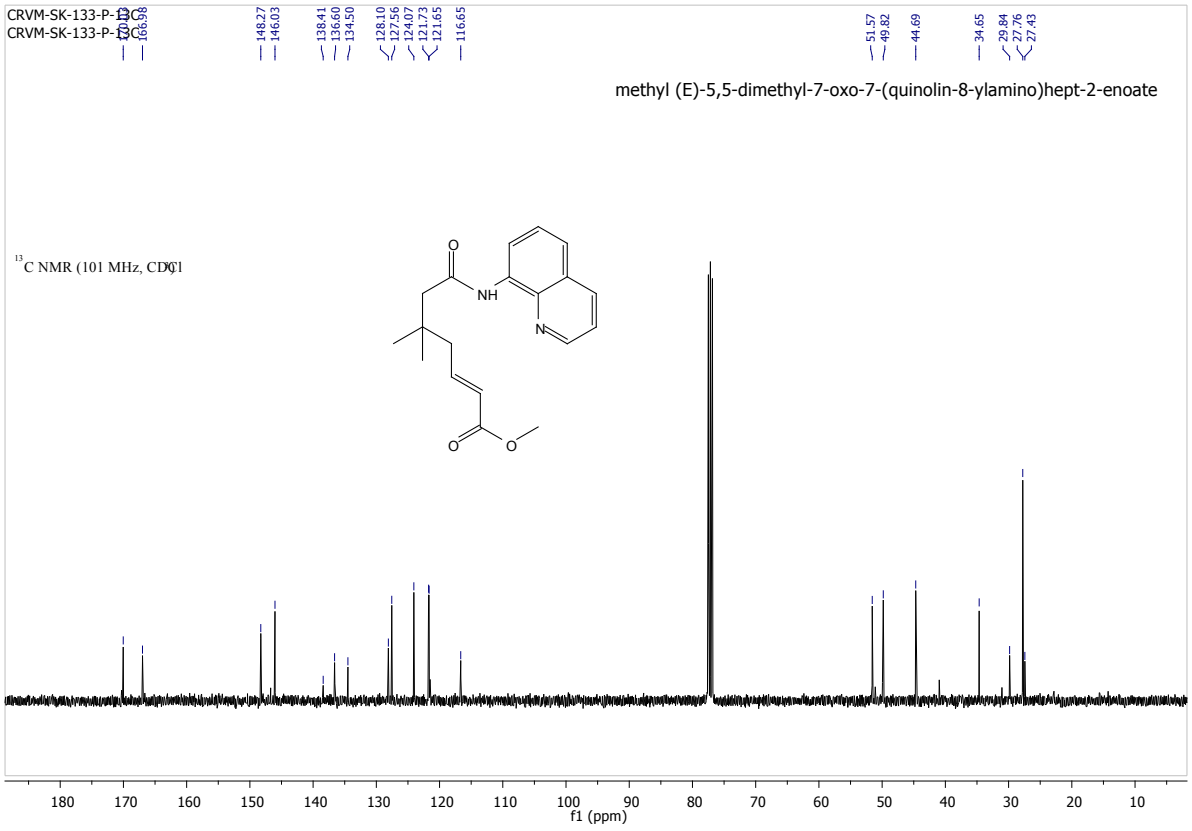
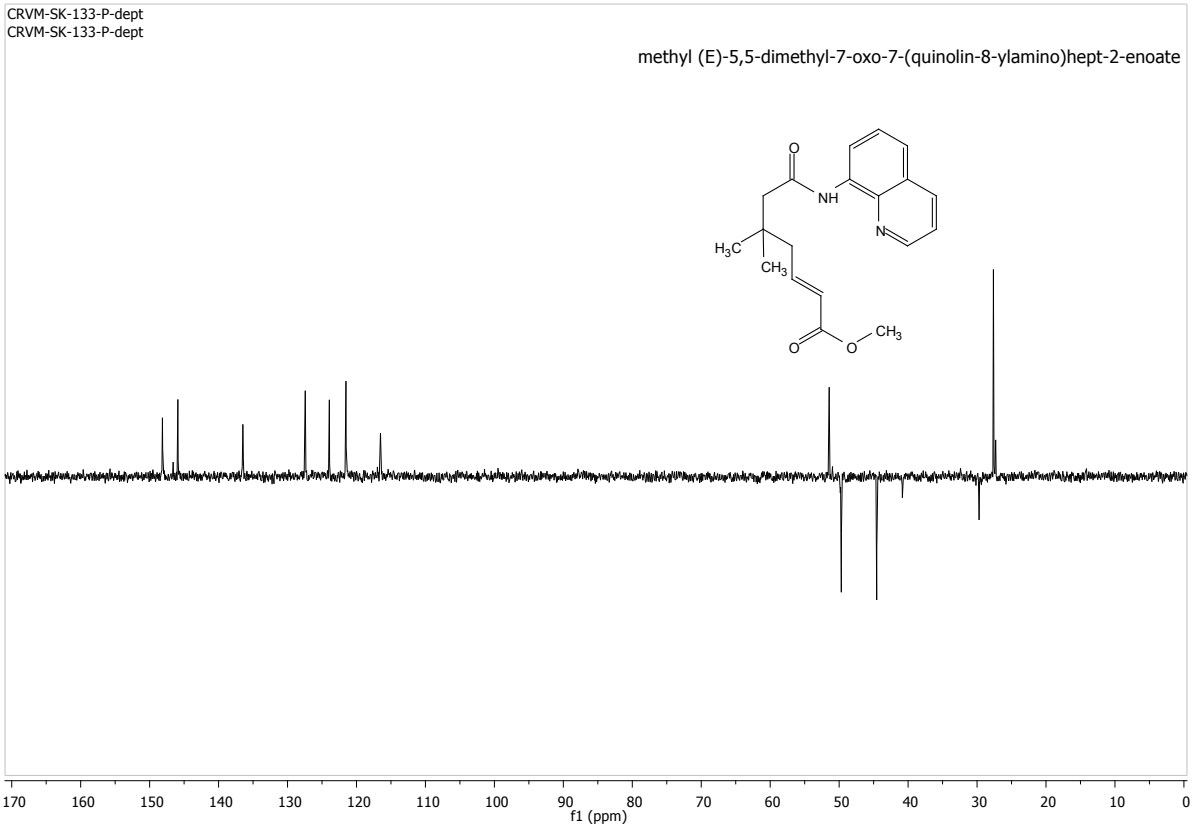
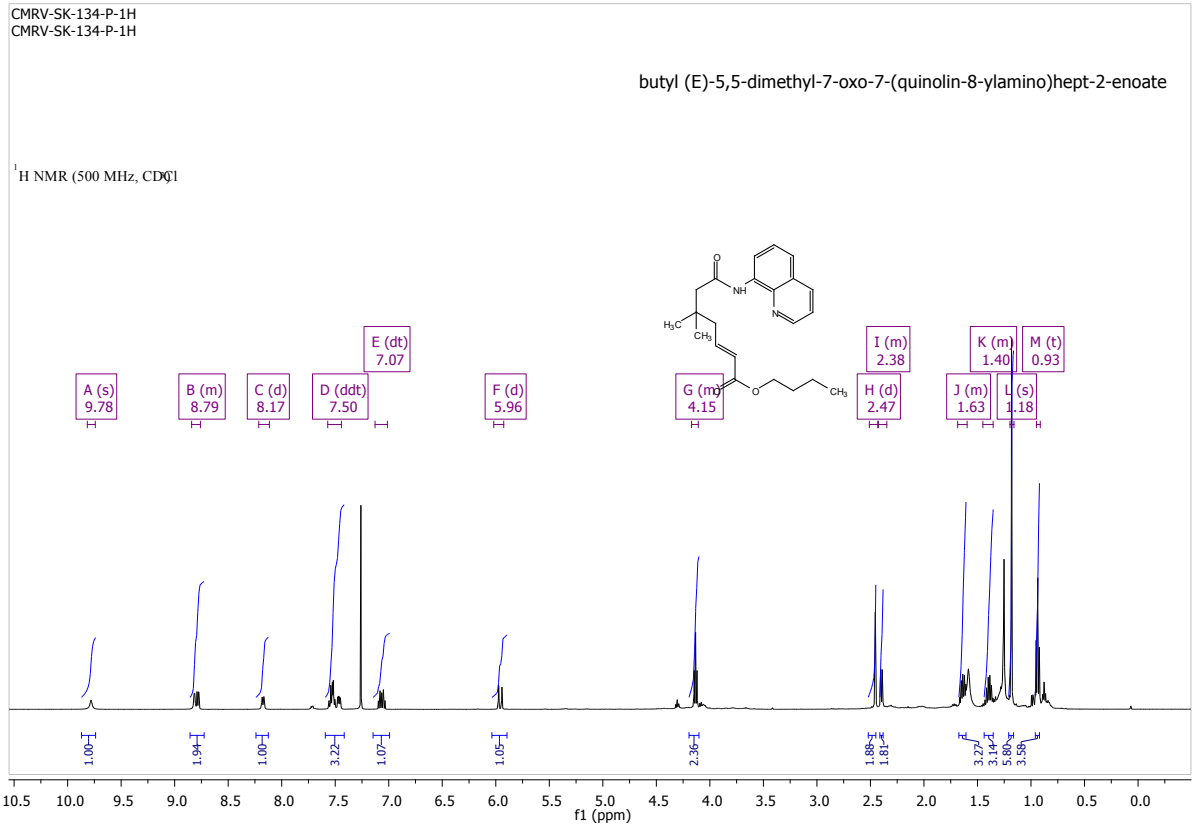

DM-NT-49-P-1H
DM-NT-49-P-1H
ethyl (E)-5,5-dimethyl-7-oxo-7-(quinolin-8-ylamino)hept-2-enoate
A (s) 9.81
B (ddd) 8.82
C (d) 8.20
D (m) 7.53
E (m) 7.09
F (m) 5.97
G (q) 4.21
H (d) 2.50
I (m) 2.40
J (t) 1.31
K (s) 1.20
f1 (ppm)

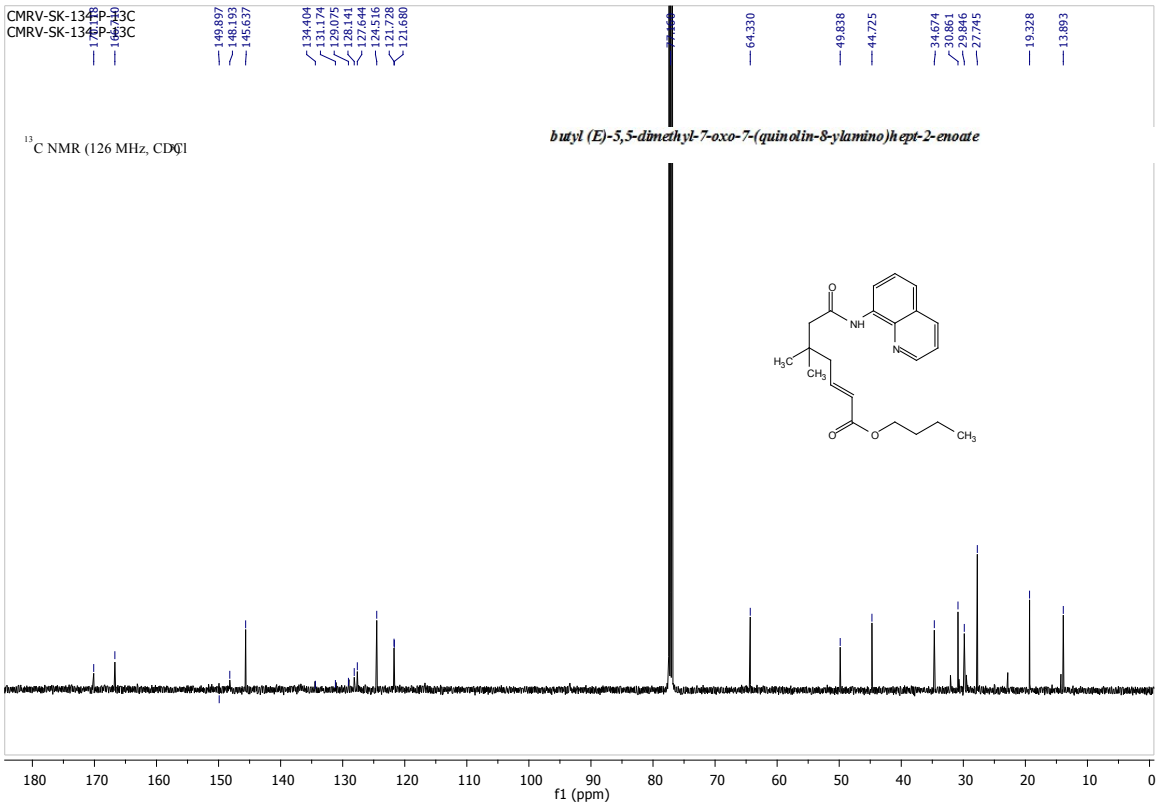

CMRV-NT-3-186-13C REPET
CMRV-NT-3-186-13C REPET
ethyl (E)-5,5-dimethyl-7-oxo-7-(quinolin-8-ylamino)hept-2-enoate
f1 (ppm)

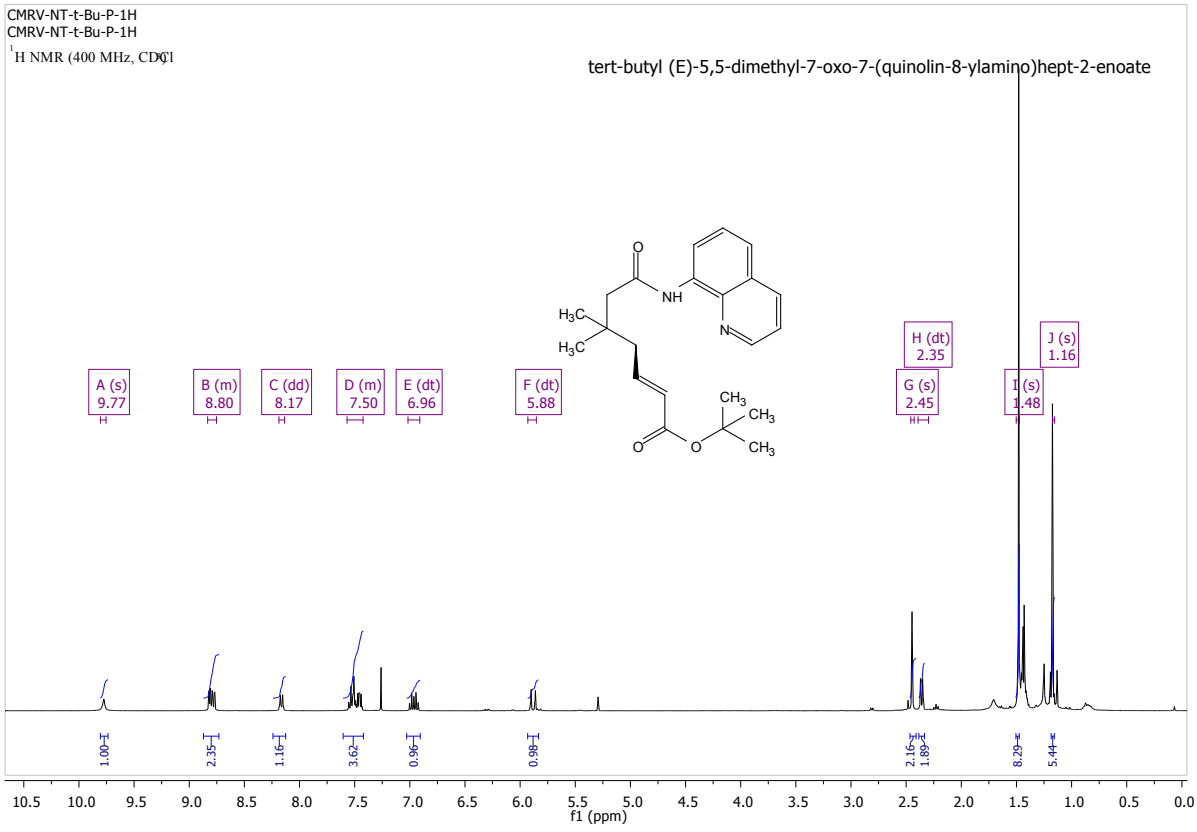

CRVM-SK-133-P-1H
CRVM-SK-133-P-1H
methyl (E)-5,5-dimethyl-7-oxo-7-(quinolin-8-ylamino)hept-2-enoate
A (s) 9.77
B (ddt) 8.79
C (m) 8.16
D (m) 7.50
E (dt) 7.08
F (ddd) 5.94
G (s) 3.73
H (s) 2.45
I (dd) 2.40
J (s) 1.18
f1 (ppm)

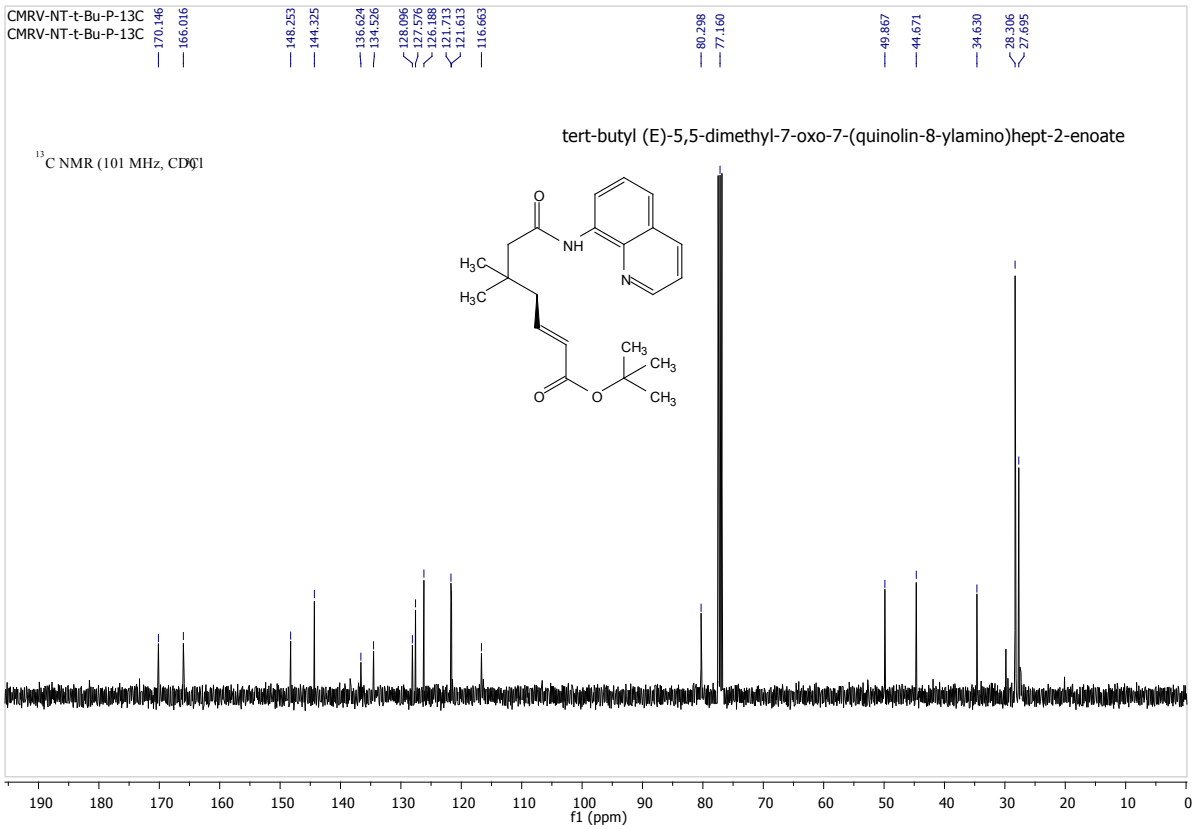

CRVM-SK-133-P-13C
CRVM-SK-133-P-13C
methyl (E)-5,5-dimethyl-7-oxo-7-(quinolin-8-ylamino)hept-2-enoate
13C NMR (101 MHz, CDCl3)
f1 (ppm)

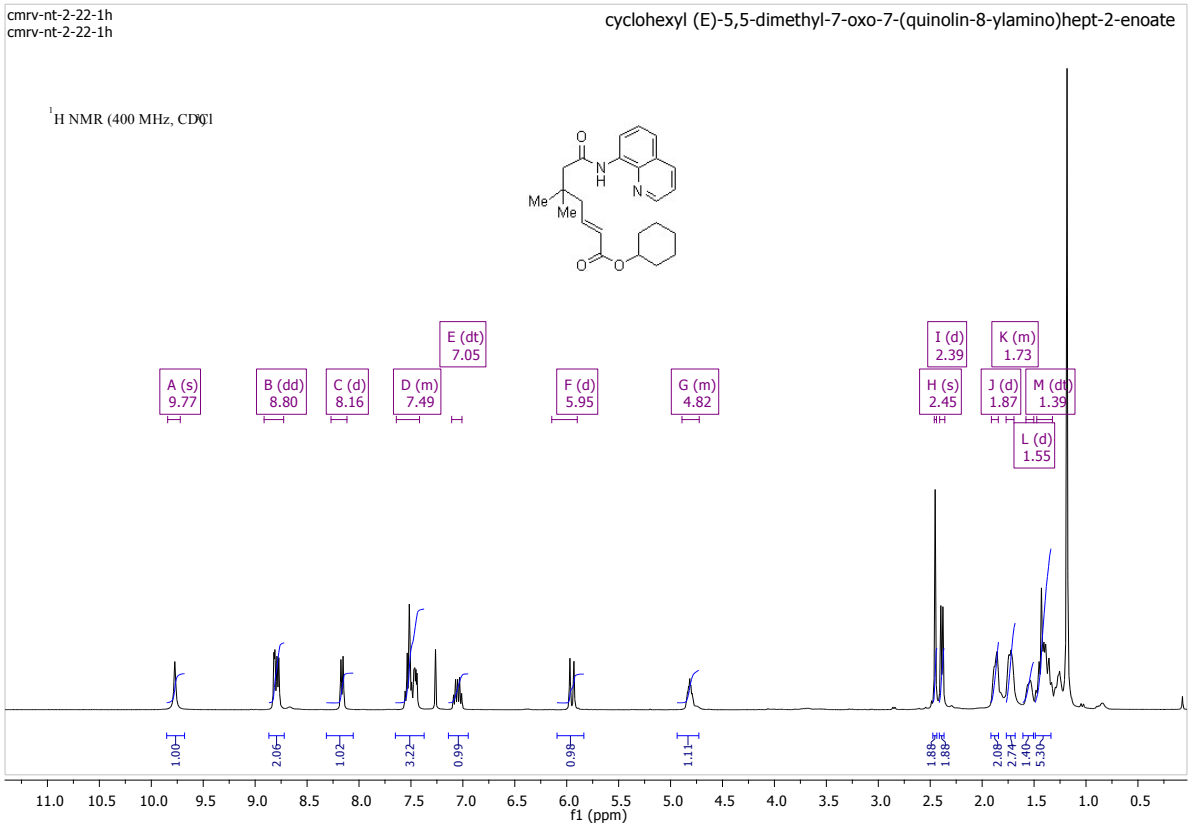

CRVM-SK-133-P-dept
CRVM-SK-133-P-dept
methyl (E)-5,5-dimethyl-7-oxo-7-(quinolin-8-ylamino)hept-2-enoate
O
NH
N
H3C
CH3
O
O
CH3
170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0
f1 (ppm)

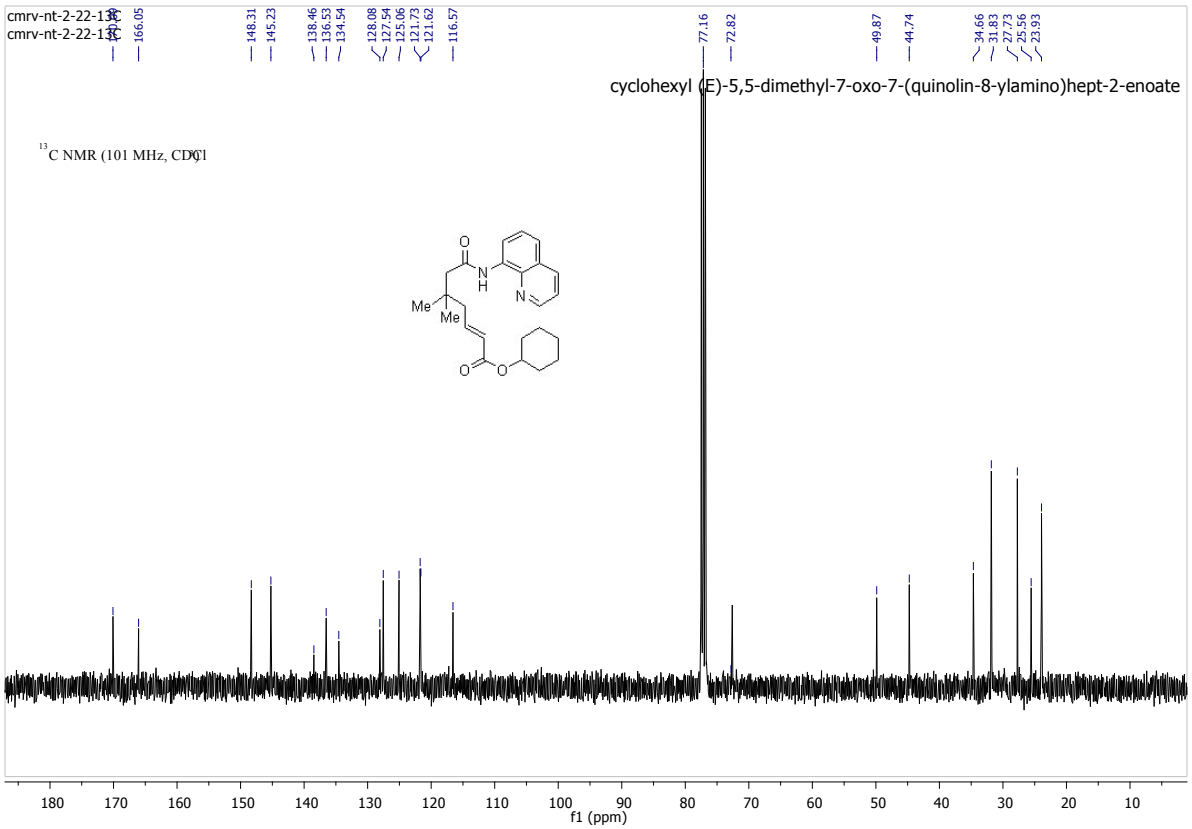

CMRV-SK-134-P-1H
CMRV-SK-134-P-1H
butyl (E)-5,5-dimethyl-7-oxo-7-(quinolin-8-ylamino)hept-2-enoate
1H NMR (500 MHz, CDCl3)
A (s) 9.78
B (m) 8.79
C (d) 8.17
D (ddt) 7.50
E (dt) 7.07
F (d) 5.96
G (m) 4.15
H (d) 2.47
I (m) 2.38
J (m) 1.63
K (m) 1.40
L (s) 1.18
M (t) 0.93
1.00 1.94 1.00 3.22 1.07 1.05 2.36 1.88 1.81 3.27 3.14 5.80 3.58
10.5 10.0 9.5 9.0 8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 0.0
f1 (ppm)

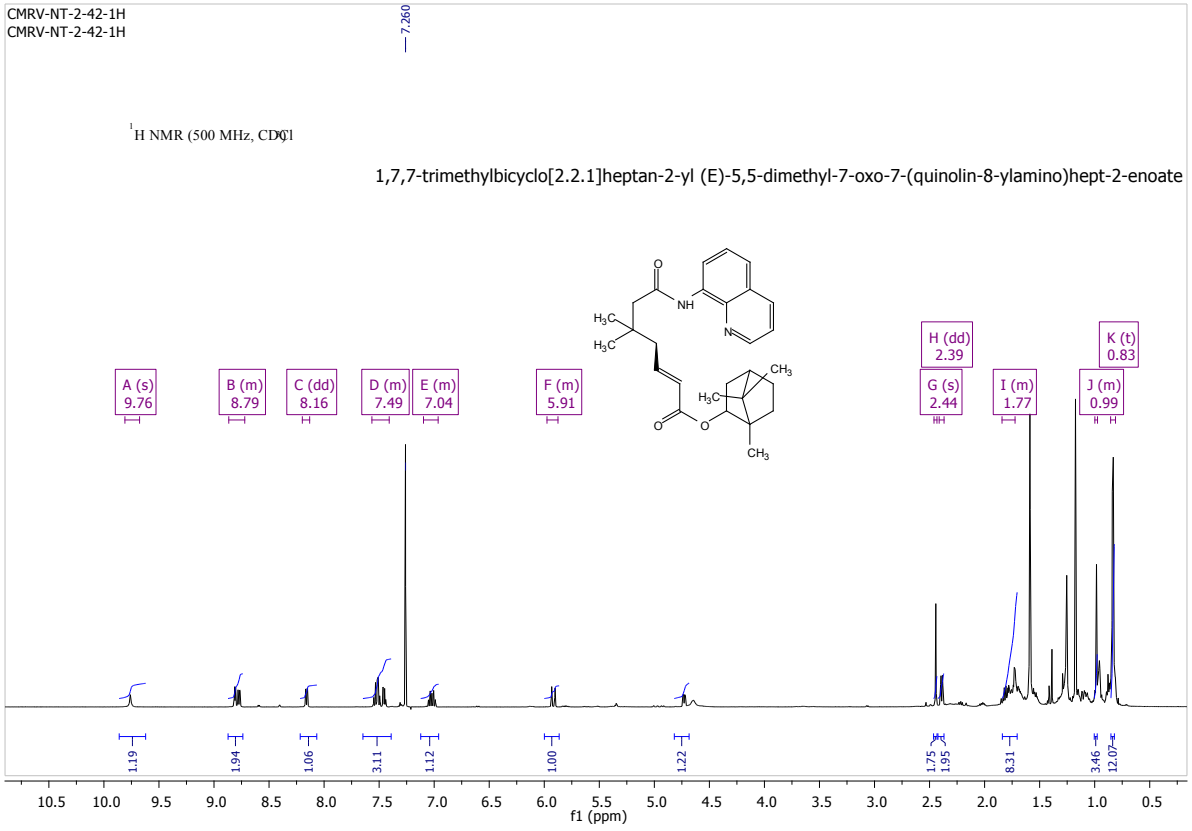

CMRV-SK-134-P-13C
CMRV-SK-134-P-13C
149.897
148.193
145.637
134.404
131.174
129.075
128.141
127.444
124.516
121.728
121.680
64.330
49.838
44.725
34.674
30.861
29.846
27.745
19.328
13.893
butyl (E)-5,5-dimethyl-7-oxo-7-(quinolin-8-ylamino)hept-2-enoate
f1 (ppm)

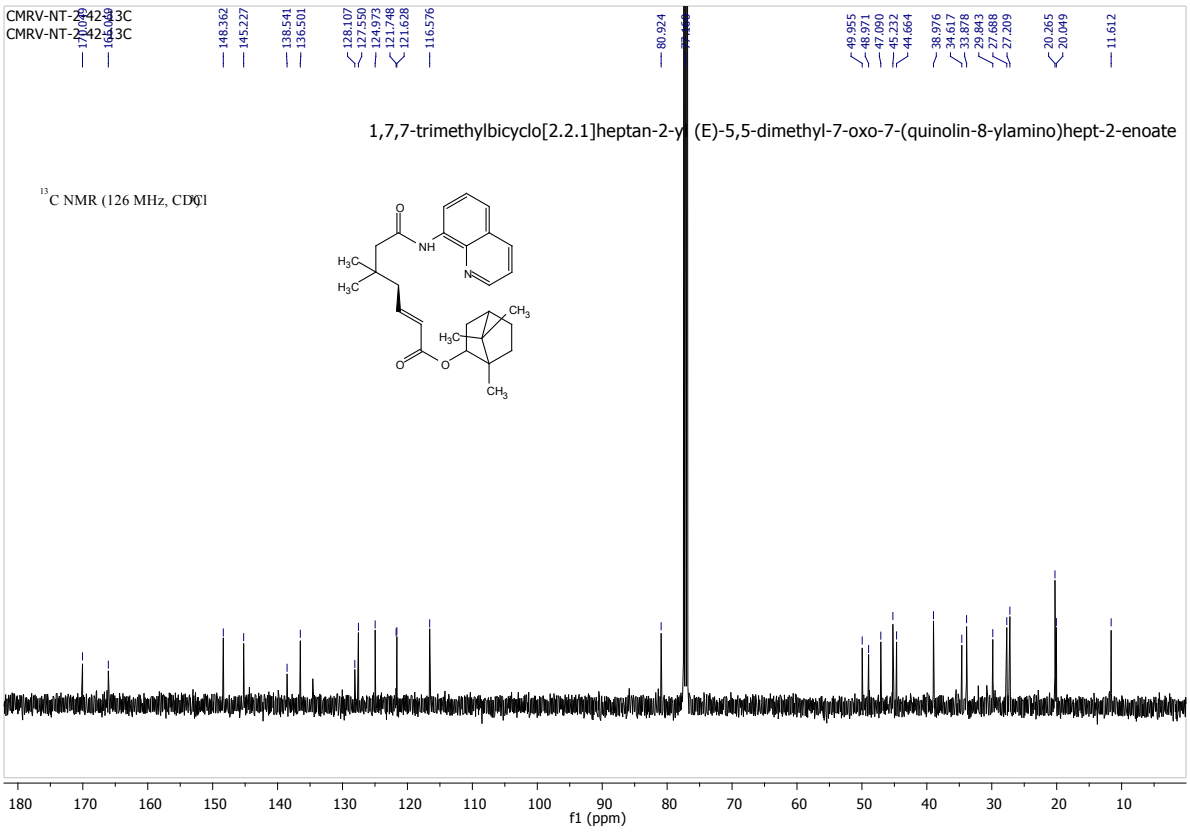

CMRV-NT-t-Bu-P-1H
CMRV-NT-t-Bu-P-1H
tert-butyl (E)-5,5-dimethyl-7-oxo-7-(quinolin-8-ylamino)hept-2-enoate
A (s) 9.77
B (m) 8.80
C (dd) 8.17
D (m) 7.50
E (dt) 6.96
F (dt) 5.88
G (s) 2.45
H (dt) 2.35
I (s) 1.48
J (s) 1.16
f1 (ppm)

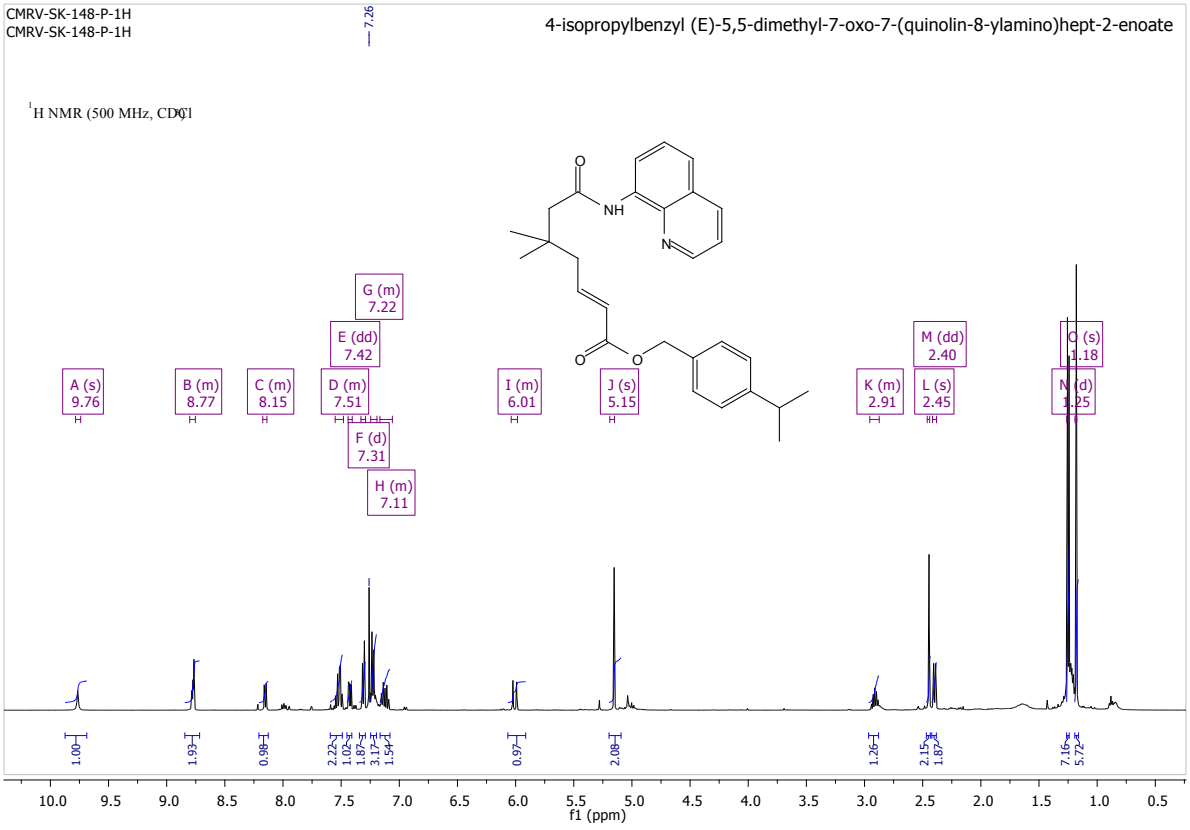

CMRV-NT-t-Bu-P-13C
CMRV-NT-t-Bu-P-13C
170.146
166.016
148.253
144.325
136.624
134.526
128.096
127.576
126.188
121.713
121.613
116.663
80.298
77.160
49.867
44.671
34.630
28.306
27.695
tert-butyl (E)-5,5-dimethyl-7-oxo-7-(quinolin-8-ylamino)hept-2-enoate
13C NMR (101 MHz, CDCl3)
f1 (ppm)

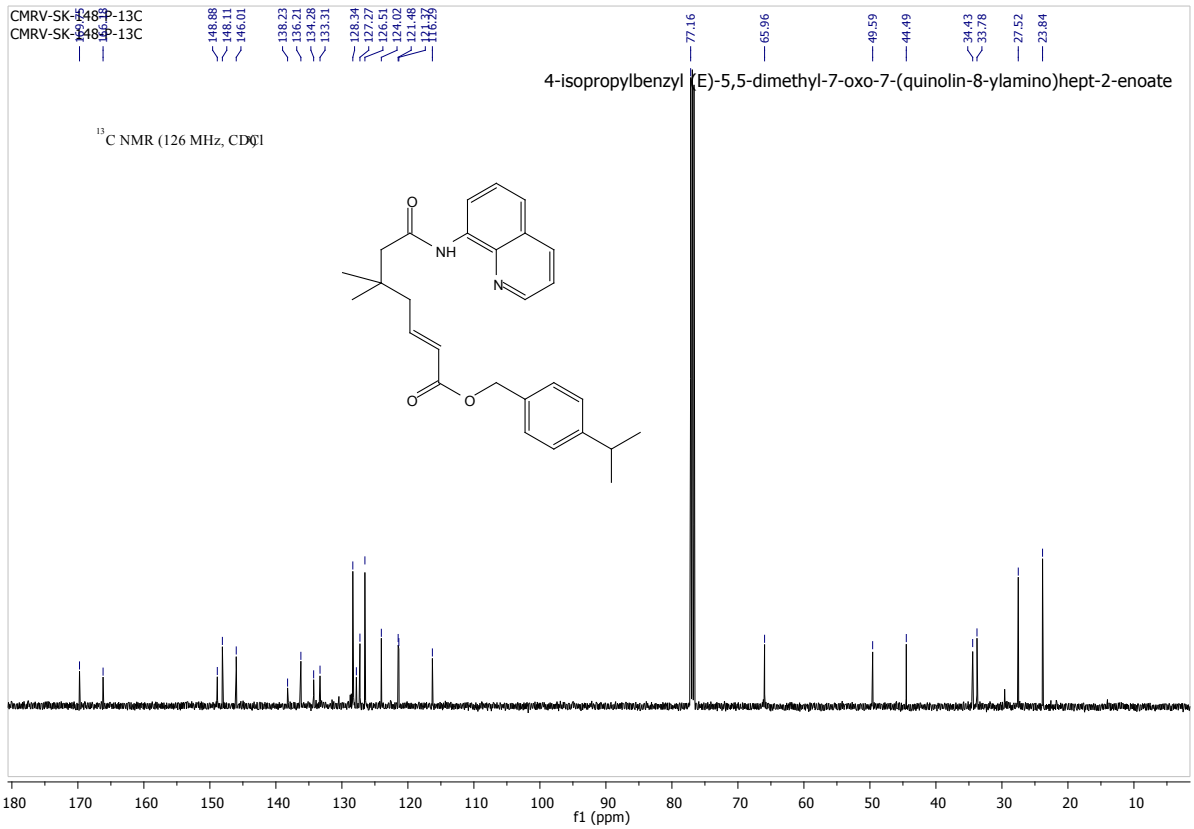

cmrv-nt-2-22-1h
cmrv-nt-2-22-1h
cyclohexyl (E)-5,5-dimethyl-7-oxo-7-(quinolin-8-ylamino)hept-2-enoate
1H NMR (400 MHz, CDCl3)
A (s) 9.77
B (dd) 8.80
C (d) 8.16
D (m) 7.49
E (dt) 7.05
F (d) 5.95
G (m) 4.82
H (s) 2.45
I (d) 2.39
J (d) 1.87
K (m) 1.73
L (d) 1.55
M (dt) 1.39
f1 (ppm)

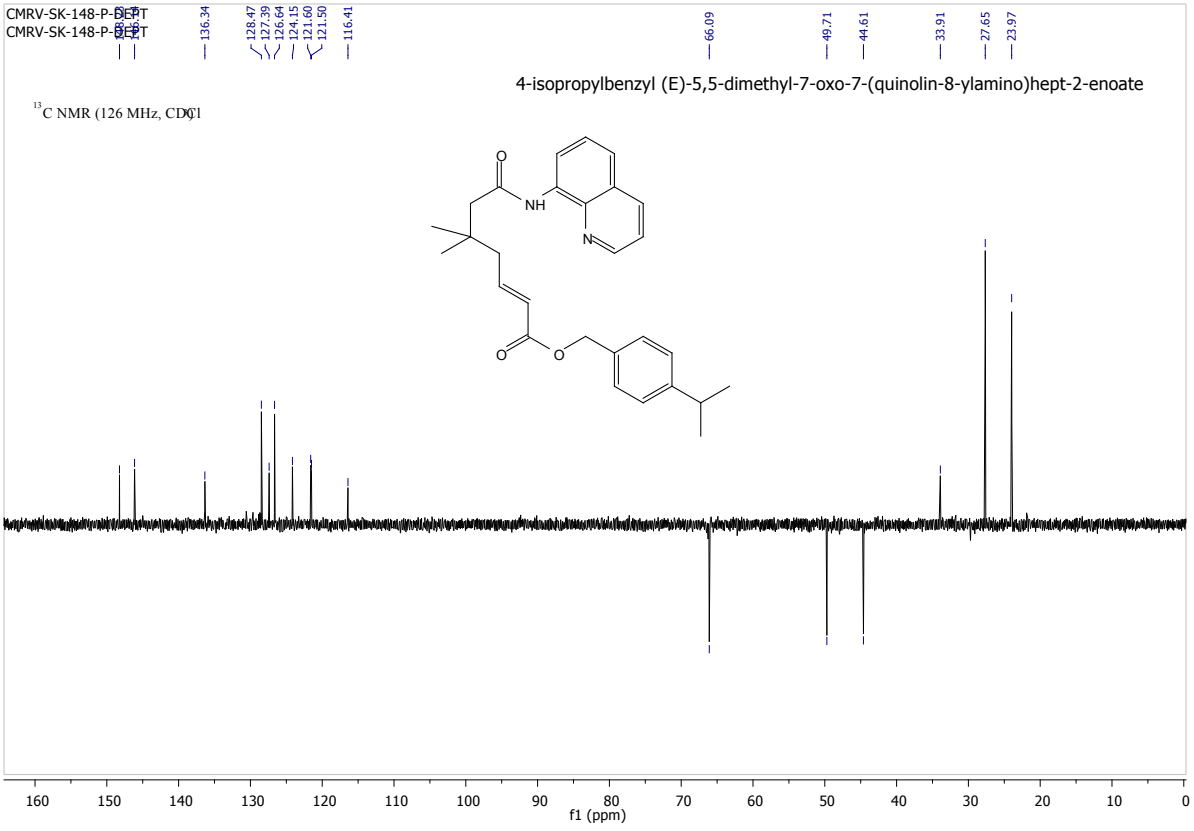

cmrv-nt-2-22-13C
cmrv-nt-2-22-13C
166.05
148.31
145.23
138.46
136.53
134.54
128.08
127.54
125.06
121.73
121.62
116.57
77.16
72.82
49.87
44.74
34.66
31.83
27.73
25.56
23.93
cyclohexyl (E)-5,5-dimethyl-7-oxo-7-(quinolin-8-ylamino)hept-2-enoate
13C NMR (101 MHz, CDCl3)
Me
Me
f1 (ppm)

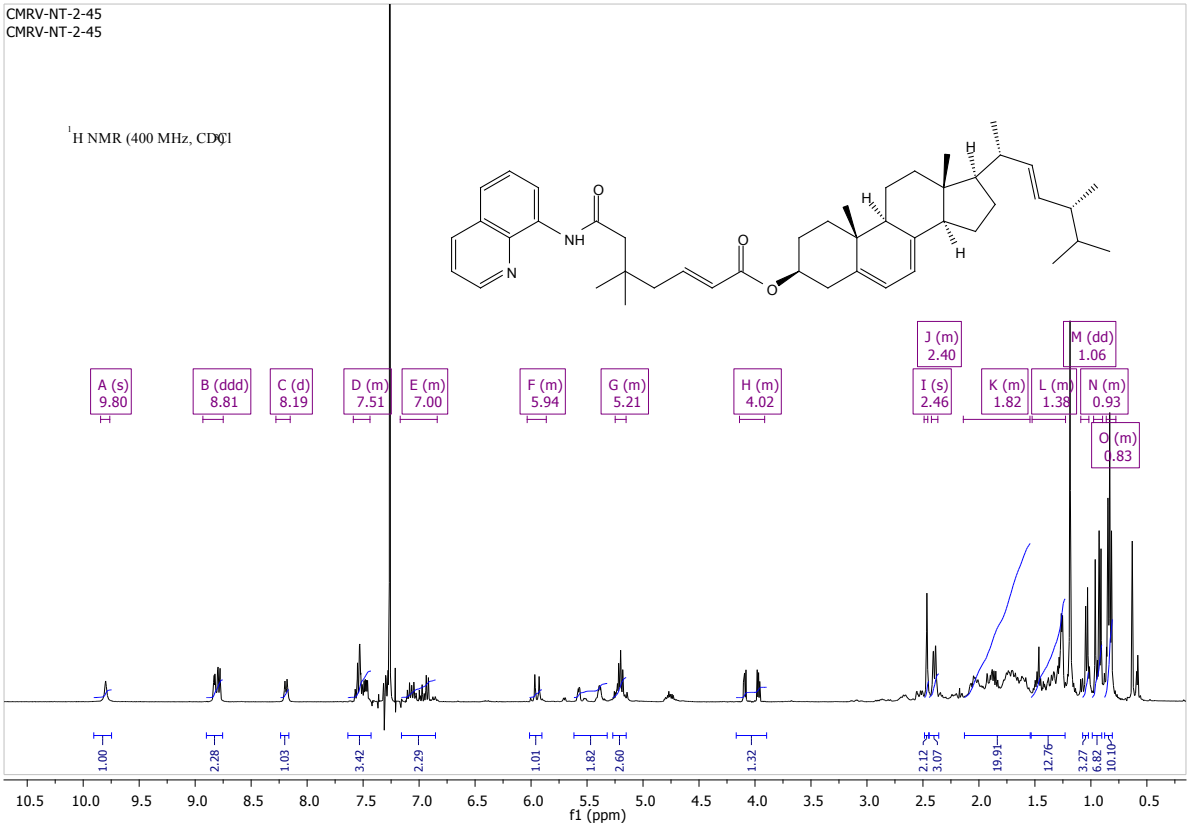

CMRV-NT-2-42-1H
CMRV-NT-2-42-1H
7.260
1H NMR (500 MHz, CDCl3)
1,7,7-trimethylbicyclo[2.2.1]heptan-2-yl (E)-5,5-dimethyl-7-oxo-7-(quinolin-8-ylamino)hept-2-enoate
A (s) 9.76
B (m) 8.79
C (dd) 8.16
D (m) 7.49
E (m) 7.04
F (m) 5.91
G (s) 2.44
H (dd) 2.39
I (m) 1.77
J (m) 0.99
K (t) 0.83
1.19
1.94
1.06
3.11
1.12
1.00
1.22
1.75
1.95
8.31
3.46
12.07
f1 (ppm)

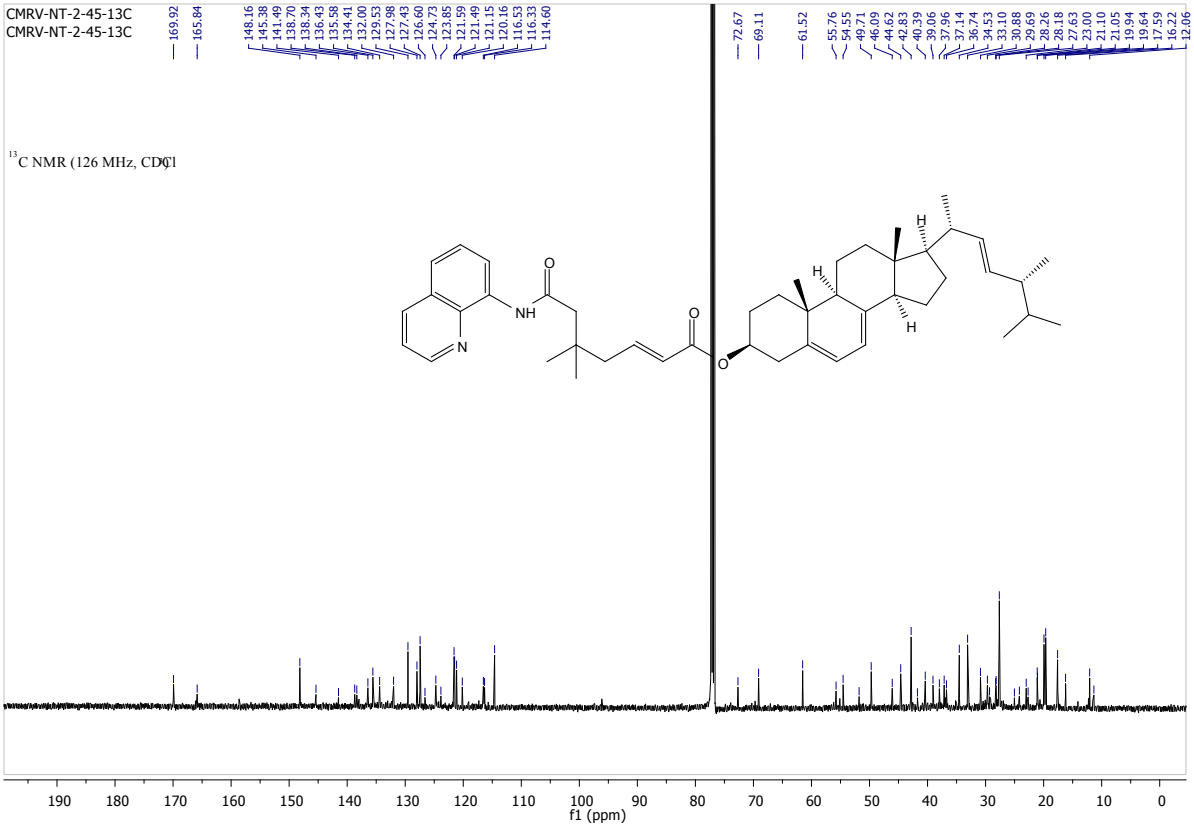

CMRV-NT-2-42-13C
CMRV-NT-2-42-13C
148.362
145.227
138.541
136.501
128.107
127.550
124.973
121.748
121.628
116.576
80.924
49.955
48.971
47.090
45.232
44.664
38.976
34.617
33.878
29.843
27.688
27.209
20.265
20.049
11.612
1,7,7-trimethylbicyclo[2.2.1]heptan-2-yl (E)-5,5-dimethyl-7-oxo-7-(quinolin-8-ylamino)hept-2-enoate
13C NMR (126 MHz, CDCl3)
f1 (ppm)

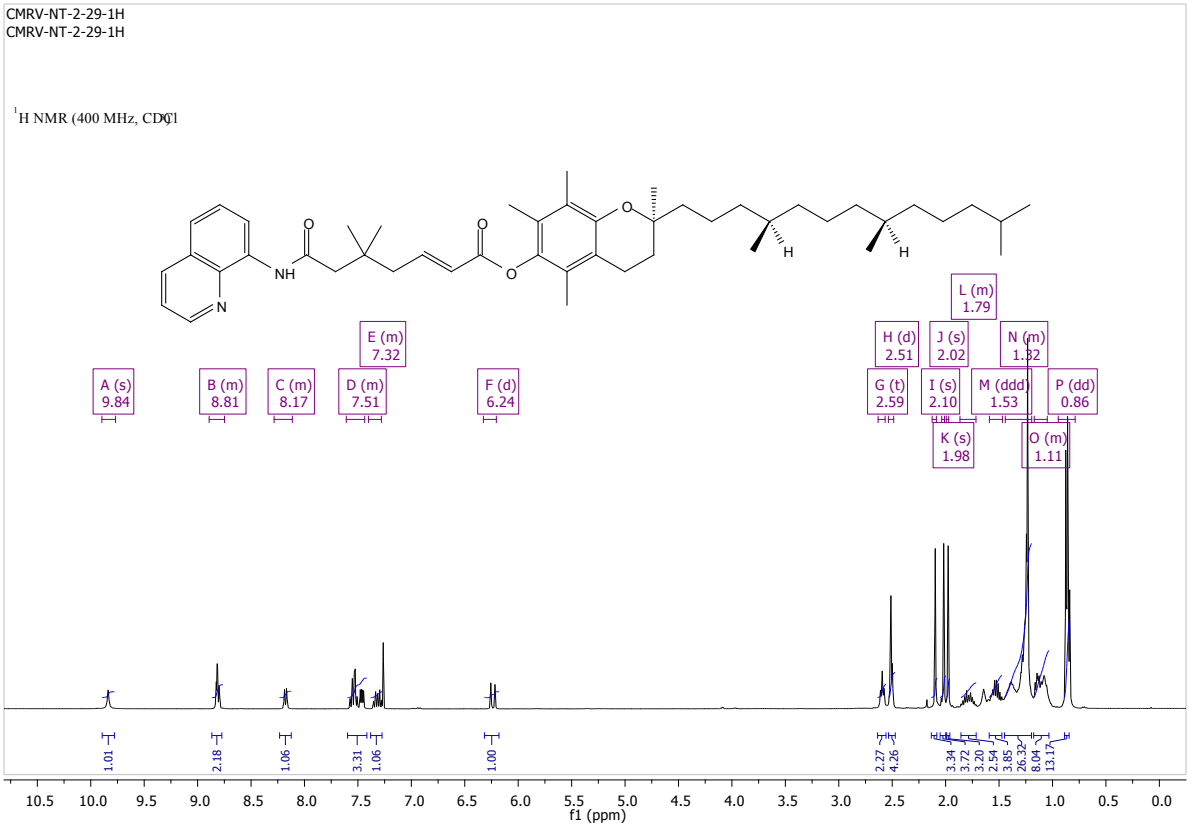

CMRV-SK-148-P-1H
CMRV-SK-148-P-1H
7.26
4-isopropylbenzyl (E)-5,5-dimethyl-7-oxo-7-(quinolin-8-ylamino)hept-2-enoate
1H NMR (500 MHz, CDCl3)
A (s) 9.76
B (m) 8.77
C (m) 8.15
D (m) 7.51
E (dd) 7.42
F (d) 7.31
G (m) 7.22
H (m) 7.11
I (m) 6.01
J (s) 5.15
K (m) 2.91
L (s) 2.45
M (dd) 2.40
N (d) 1.25
O (s) 1.18
f1 (ppm)

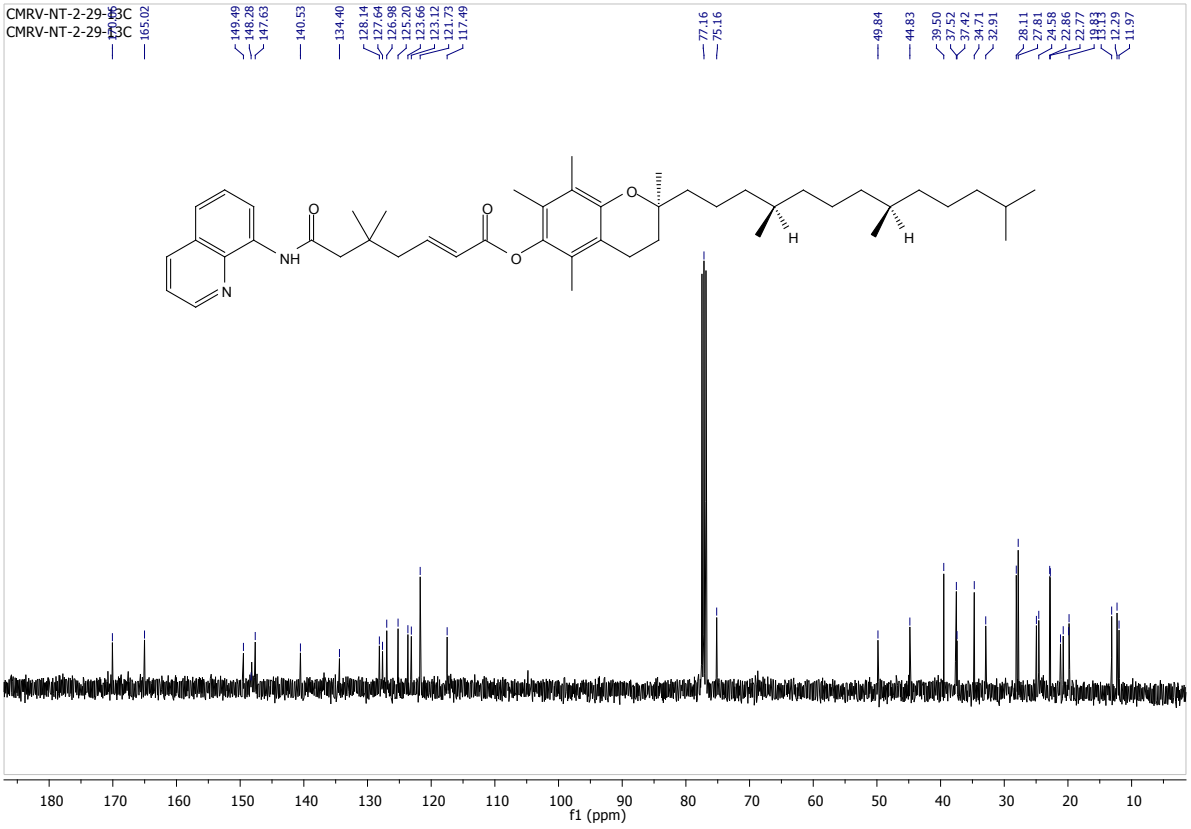

CMRV-SK-148-P-13C
CMRV-SK-148-P-13C
148.88
148.11
146.01
138.23
136.21
134.28
133.31
128.34
127.27
126.51
124.02
121.48
121.37
116.29
77.16
65.96
49.59
44.49
34.43
33.78
27.52
23.84
4-isopropylbenzyl (E)-5,5-dimethyl-7-oxo-7-(quinolin-8-ylamino)hept-2-enoate
13C NMR (126 MHz, CDCl3)
O
NH
N
O
O
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
f1 (ppm)

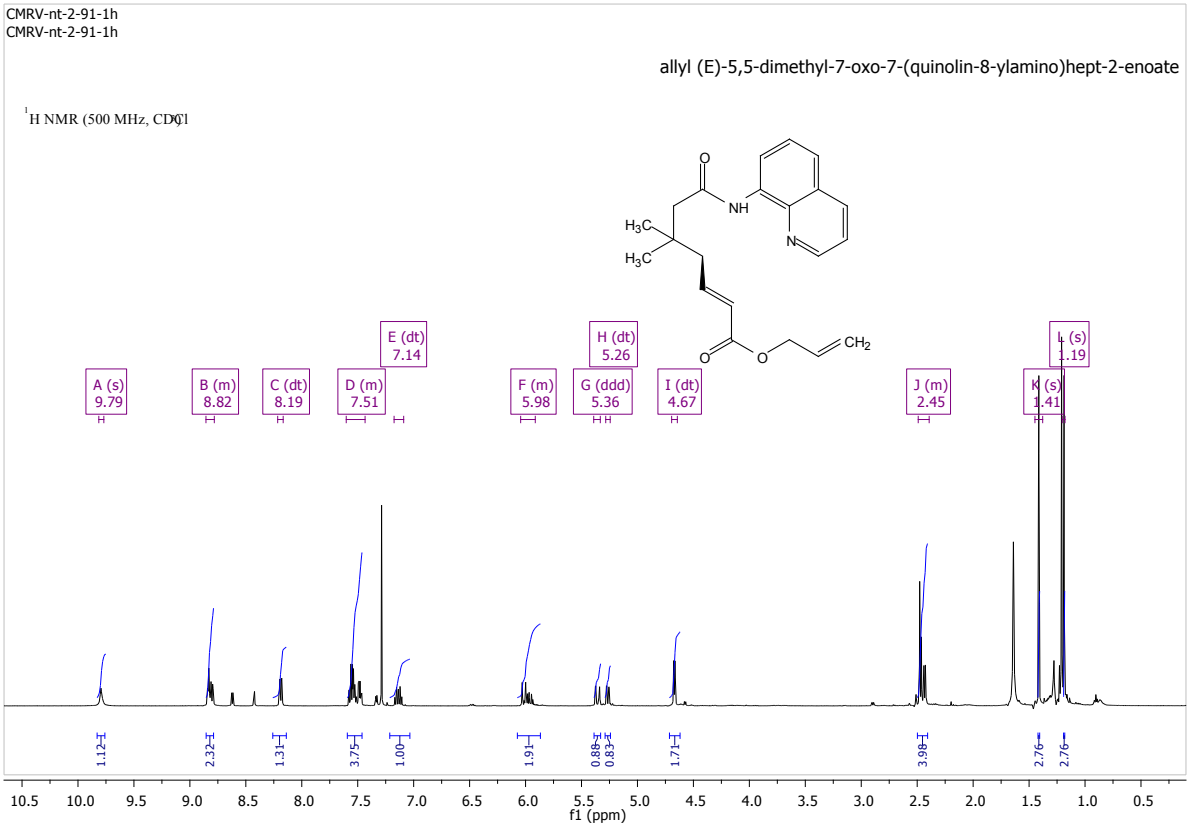

CMRV-SK-148-P-DEPT
CMRV-SK-148-P-DEPT
136.34
128.47
127.39
126.64
124.15
121.60
121.50
116.41
66.09
49.71
44.61
33.91
27.65
23.97
4-isopropylbenzyl (E)-5,5-dimethyl-7-oxo-7-(quinolin-8-ylamino)hept-2-enoate
13C NMR (126 MHz, CDCl3)
O
NH
N
O
O
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
f1 (ppm)

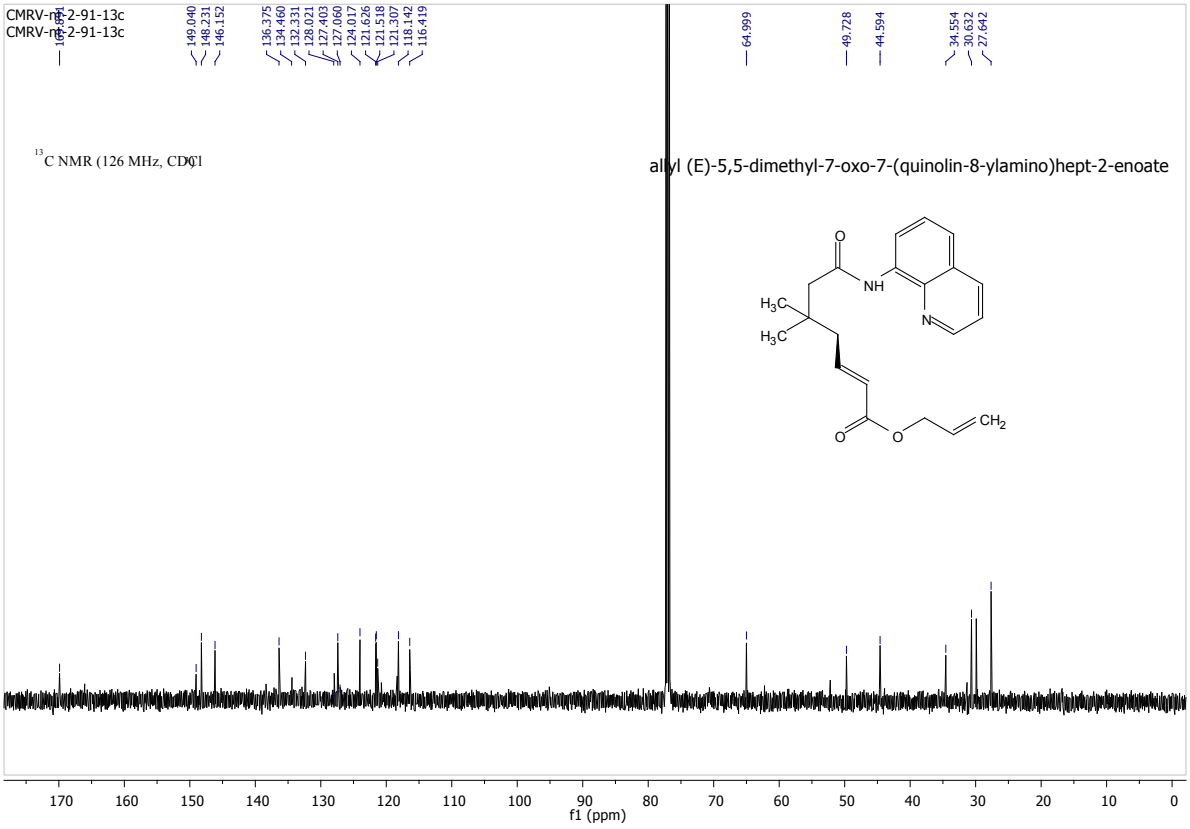

CMRV-NT-2-45
CMRV-NT-2-45
1H NMR (400 MHz, CDCl3)
A (s) 9.80
B (ddd) 8.81
C (d) 8.19
D (m) 7.51
E (m) 7.00
F (m) 5.94
G (m) 5.21
H (m) 4.02
I (s) 2.46
J (m) 2.40
K (m) 1.82
L (m) 1.38
M (dd) 1.06
N (m) 0.93
O (m) 0.83
f1 (ppm)

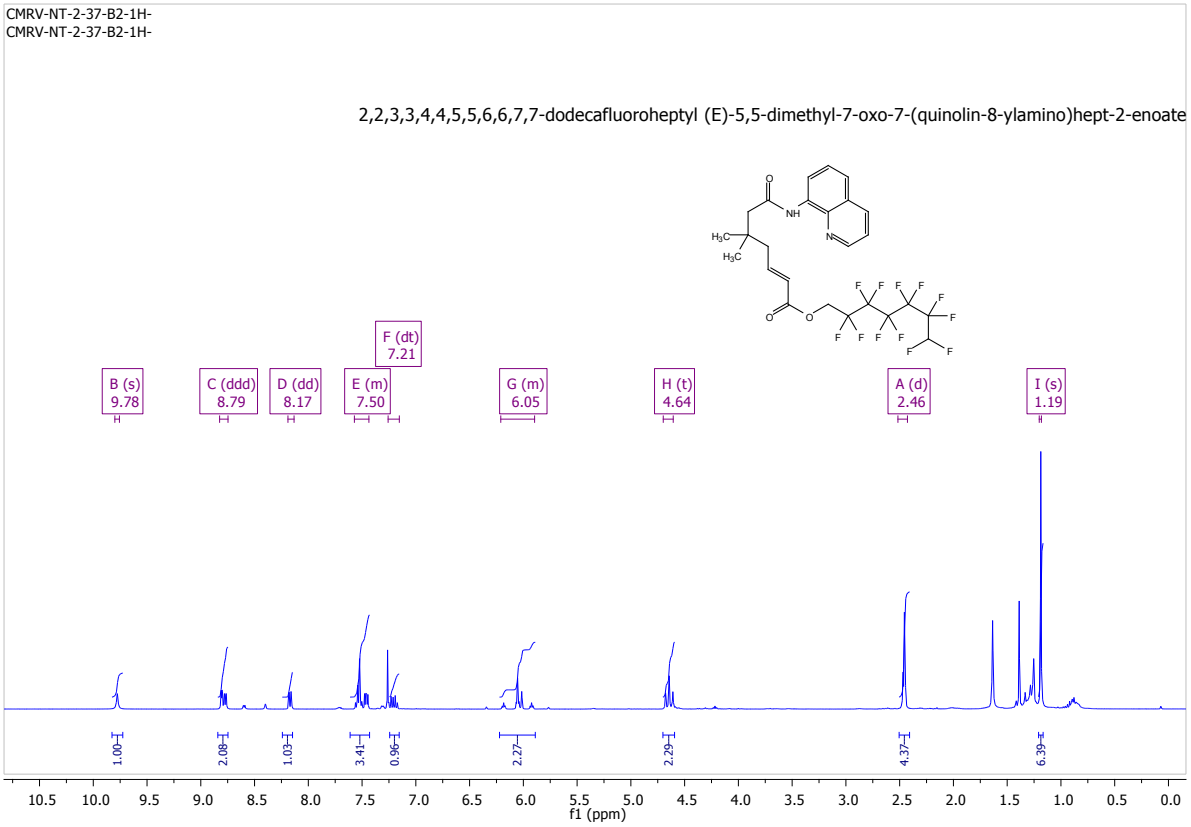

CMRV-NT-2-45-13C
CMRV-NT-2-45-13C
13C NMR (126 MHz, CDCl3)
f1 (ppm)

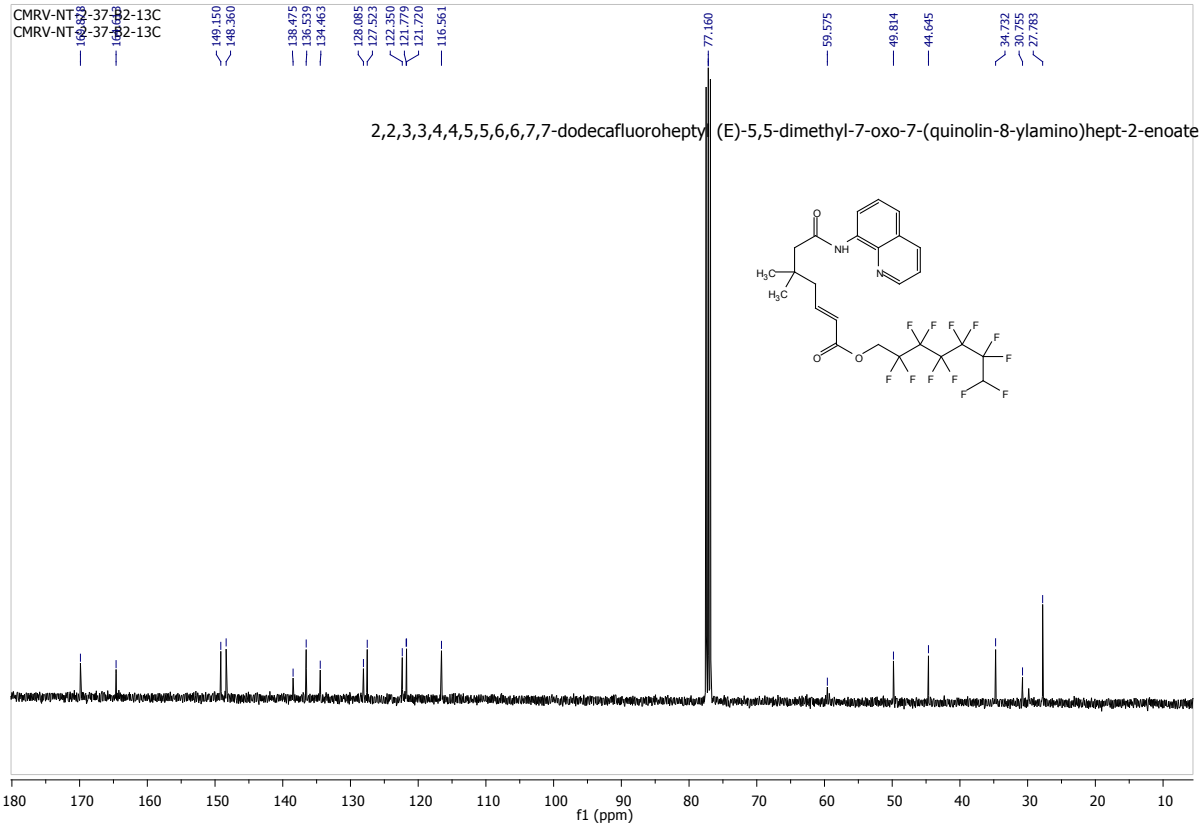

CMRV-NT-2-29-1H
CMRV-NT-2-29-1H
1H NMR (400 MHz, CDCl3)
A (s) 9.84
B (m) 8.81
C (m) 8.17
D (m) 7.51
E (m) 7.32
F (d) 6.24
G (t) 2.59
H (d) 2.51
I (s) 2.10
J (s) 2.02
K (s) 1.98
L (m) 1.79
M (ddd) 1.53
N (m) 1.32
O (m) 1.11
P (dd) 0.86
f1 (ppm)

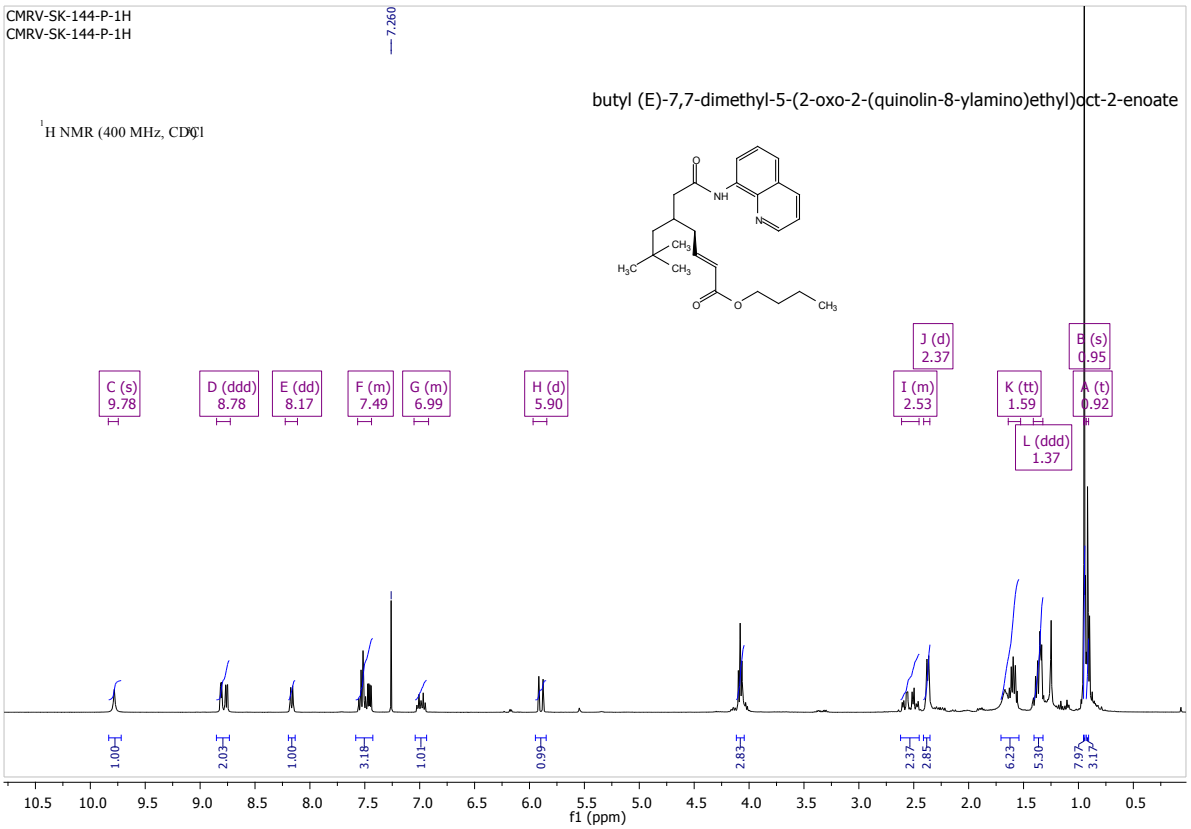

CMRV-NT-2-29-13C
CMRV-NT-2-29-13C
f1 (ppm)

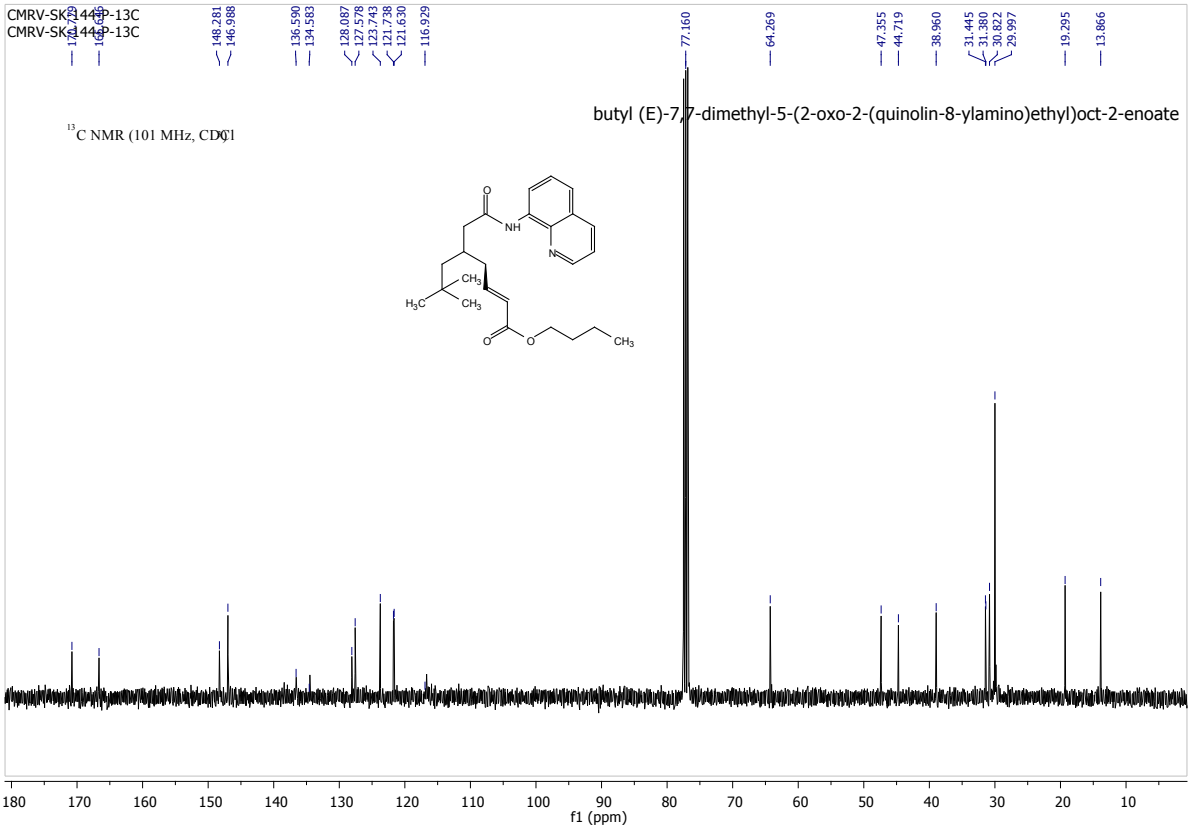

CMRV-nt-2-91-1h
CMRV-nt-2-91-1h
allyl (E)-5,5-dimethyl-7-oxo-7-(quinolin-8-ylamino)hept-2-enoate
1H NMR (500 MHz, CDCl3)
A (s) 9.79
B (m) 8.82
C (dt) 8.19
D (m) 7.51
E (dt) 7.14
F (m) 5.98
G (ddd) 5.36
H (dt) 5.26
I (dt) 4.67
J (m) 2.45
K (s) 1.41
L (s) 1.19
1.12
2.32
1.31
3.75
1.00
1.91
0.88
0.83
1.71
3.98
2.76
2.76
f1 (ppm)

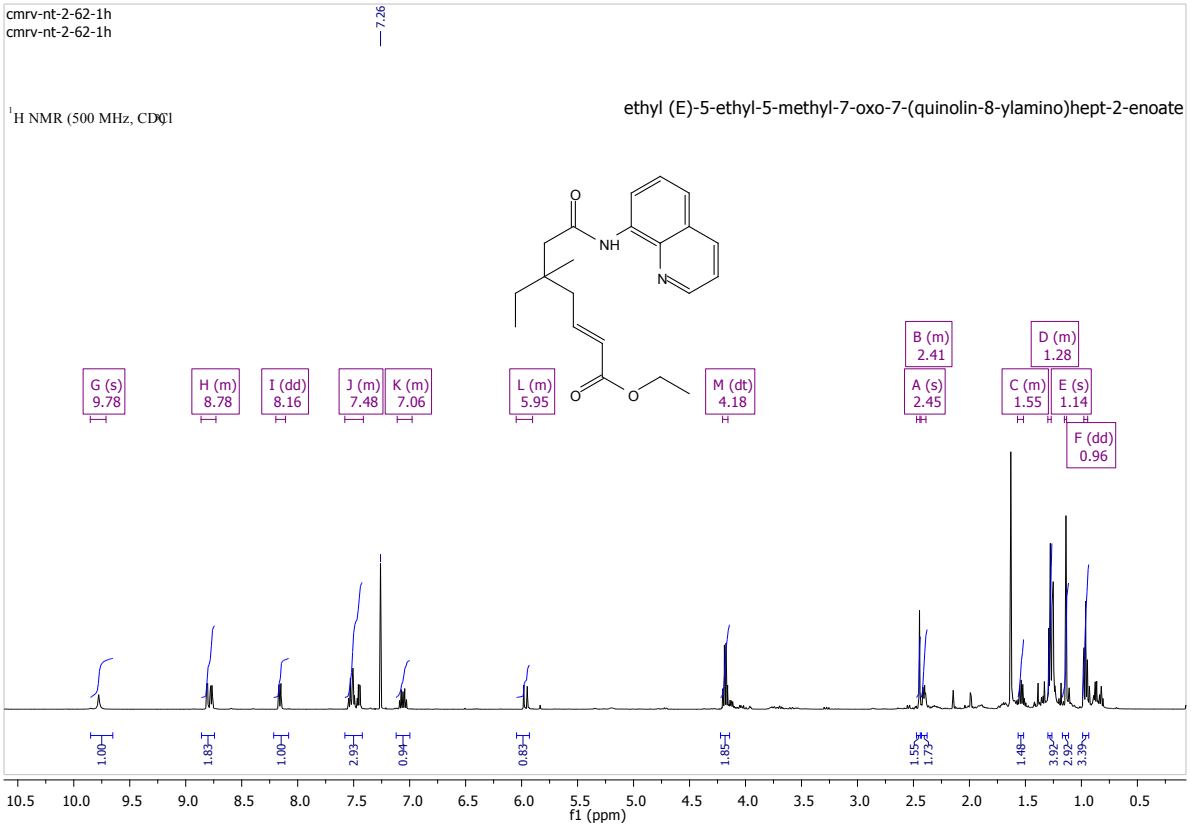

CMRV-nt-2-91-13c
CMRV-nt-2-91-13c
149.040
148.231
146.152
136.375
134.460
132.331
128.021
127.403
127.060
124.017
121.626
121.518
121.307
118.142
116.419
64.999
49.728
44.594
34.554
30.632
27.642
13C NMR (126 MHz, CDCl3)
allyl (E)-5,5-dimethyl-7-oxo-7-(quinolin-8-ylamino)hept-2-enoate
f1 (ppm)

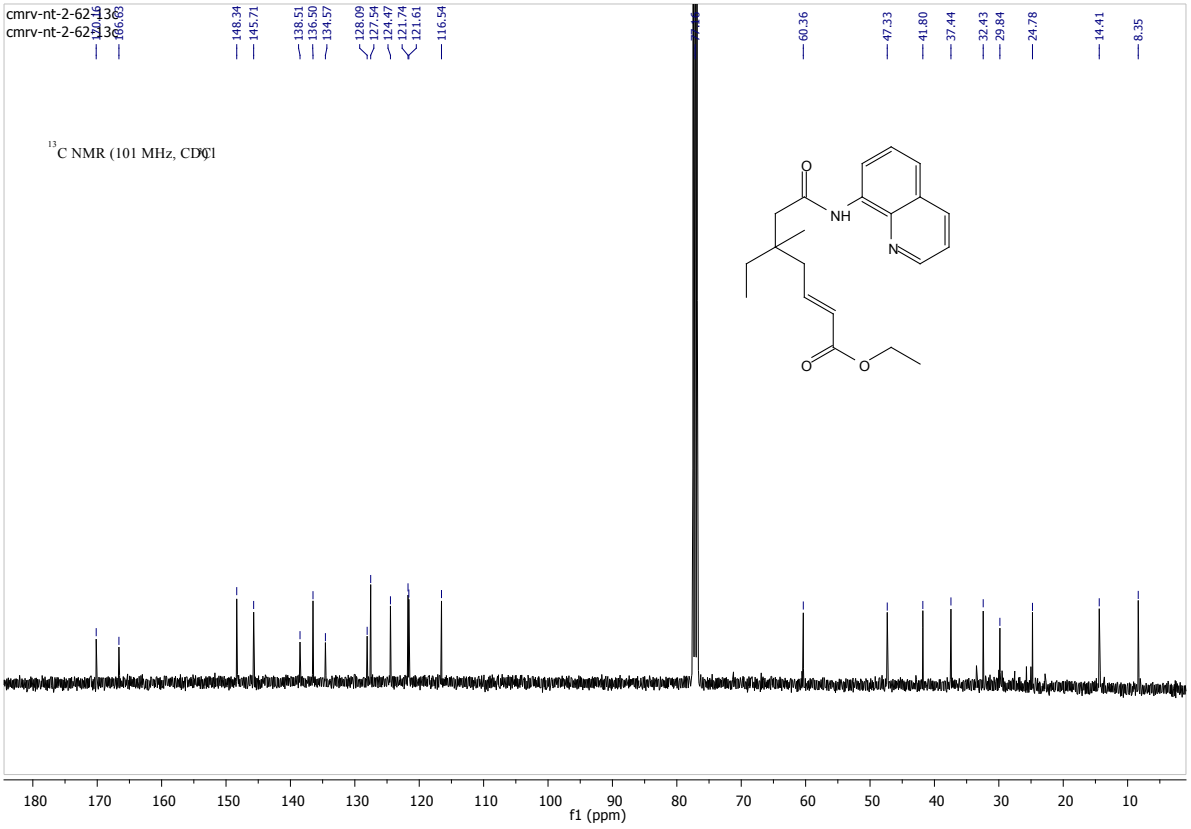

CMRV-NT-2-37-B2-1H-
CMRV-NT-2-37-B2-1H-
2,2,3,3,4,4,5,5,6,6,7,7-dodecafluoroheptyl (E)-5,5-dimethyl-7-oxo-7-(quinolin-8-ylamino)hept-2-enoate
B (s) 9.78
C (ddd) 8.79
D (dd) 8.17
E (m) 7.50
F (dt) 7.21
G (m) 6.05
H (t) 4.64
A (d) 2.46
I (s) 1.19
1.00
2.08
1.03
3.41
0.96
2.27
2.29
4.37
6.39
f1 (ppm)

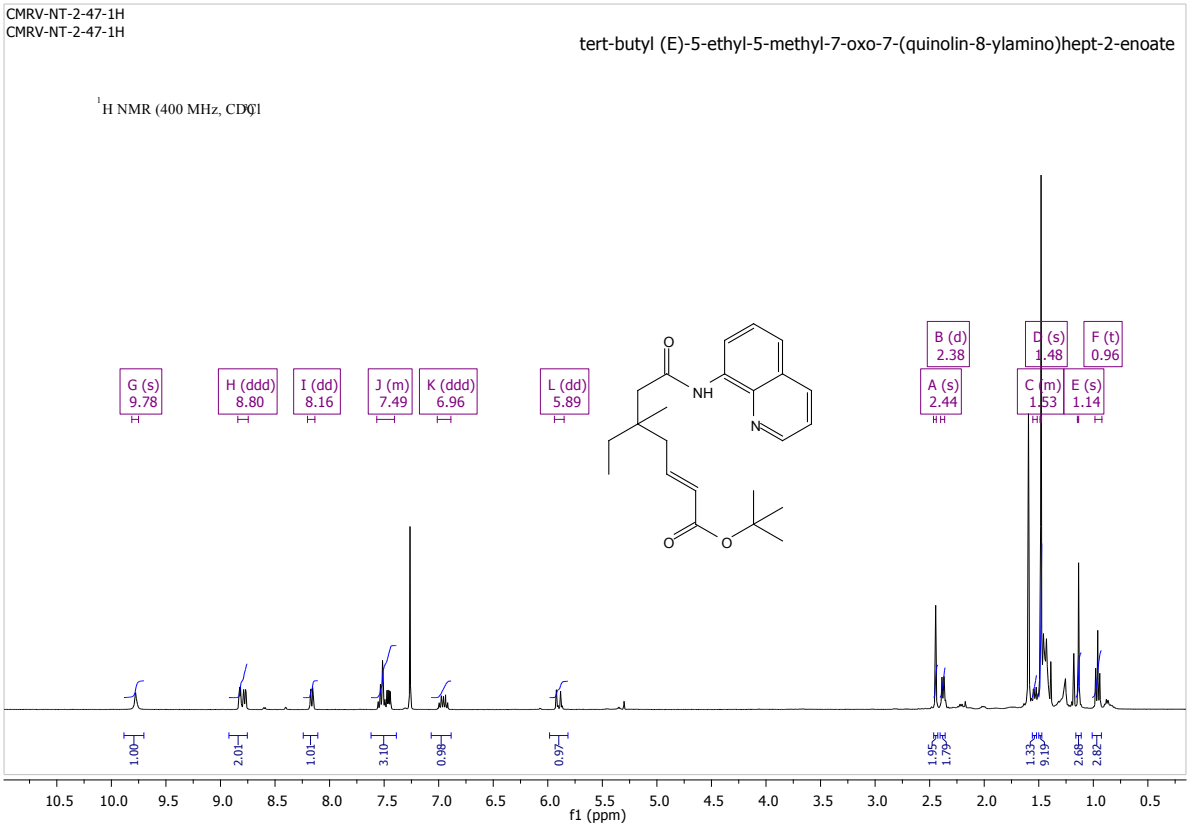

CMRV-NT-2-37-B2-13C
CMRV-NT-2-37-B2-13C
149.150
148.360
138.475
136.539
134.463
128.085
127.523
122.350
121.779
121.720
116.561
77.160
59.575
49.814
44.645
34.732
30.755
27.783
2,2,3,3,4,4,5,5,6,6,7,7-dodecafluoroheptyl (E)-5,5-dimethyl-7-oxo-7-(quinolin-8-ylamino)hept-2-enoate
f1 (ppm)

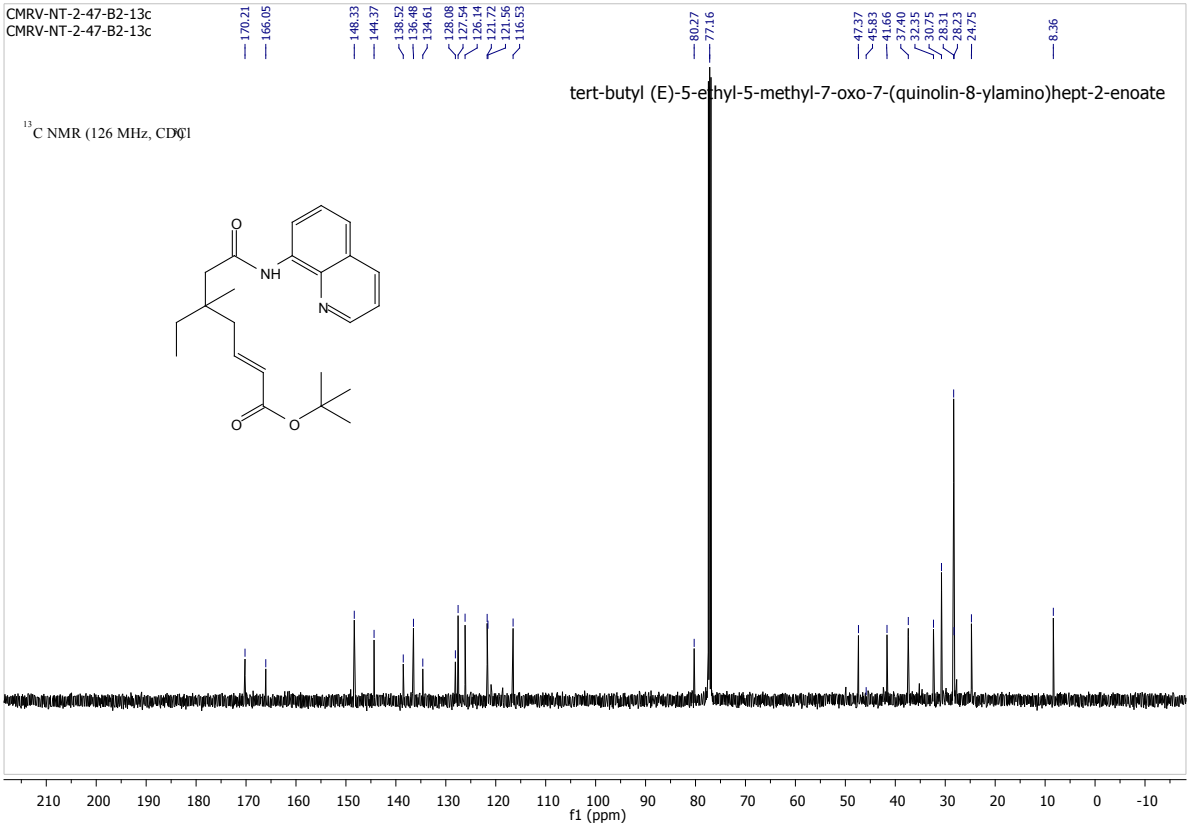

CMRV-SK-144-P-1H
CMRV-SK-144-P-1H
butyl (E)-7,7-dimethyl-5-(2-oxo-2-(quinolin-8-ylamino)ethyl)oct-2-enoate
1H NMR (400 MHz, CDCl3)
7.260
C (s) 9.78
D (ddd) 8.78
E (dd) 8.17
F (m) 7.49
G (m) 6.99
H (d) 5.90
I (m) 2.53
J (d) 2.37
K (tt) 1.59
L (ddd) 1.37
A (t) 0.92
B (s) 0.95
f1 (ppm)

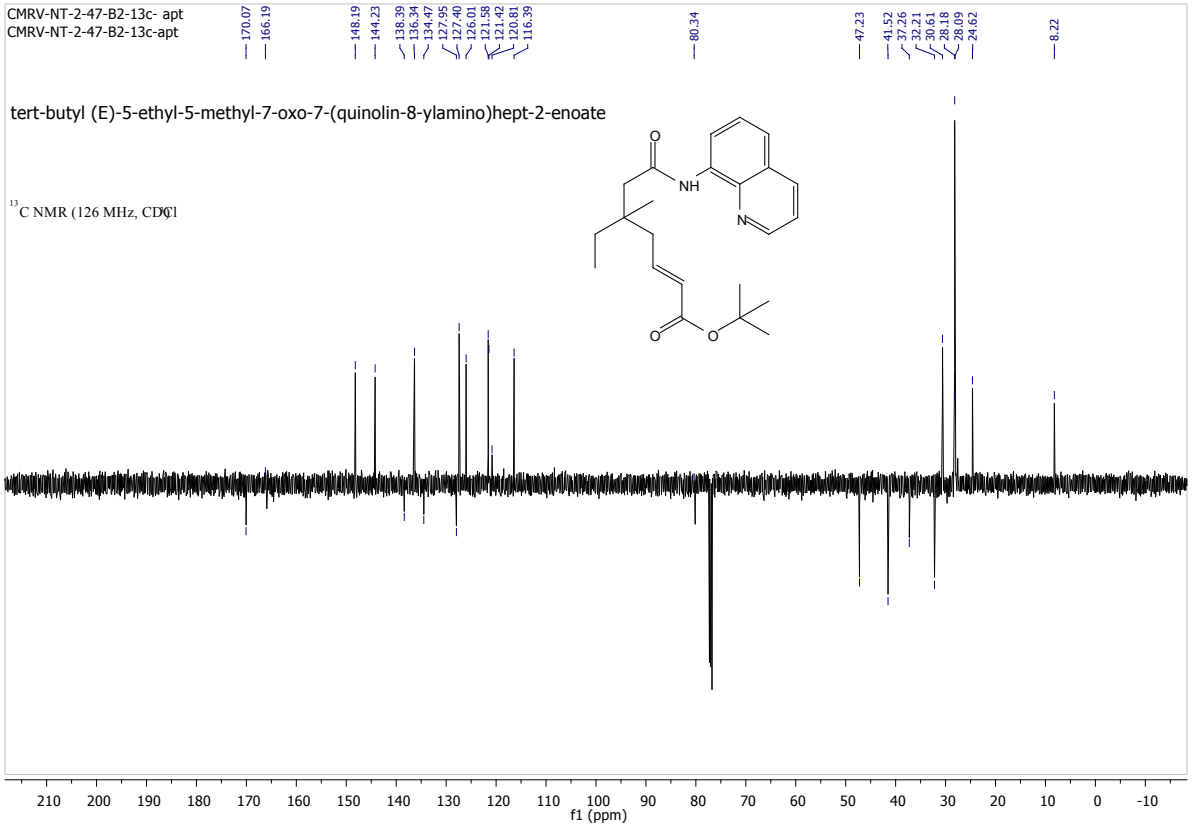

CMRV-SK-144-P-13C
CMRV-SK-144-P-13C
butyl (E)-7,7-dimethyl-5-(2-oxo-2-(quinolin-8-ylamino)ethyl)oct-2-enoate
13C NMR (101 MHz, CDCl3)
148.281
146.988
136.590
134.583
128.087
127.578
123.743
121.738
121.630
116.929
77.160
64.269
47.355
44.719
38.960
31.445
31.380
30.822
29.997
19.295
13.866
f1 (ppm)

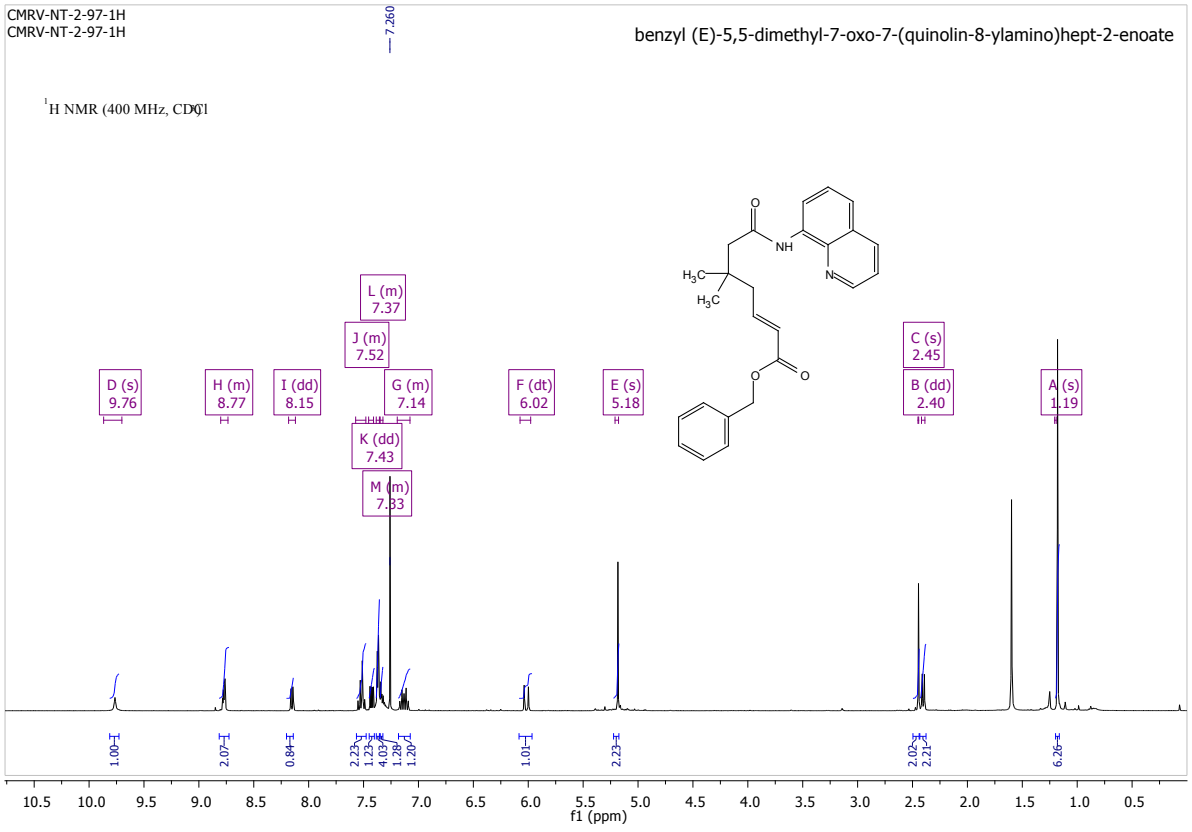

cmrv-nt-2-62-1h
cmrv-nt-2-62-1h
7.26
^{1}H NMR (500 MHz, CDCl)
ethyl (E)-5-ethyl-5-methyl-7-oxo-7-(quinolin-8-ylamino)hept-2-enoate
G (s) 9.78
H (m) 8.78
I (dd) 8.16
J (m) 7.48
K (m) 7.06
L (m) 5.95
M (dt) 4.18
B (m) 2.41
A (s) 2.45
D (m) 1.28
C (m) 1.55
E (s) 1.14
F (dd) 0.96
1.00
1.83
1.00
2.93
0.94
0.83
1.85
1.55
1.72
1.48
3.92
2.92
3.39
10.5 10.0 9.5 9.0 8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5
f1 (ppm)

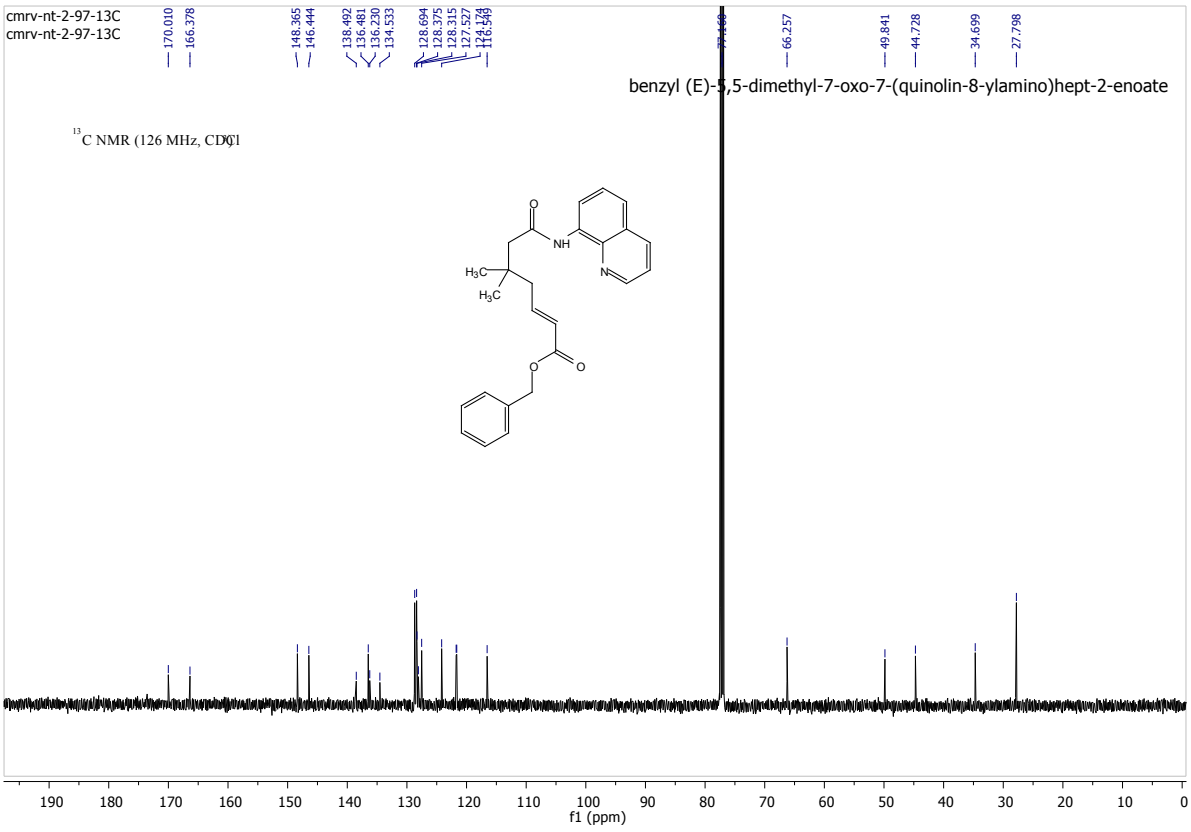

cmrv-nt-2-62-13c
cmrv-nt-2-62-13c
148.34
145.71
138.51
136.50
134.57
128.09
127.54
124.47
121.74
121.61
116.54
60.36
47.33
41.80
37.44
32.43
29.84
24.78
14.41
8.35
^{13}C NMR (101 MHz, CDCl)
180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10
f1 (ppm)

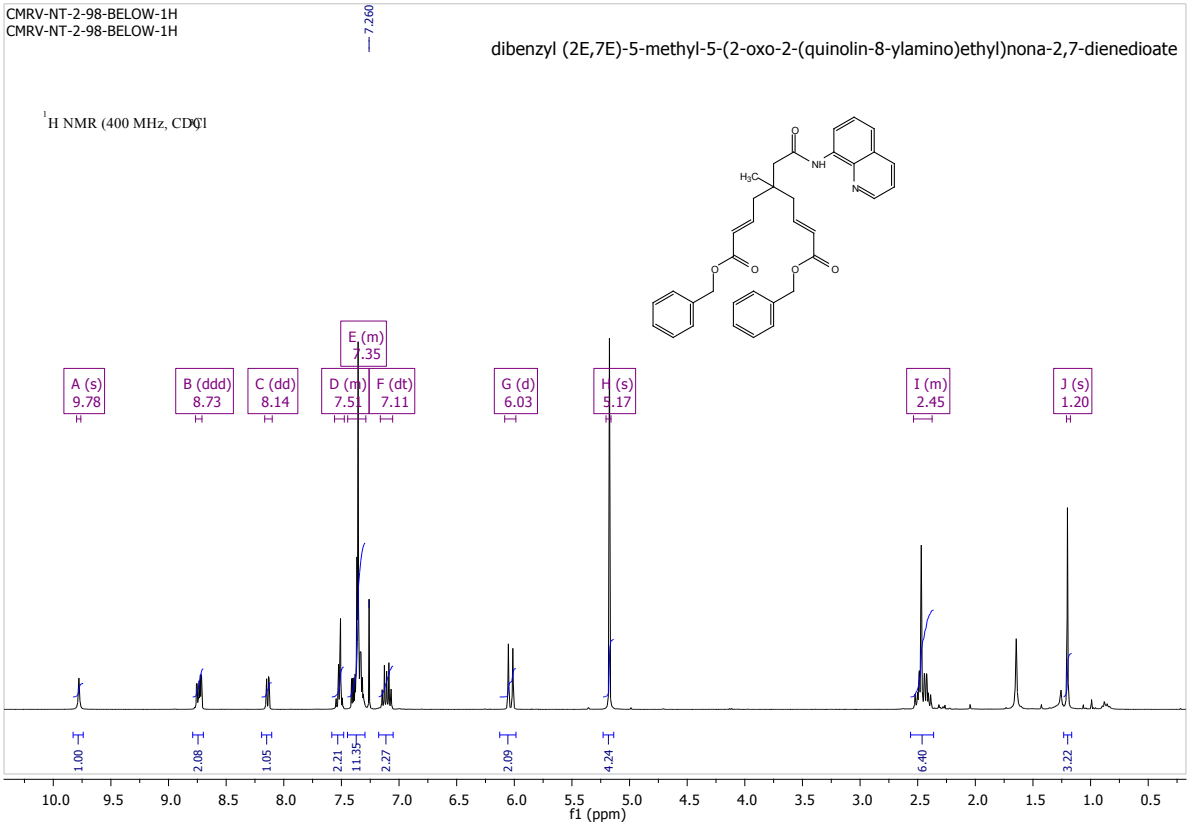

CMRV-NT-2-47-1H
CMRV-NT-2-47-1H
tert-butyl (E)-5-ethyl-5-methyl-7-oxo-7-(quinolin-8-ylamino)hept-2-enoate
1H NMR (400 MHz, CDCl3)
G (s) 9.78
H (ddd) 8.80
I (dd) 8.16
J (m) 7.49
K (ddd) 6.96
L (dd) 5.89
B (d) 2.38
A (s) 2.44
D (s) 1.48
C (m) 1.53
F (t) 0.96
E (s) 1.14
1.00
2.01
1.01
3.10
0.98
0.97
1.95
1.79
1.33
9.19
2.69
2.82
f1 (ppm)

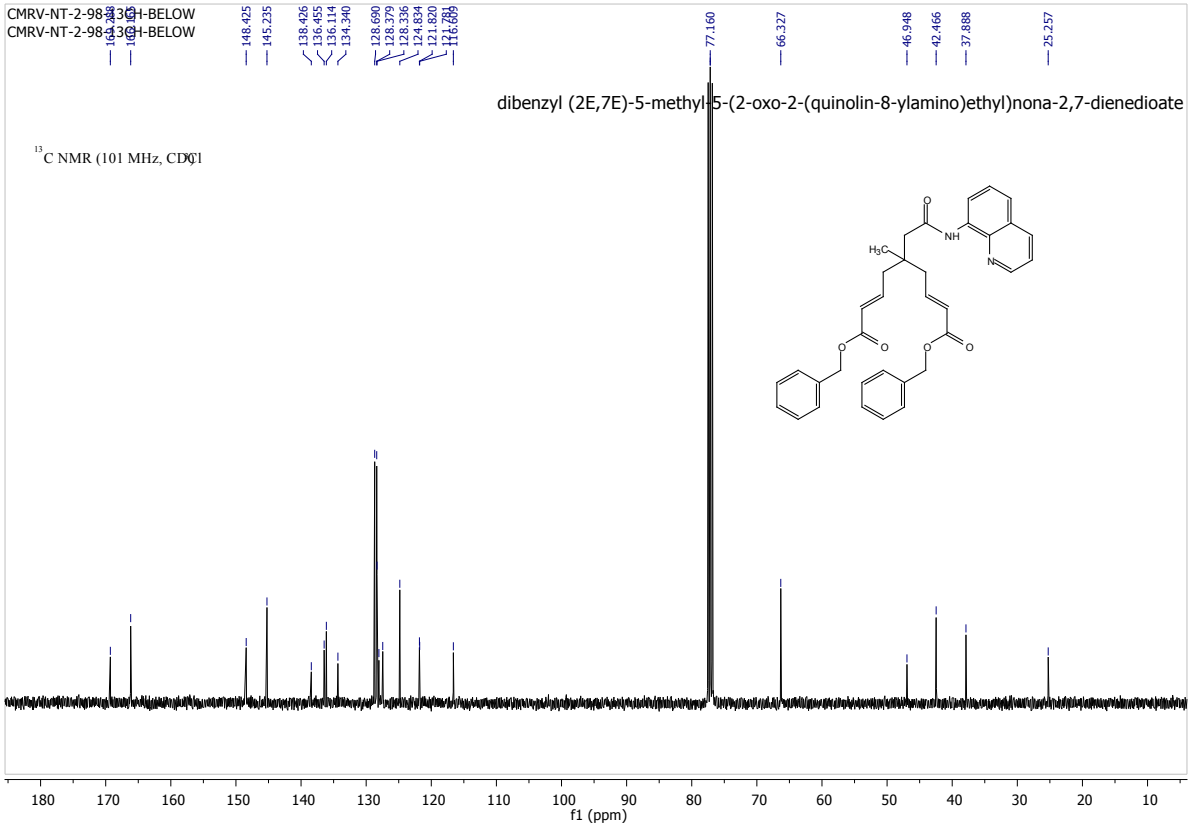

CMRV-NT-2-47-B2-13c
CMRV-NT-2-47-B2-13c
170.21
166.05
148.33
144.37
138.52
136.48
134.61
128.08
127.54
126.14
121.72
121.56
116.53
80.27
77.16
47.37
45.83
41.66
37.40
32.35
30.75
28.31
28.23
24.75
8.36
tert-butyl (E)-5-ethyl-5-methyl-7-oxo-7-(quinolin-8-ylamino)hept-2-enoate
13C NMR (126 MHz, CDCl3)
f1 (ppm)

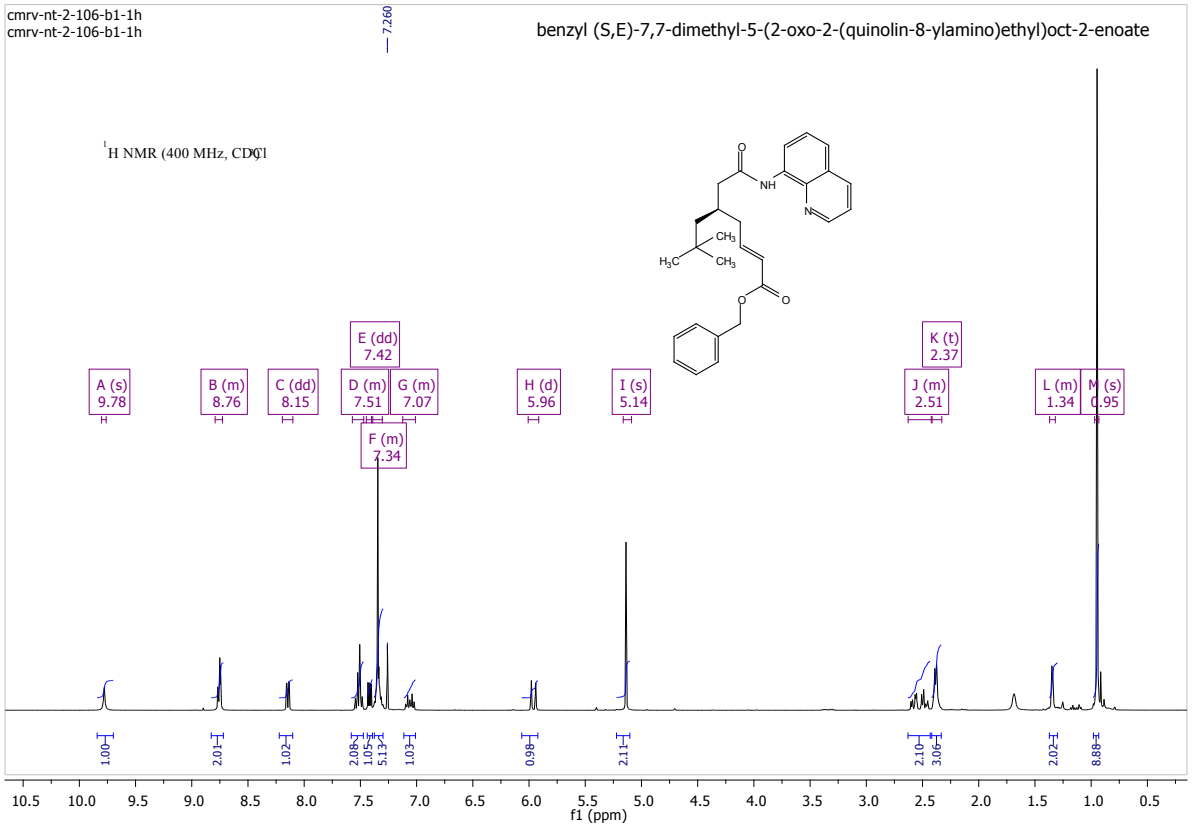

CMRV-NT-2-47-B2-13c- apt
CMRV-NT-2-47-B2-13c-apt
170.07
166.19
148.19
144.23
138.39
136.34
134.47
127.95
127.40
126.01
121.58
121.42
120.81
116.39
80.34
47.23
41.52
37.26
32.21
30.61
28.18
28.09
24.62
8.22
tert-butyl (E)-5-ethyl-5-methyl-7-oxo-7-(quinolin-8-ylamino)hept-2-enoate
13C NMR (126 MHz, CDCl3)
f1 (ppm)

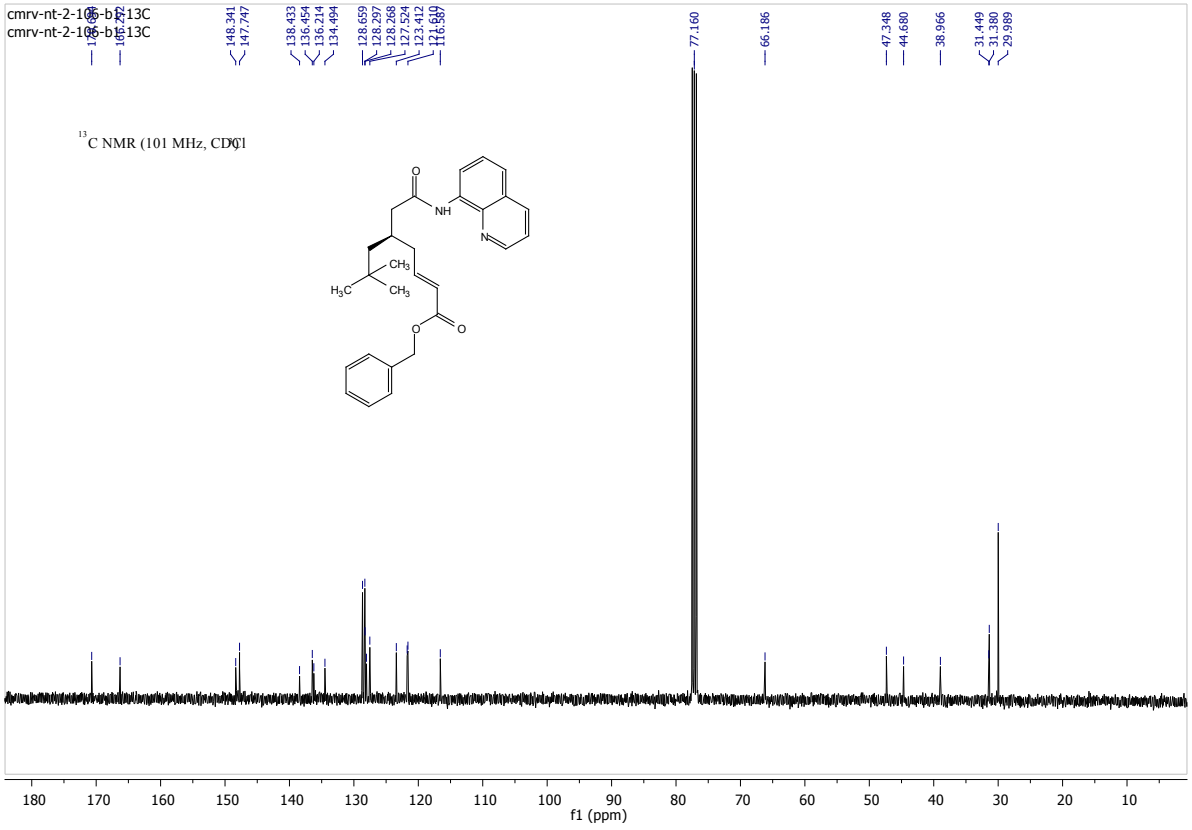

CMRV-NT-2-97-1H
CMRV-NT-2-97-1H
7.260
benzyl (E)-5,5-dimethyl-7-oxo-7-(quinolin-8-ylamino)hept-2-enoate
1H NMR (400 MHz, CDCl3)
D (s) 9.76
H (m) 8.77
I (dd) 8.15
L (m) 7.37
J (m) 7.52
G (m) 7.14
K (dd) 7.43
M (m) 7.83
F (dt) 6.02
E (s) 5.18
C (s) 2.45
B (dd) 2.40
A (s) 1.19
f1 (ppm)

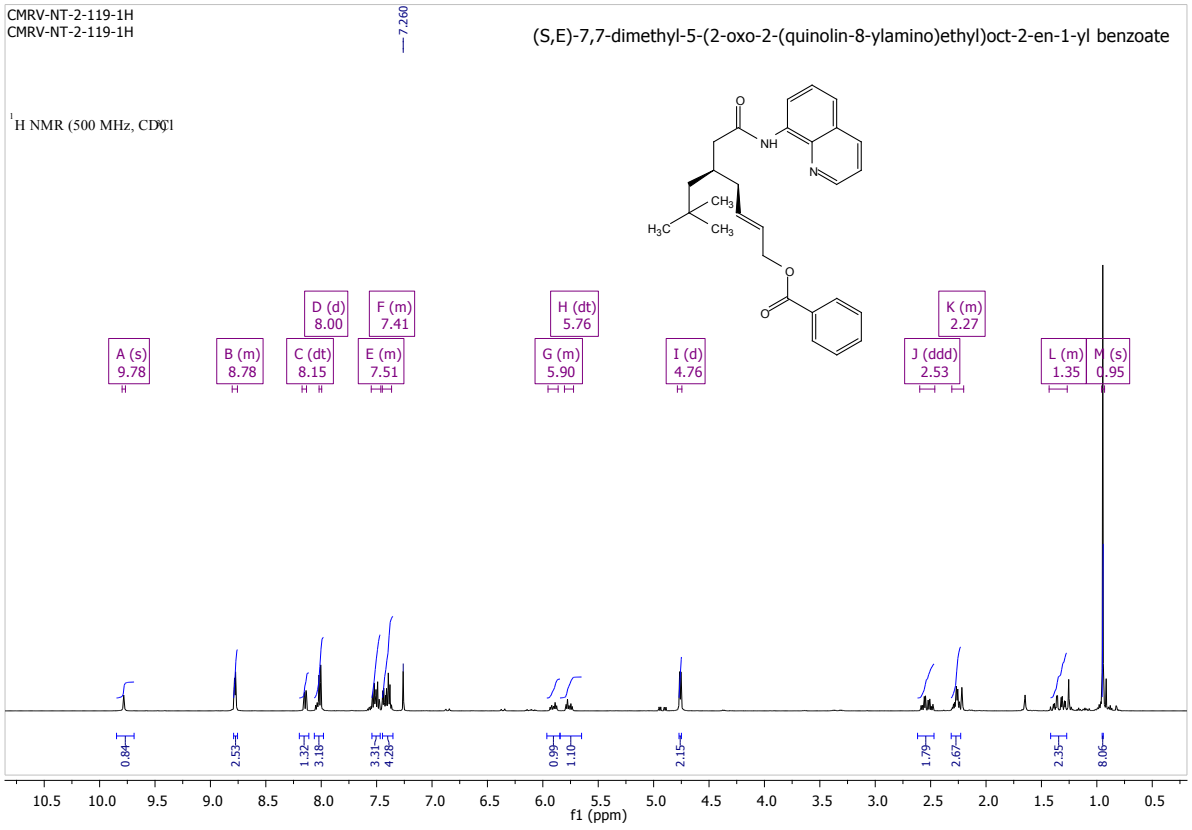

cmrv-nt-2-97-13C
cmrv-nt-2-97-13C
170.010
166.378
148.365
146.444
138.492
136.481
136.230
134.533
128.694
128.375
128.315
127.527
77.160
66.257
49.841
44.728
34.699
27.798
benzyl (E)-5,5-dimethyl-7-oxo-7-(quinolin-8-ylamino)hept-2-enoate
13C NMR (126 MHz, CDCl3)
f1 (ppm)

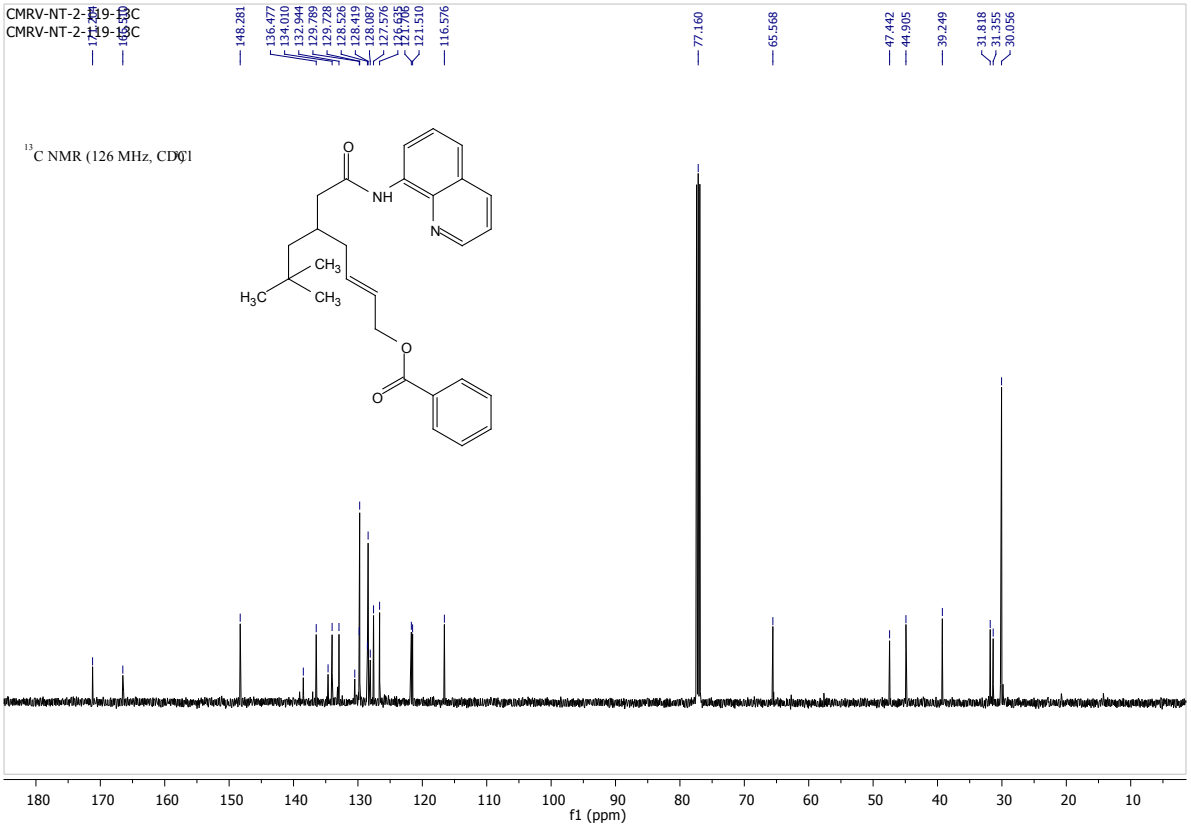

CMRV-NT-2-98-BELOW-1H
CMRV-NT-2-98-BELOW-1H
7.260
dibenzyl (2E,7E)-5-methyl-5-(2-oxo-2-(quinolin-8-ylamino)ethyl)nona-2,7-dienedioate
1H NMR (400 MHz, CDCl3)
A (s) 9.78
B (ddd) 8.73
C (dd) 8.14
D (m) 7.51
E (m) 7.35
F (dt) 7.11
G (d) 6.03
H (s) 5.17
I (m) 2.45
J (s) 1.20
1.00
2.08
1.05
2.21
11.35
2.27
2.09
4.24
6.40
3.22
f1 (ppm)

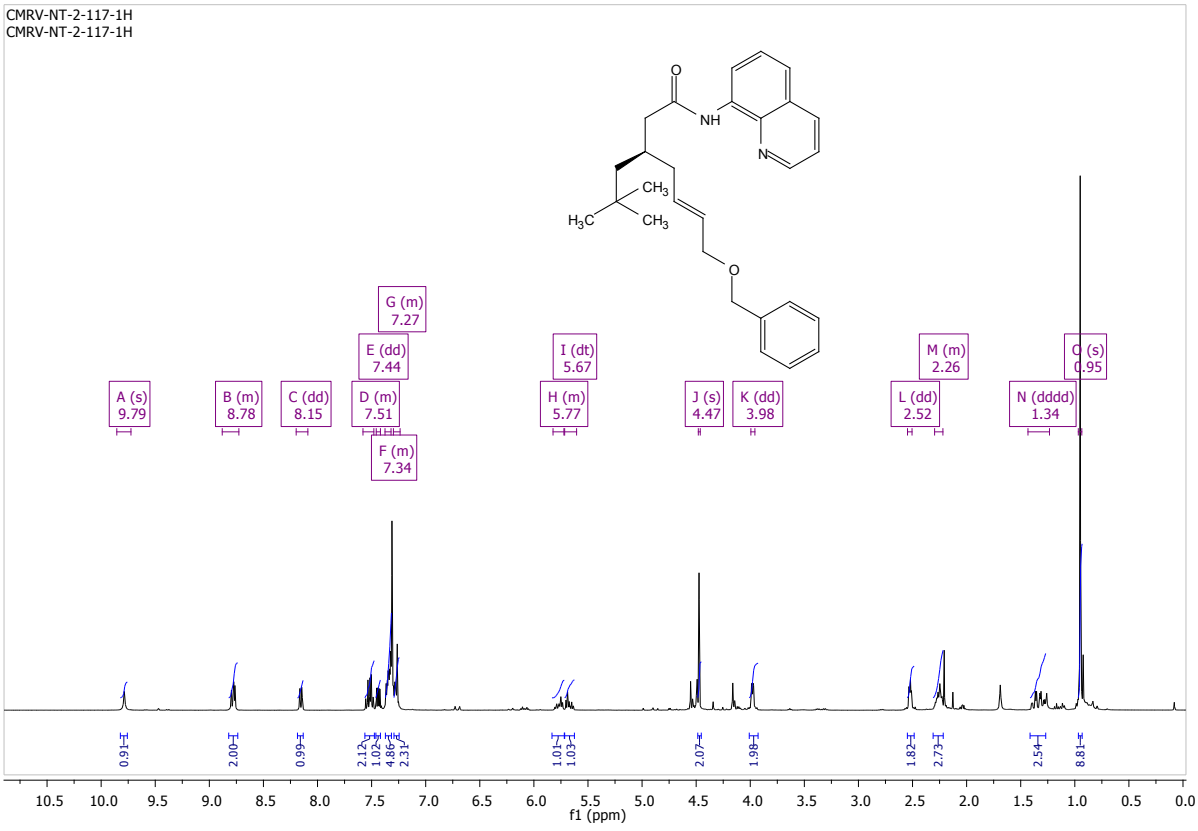

CMRV-NT-2-98-13C-H-BELOW
CMRV-NT-2-98-13C-H-BELOW
148.425
145.235
138.426
136.455
136.114
134.340
128.690
128.379
128.336
124.834
121.820
77.160
66.327
46.948
42.466
37.888
25.257
dibenzyl (2E,7E)-5-methyl-5-(2-oxo-2-(quinolin-8-ylamino)ethyl)nona-2,7-dienedioate
13C NMR (101 MHz, CDCl3)
f1 (ppm)

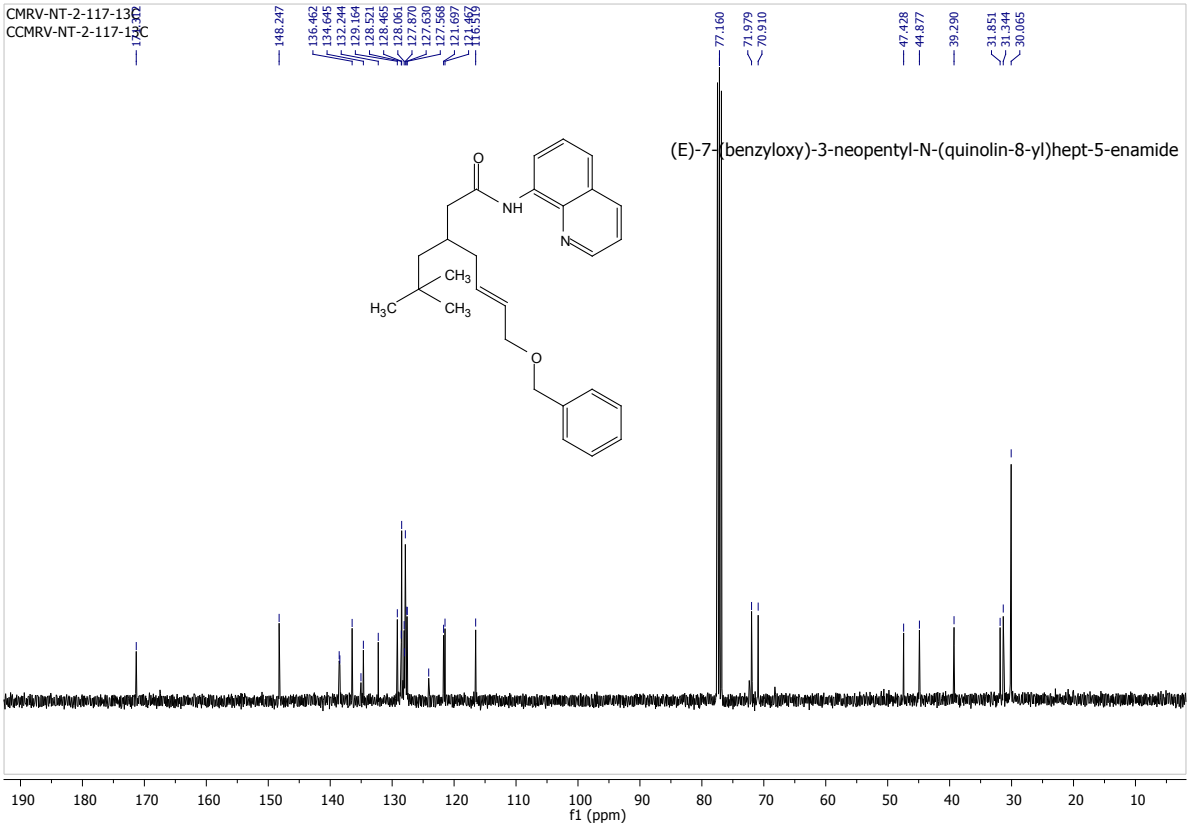

cmrv-nt-2-106-b1-1h
cmrv-nt-2-106-b1-1h
7.260
benzyl (S,E)-7,7-dimethyl-5-(2-oxo-2-(quinolin-8-ylamino)ethyl)oct-2-enoate
1H NMR (400 MHz, CDCl3)
A (s) 9.78
B (m) 8.76
C (dd) 8.15
D (m) 7.51
E (dd) 7.42
F (m) 7.34
G (m) 7.07
H (d) 5.96
I (s) 5.14
J (m) 2.51
K (t) 2.37
L (m) 1.34
M (s) 0.95
f1 (ppm)

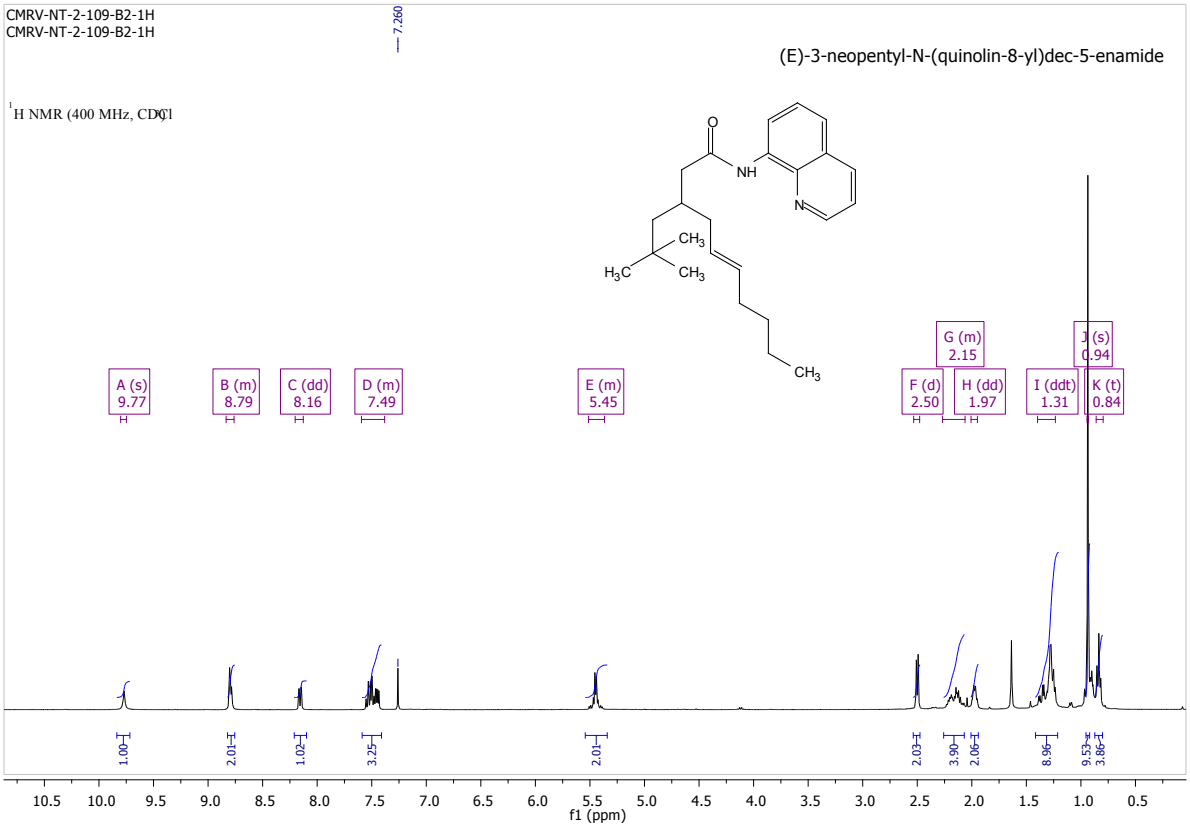

cmrv-nt-2-106-b-13C
cmrv-nt-2-106-b-13C
148.341
147.747
138.433
136.454
136.214
134.494
128.659
128.297
128.268
127.524
123.412
77.160
66.186
47.348
44.680
38.966
31.449
31.380
29.989
13C NMR (101 MHz, CDCl3)
f1 (ppm)

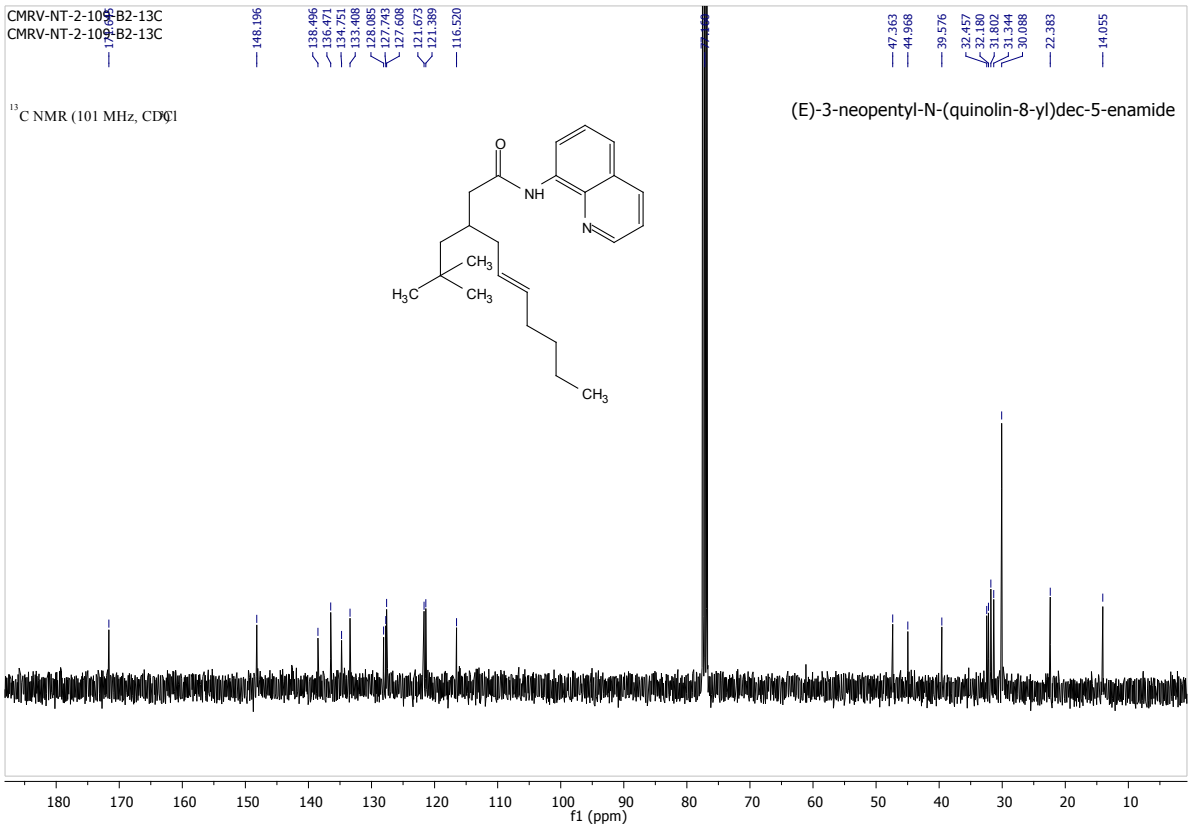

CMRV-NT-2-119-1H
CMRV-NT-2-119-1H
7.260
(S,E)-7,7-dimethyl-5-(2-oxo-2-(quinolin-8-ylamino)ethyl)oct-2-en-1-yl benzoate
1H NMR (500 MHz, CDCl3)
A (s) 9.78
B (m) 8.78
C (dt) 8.15
D (d) 8.00
E (m) 7.51
F (m) 7.41
G (m) 5.90
H (dt) 5.76
I (d) 4.76
J (ddd) 2.53
K (m) 2.27
L (m) 1.35
M (s) 0.95
f1 (ppm)

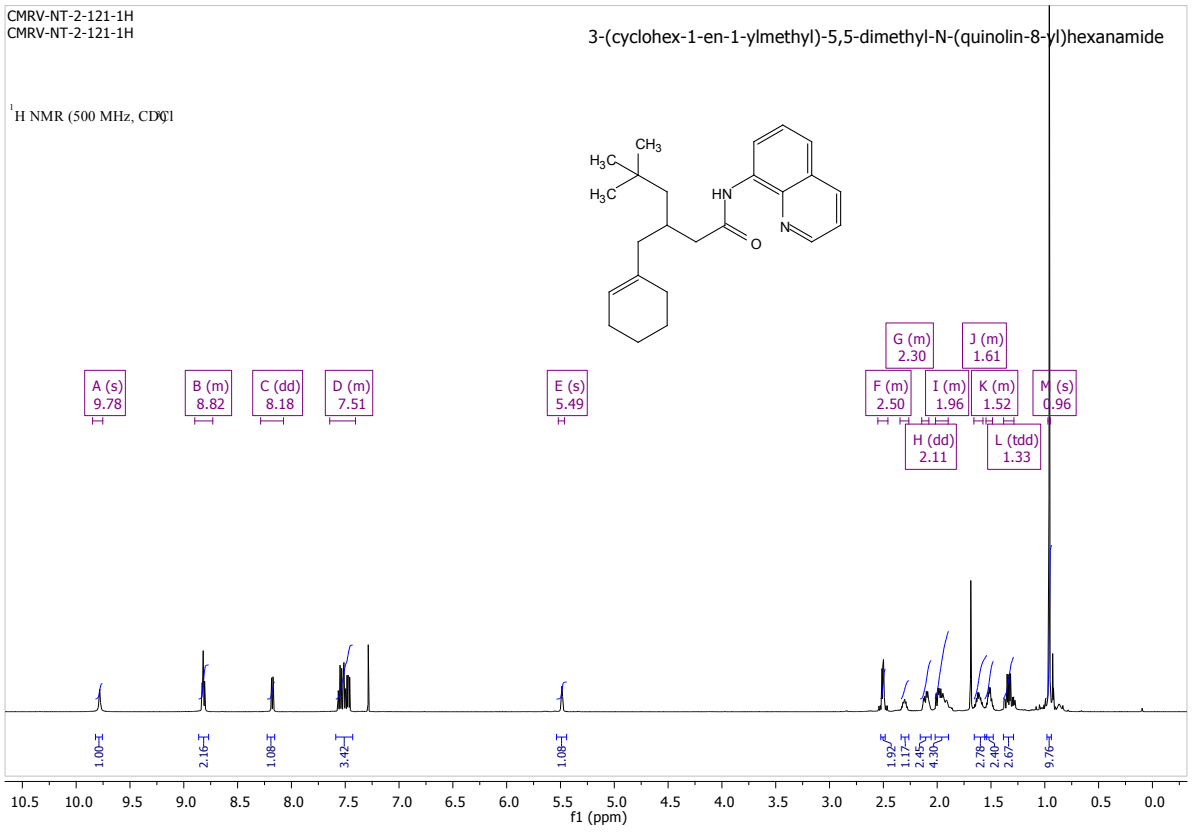

CMRV-NT-2-119-13C
CMRV-NT-2-119-13C
148.281
136.477
134.010
132.944
129.789
129.728
128.526
128.419
128.087
127.576
126.635
121.708
121.510
116.576
77.160
65.568
47.442
44.905
39.249
31.818
31.355
30.056
13C NMR (126 MHz, CDCl
O
NH
N
CH3
H3C
CH3
O
O
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
f1 (ppm)

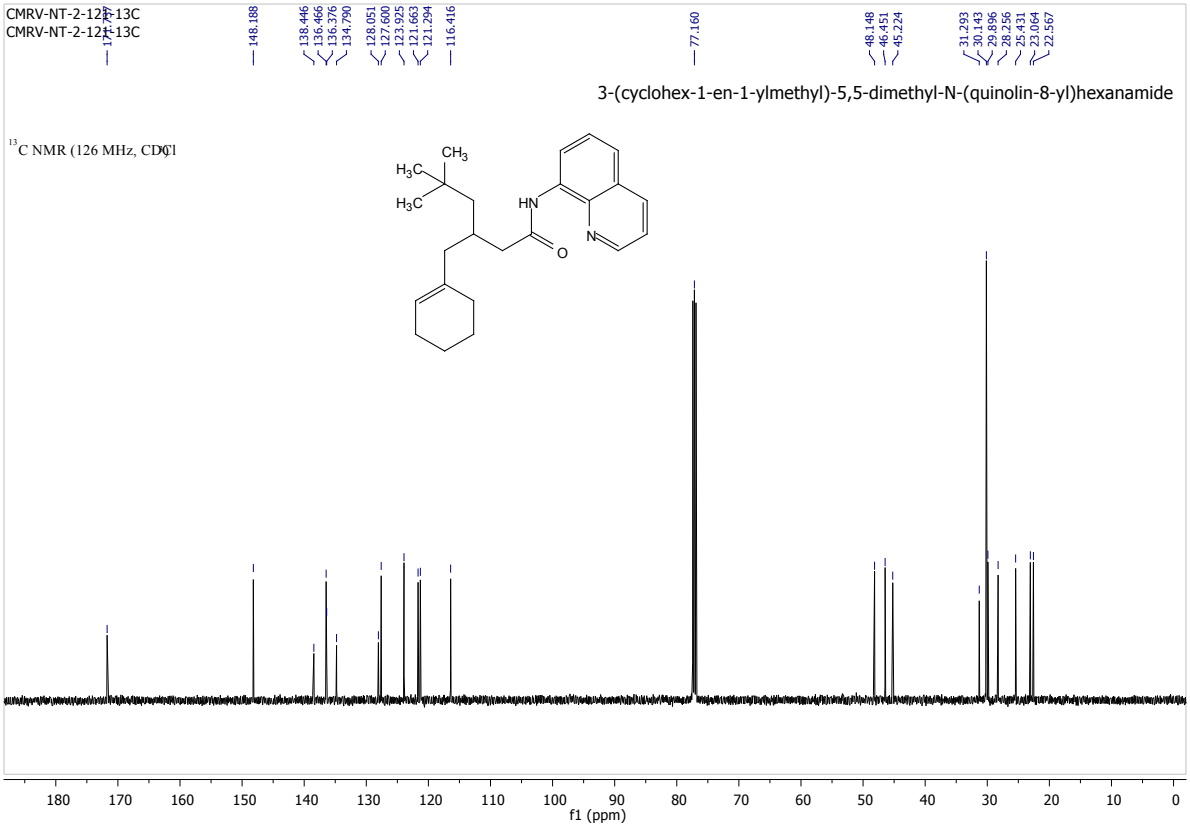

CMRV-NT-2-117-1H
CMRV-NT-2-117-1H
O
NH
N
CH3
H3C
CH3
O
A (s) 9.79
B (m) 8.78
C (dd) 8.15
D (m) 7.51
E (dd) 7.44
F (m) 7.34
G (m) 7.27
H (m) 5.77
I (dt) 5.67
J (s) 4.47
K (dd) 3.98
L (dd) 2.52
M (m) 2.26
N (dddd) 1.34
O (s) 0.95
0.91
2.00
0.99
2.12
1.02
4.86
2.31
1.01
1.03
2.07
1.98
1.82
2.73
2.54
8.81
10.5
10.0
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
f1 (ppm)

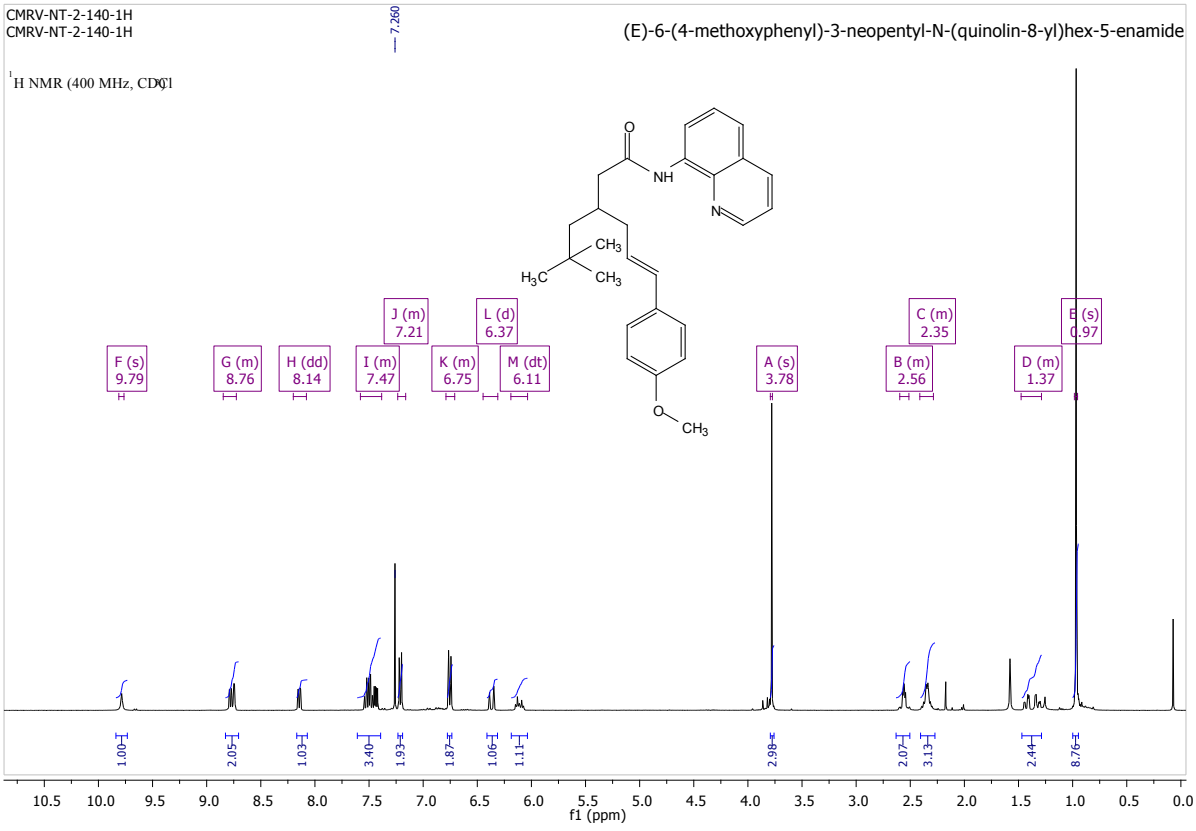

CMRV-NT-2-117-13C
CCMRV-NT-2-117-13C
148.247
136.462
134.645
132.244
129.164
128.521
128.465
128.061
127.870
127.630
127.568
121.697
121.467
116.519
77.160
71.979
70.910
47.428
44.877
39.290
31.851
31.344
30.065
(E)-7-(benzyloxy)-3-neopentyl-N-(quinolin-8-yl)hept-5-enamide
NH
N
O
CH3
H3C
CH3
O
f1 (ppm)

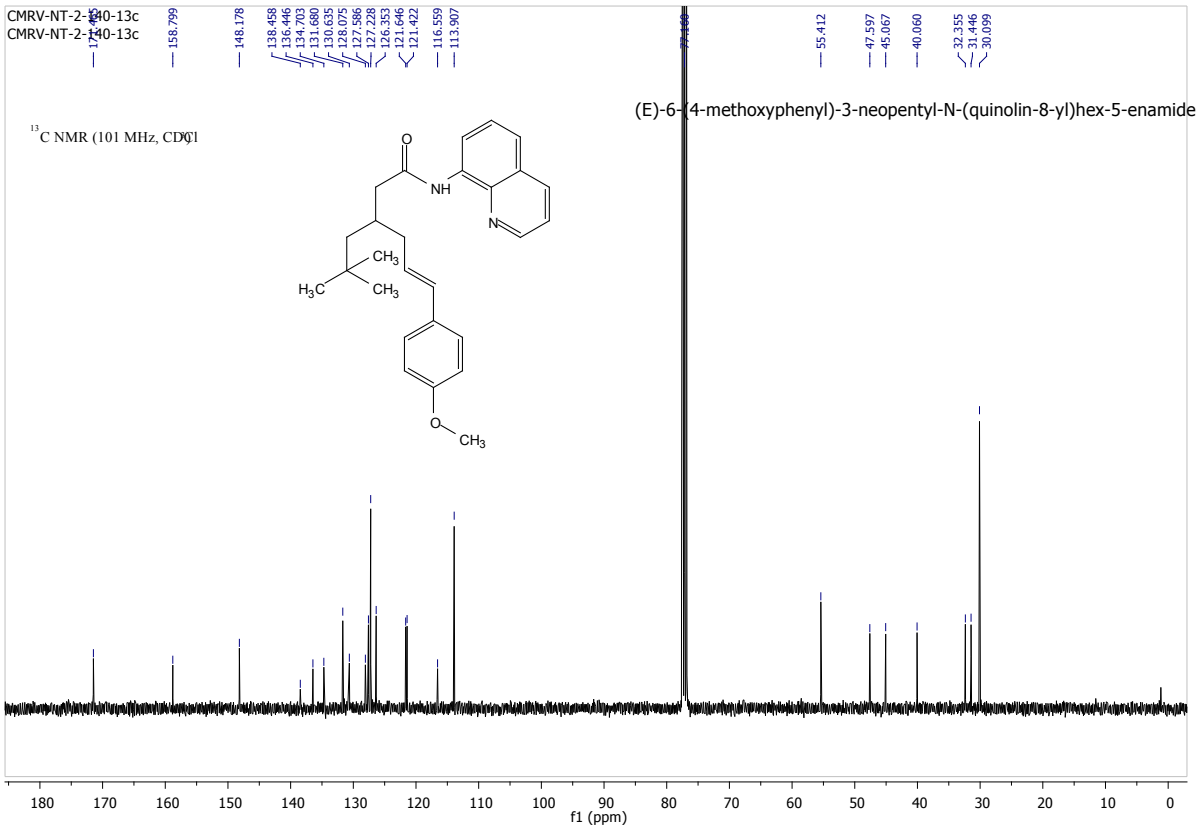

CMRV-NT-2-109-B2-1H
CMRV-NT-2-109-B2-1H
7.260
(E)-3-neopentyl-N-(quinolin-8-yl)dec-5-enamide
1H NMR (400 MHz, CDCl
A (s) 9.77
B (m) 8.79
C (dd) 8.16
D (m) 7.49
E (m) 5.45
F (d) 2.50
G (m) 2.15
H (dd) 1.97
I (ddt) 1.31
J (s) 0.94
K (t) 0.84
NH
N
O
CH3
H3C
CH3
CH3
f1 (ppm)

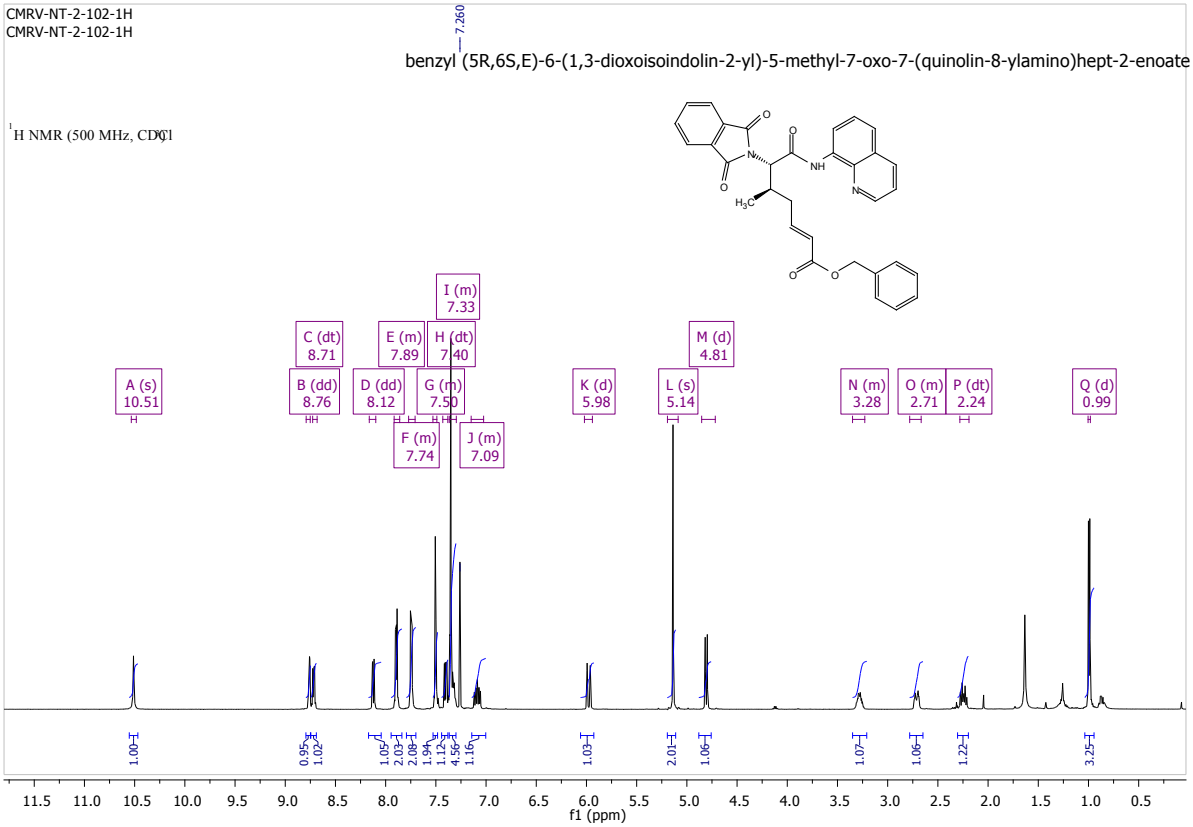

CMRV-NT-2-109-B2-13C
CMRV-NT-2-109-B2-13C
148.196
138.496
136.471
134.751
133.408
128.085
127.743
127.608
121.673
121.389
116.520
47.363
44.968
39.576
32.457
32.180
31.802
31.344
30.088
22.383
14.055
(E)-3-neopentyl-N-(quinolin-8-yl)dec-5-enamide
f1 (ppm)

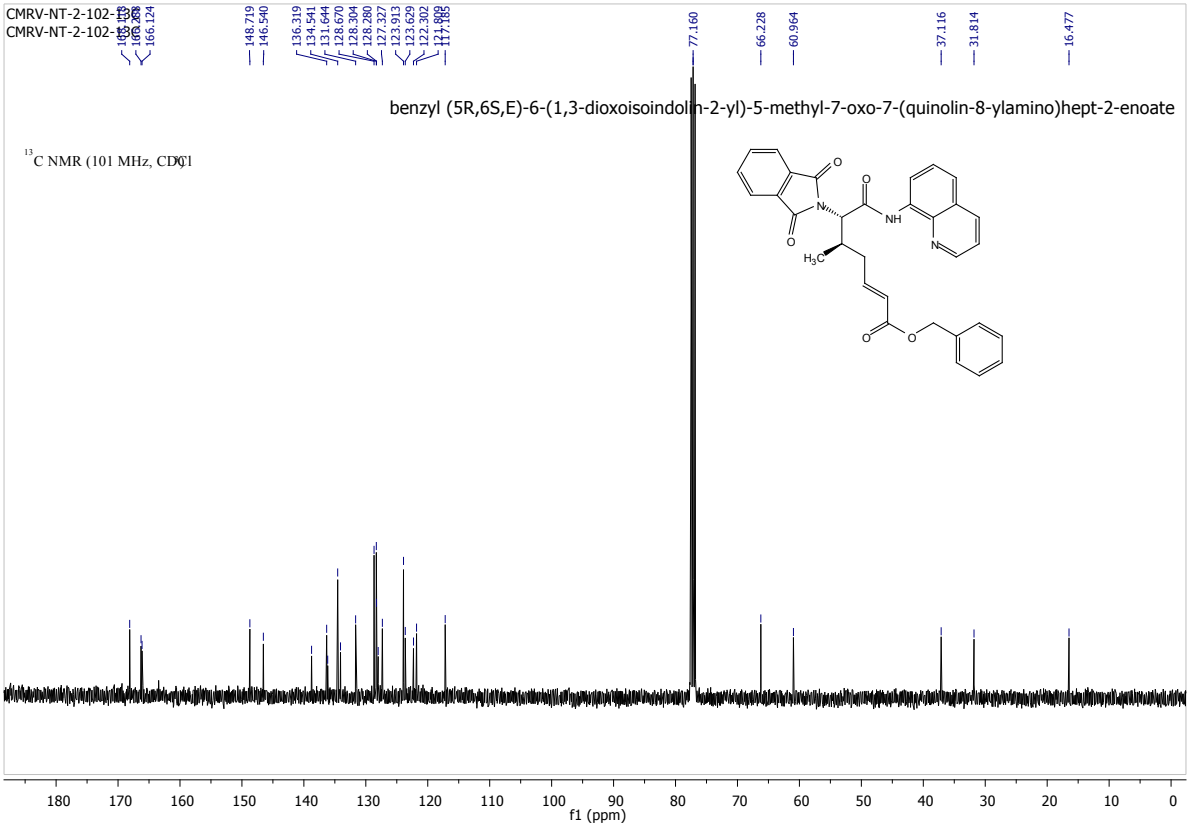

CMRV-NT-2-121-1H
CMRV-NT-2-121-1H
3-(cyclohex-1-en-1-ylmethyl)-5,5-dimethyl-N-(quinolin-8-yl)hexanamide
A (s) 9.78
B (m) 8.82
C (dd) 8.18
D (m) 7.51
E (s) 5.49
F (m) 2.50
G (m) 2.30
H (dd) 2.11
I (m) 1.96
J (m) 1.61
K (m) 1.52
L (tdd) 1.33
M (s) 0.96
f1 (ppm)

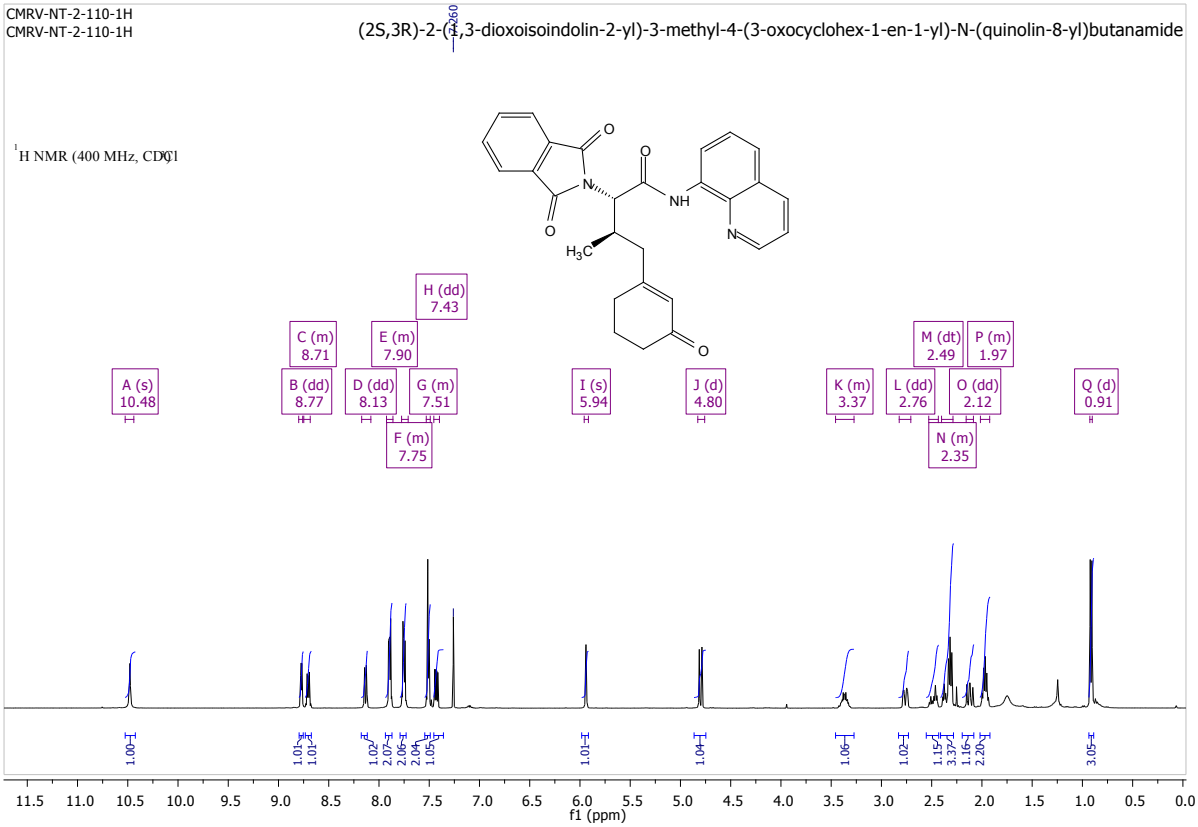

CMRV-NT-2-121-13C
CMRV-NT-2-121-13C
148.188
138.446
136.466
136.376
134.790
128.051
127.600
123.925
121.663
121.294
116.416
77.160
48.148
46.451
45.224
31.293
30.143
29.896
28.256
25.431
23.064
22.567
3-(cyclohex-1-en-1-ylmethyl)-5,5-dimethyl-N-(quinolin-8-yl)hexanamide
13C NMR (126 MHz, CDCl3)
f1 (ppm)

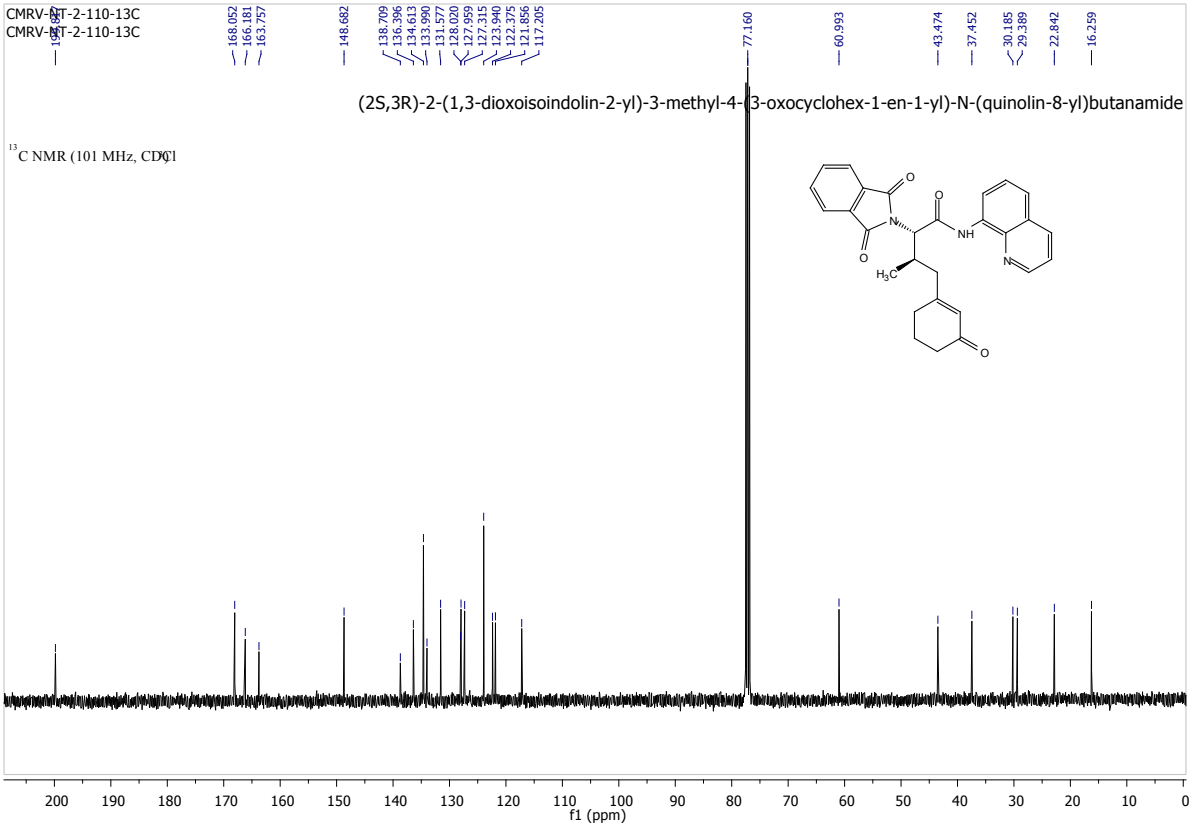

CMRV-NT-2-140-1H
CMRV-NT-2-140-1H
7.260
(E)-6-(4-methoxyphenyl)-3-neopentyl-N-(quinolin-8-yl)hex-5-enamide
1H NMR (400 MHz, CDCl3)
F (s) 9.79
G (m) 8.76
H (dd) 8.14
I (m) 7.47
J (m) 7.21
K (m) 6.75
L (d) 6.37
M (dt) 6.11
A (s) 3.78
B (m) 2.56
C (m) 2.35
D (m) 1.37
E (s) 0.97
f1 (ppm)

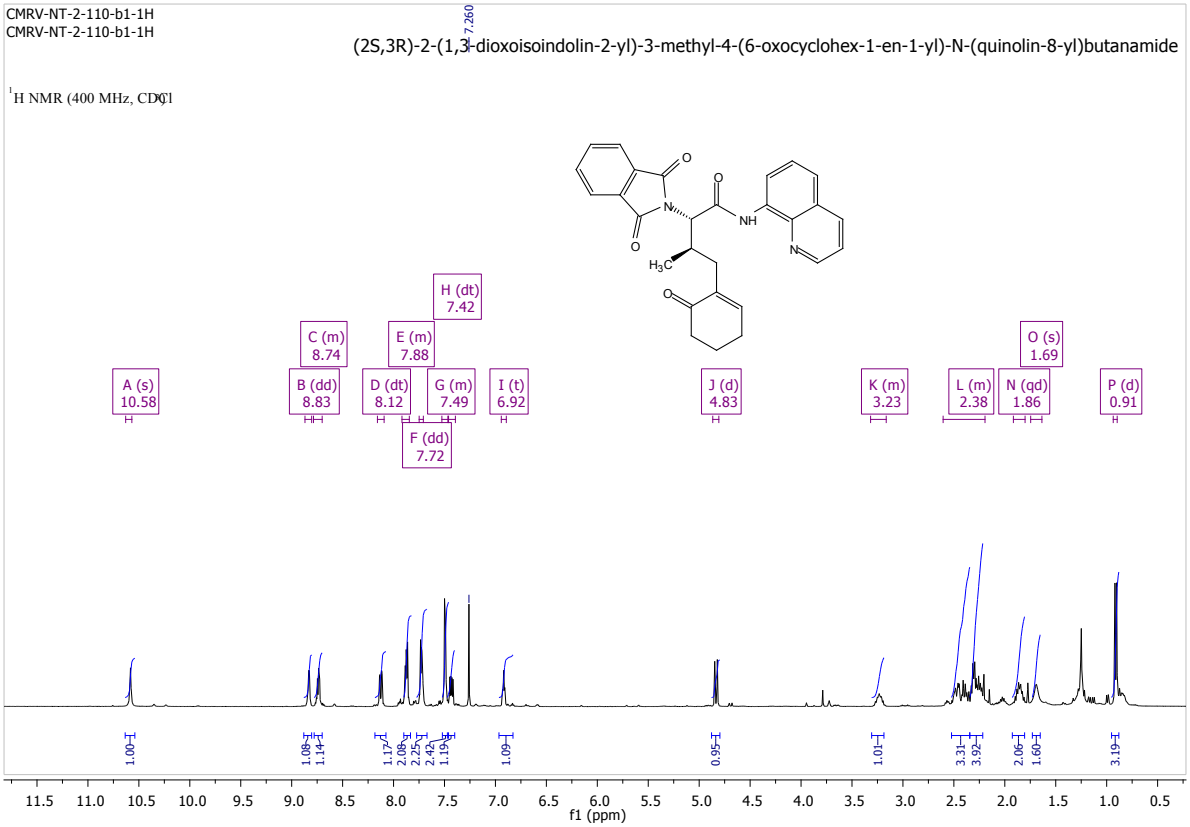

CMRV-NT-2-140-13c
CMRV-NT-2-140-13c
158.799
148.178
138.458
136.446
134.703
131.680
130.635
128.075
127.586
127.228
126.353
121.646
121.422
116.559
113.907
55.412
47.597
45.067
40.060
32.355
31.446
30.099
(E)-6-(4-methoxyphenyl)-3-neopentyl-N-(quinolin-8-yl)hex-5-enamide
^{13}C NMR (101 MHz, CDCl$_3$)
O
NH
N
CH$_3$
H$_3$C
CH$_3$
O
CH$_3$
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
f1 (ppm)

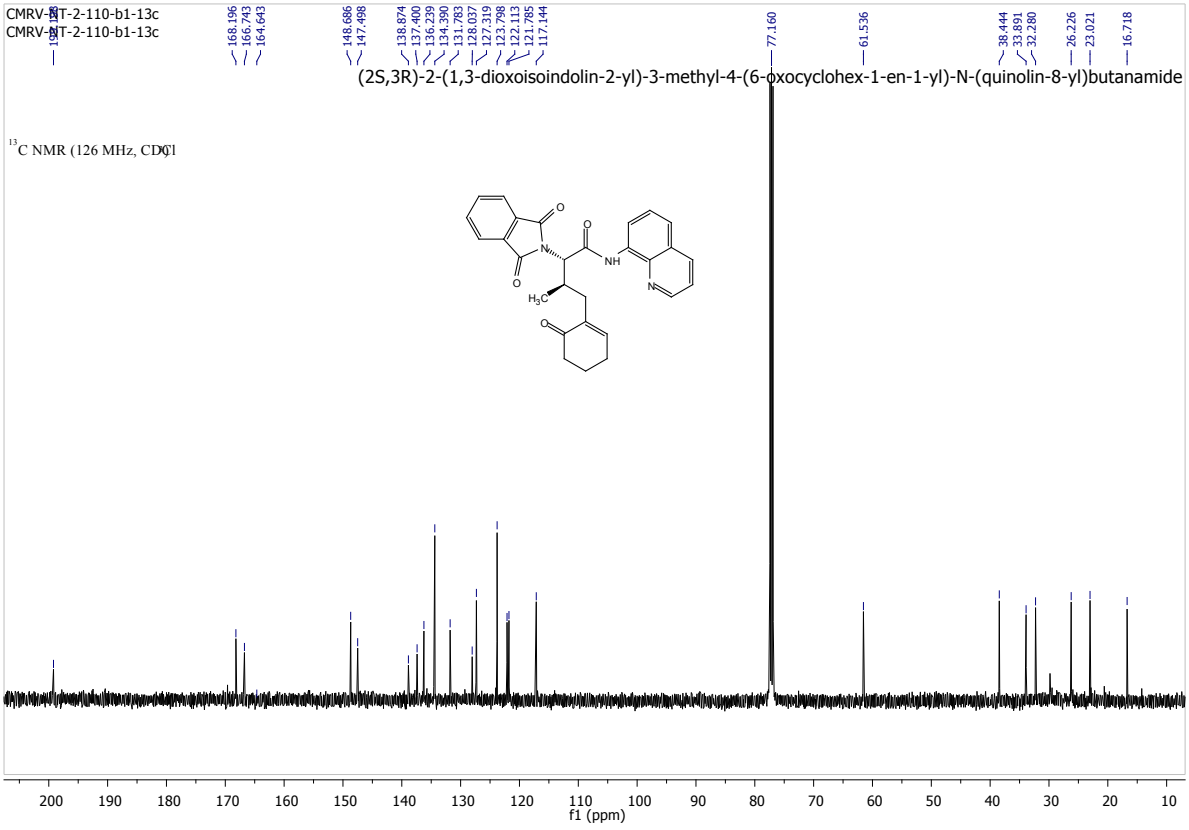

CMRV-NT-2-102-1H
CMRV-NT-2-102-1H
benzyl (5R,6S,E)-6-(1,3-dioxoisoindolin-2-yl)-5-methyl-7-oxo-7-(quinolin-8-ylamino)hept-2-enoate
1H NMR (500 MHz, CDCl3)
A (s) 10.51
B (dd) 8.76
C (dt) 8.71
D (dd) 8.12
E (m) 7.89
F (m) 7.74
G (m) 7.50
H (dt) 7.40
I (m) 7.33
J (m) 7.09
K (d) 5.98
L (s) 5.14
M (d) 4.81
N (m) 3.28
O (m) 2.71
P (dt) 2.24
Q (d) 0.99
f1 (ppm)

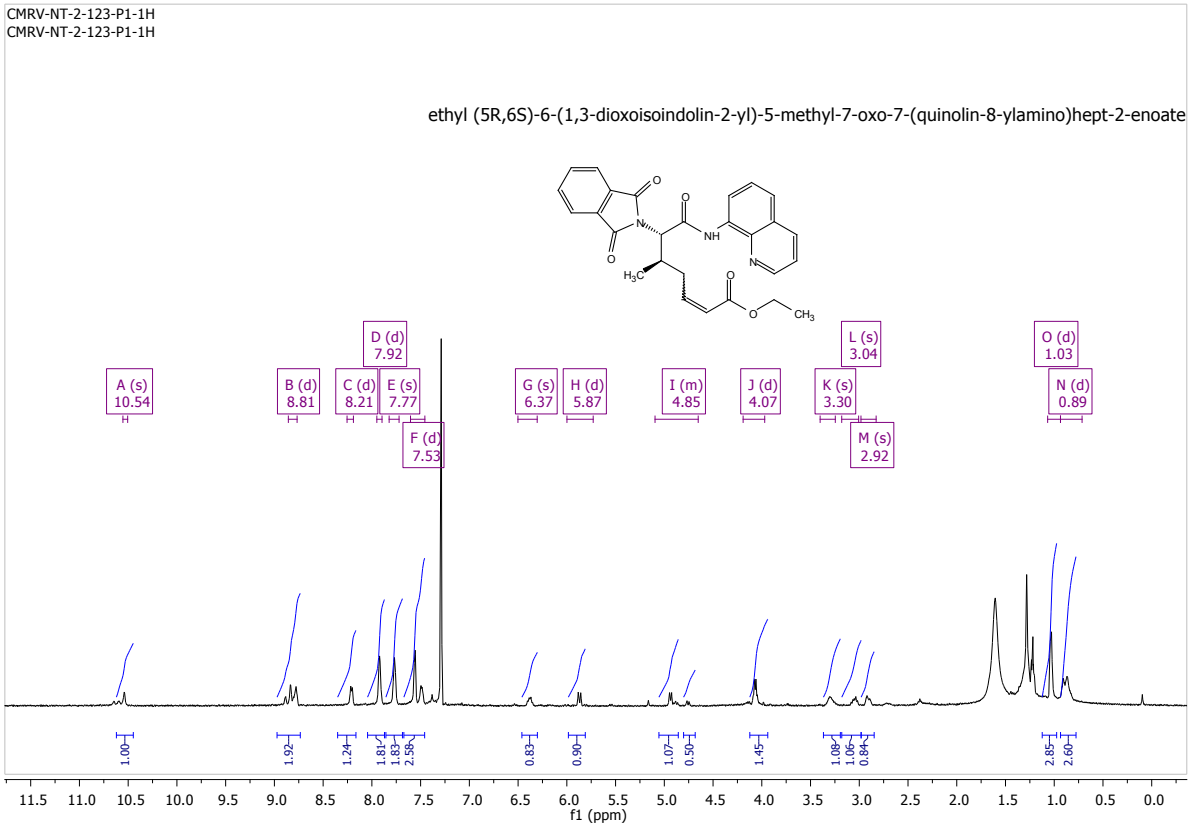

CMRV-NT-2-102-13C
CMRV-NT-2-102-13C
benzyl (5R,6S,E)-6-(1,3-dioxoisoindolin-2-yl)-5-methyl-7-oxo-7-(quinolin-8-ylamino)hept-2-enoate
13C NMR (101 MHz, CDCl3)
f1 (ppm)

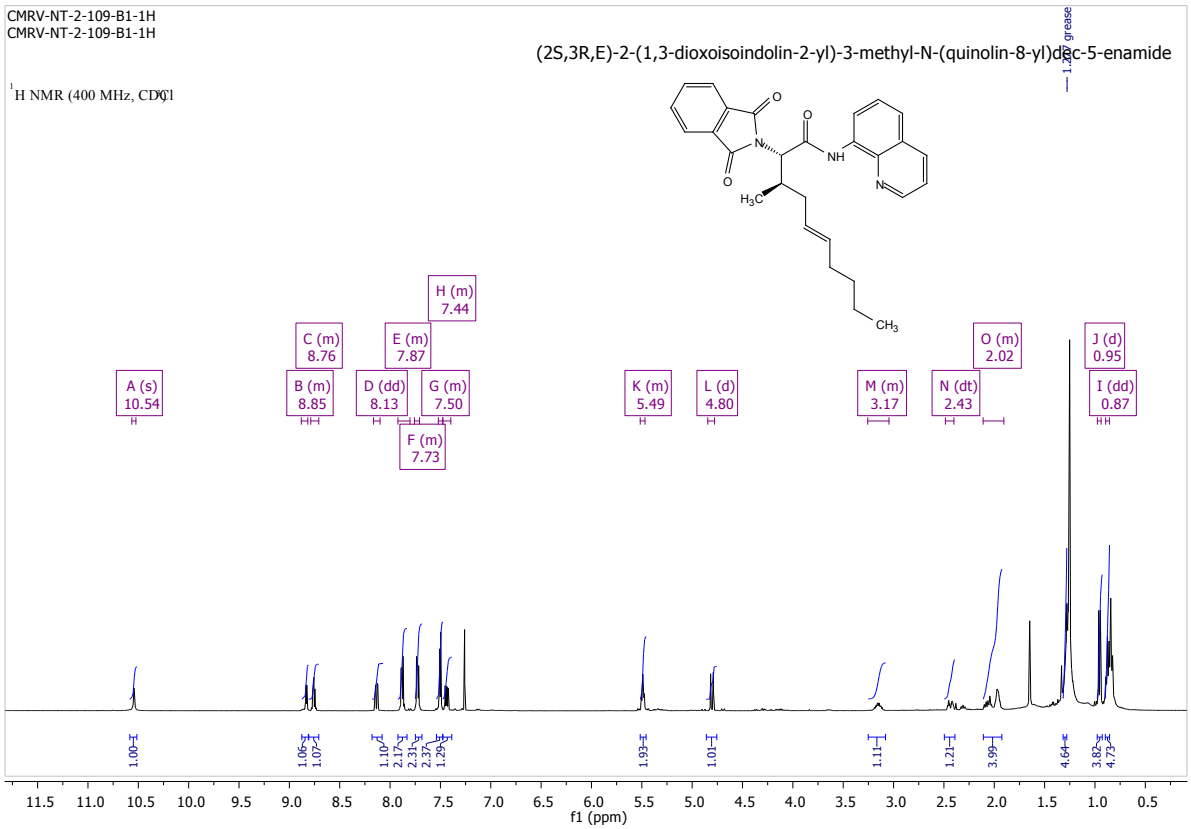

CMRV-NT-2-110-1H
CMRV-NT-2-110-1H
(2S,3R)-2-(1,3-dioxoisoindolin-2-yl)-3-methyl-4-(3-oxocyclohex-1-en-1-yl)-N-(quinolin-8-yl)butanamide
1H NMR (400 MHz, CDCl3)
A (s) 10.48
B (dd) 8.77
C (m) 8.71
D (dd) 8.13
E (m) 7.90
F (m) 7.75
G (m) 7.51
H (dd) 7.43
I (s) 5.94
J (d) 4.80
K (m) 3.37
L (dd) 2.76
M (dt) 2.49
N (m) 2.35
O (dd) 2.12
P (m) 1.97
Q (d) 0.91
f1 (ppm)

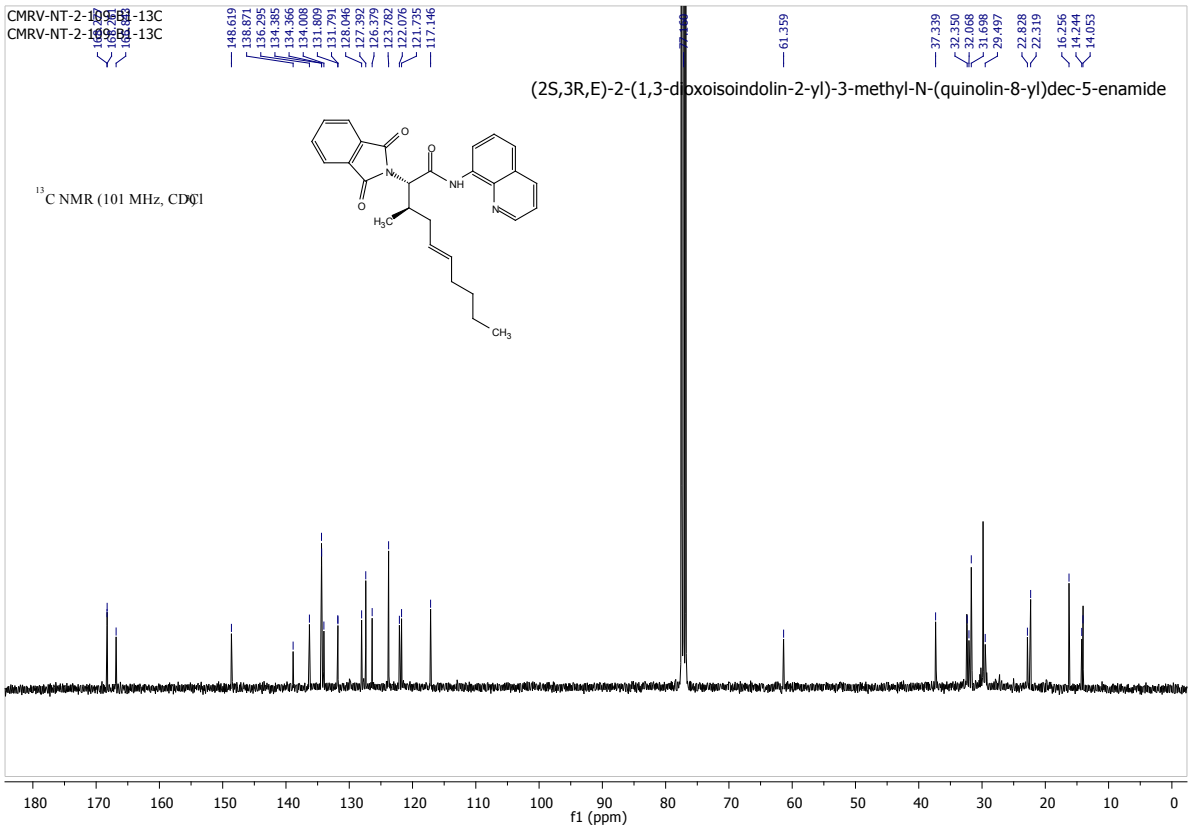

CMRV-NT-2-110-13C
CMRV-NT-2-110-13C
(2S,3R)-2-(1,3-dioxoisoindolin-2-yl)-3-methyl-4-(3-oxocyclohex-1-en-1-yl)-N-(quinolin-8-yl)butanamide
13C NMR (101 MHz, CDCl3)
168.052
166.181
163.757
148.682
138.709
136.396
134.613
133.990
131.577
128.020
127.959
127.315
123.940
122.375
121.856
117.205
77.160
60.993
43.474
37.452
30.185
29.389
22.842
16.259
f1 (ppm)

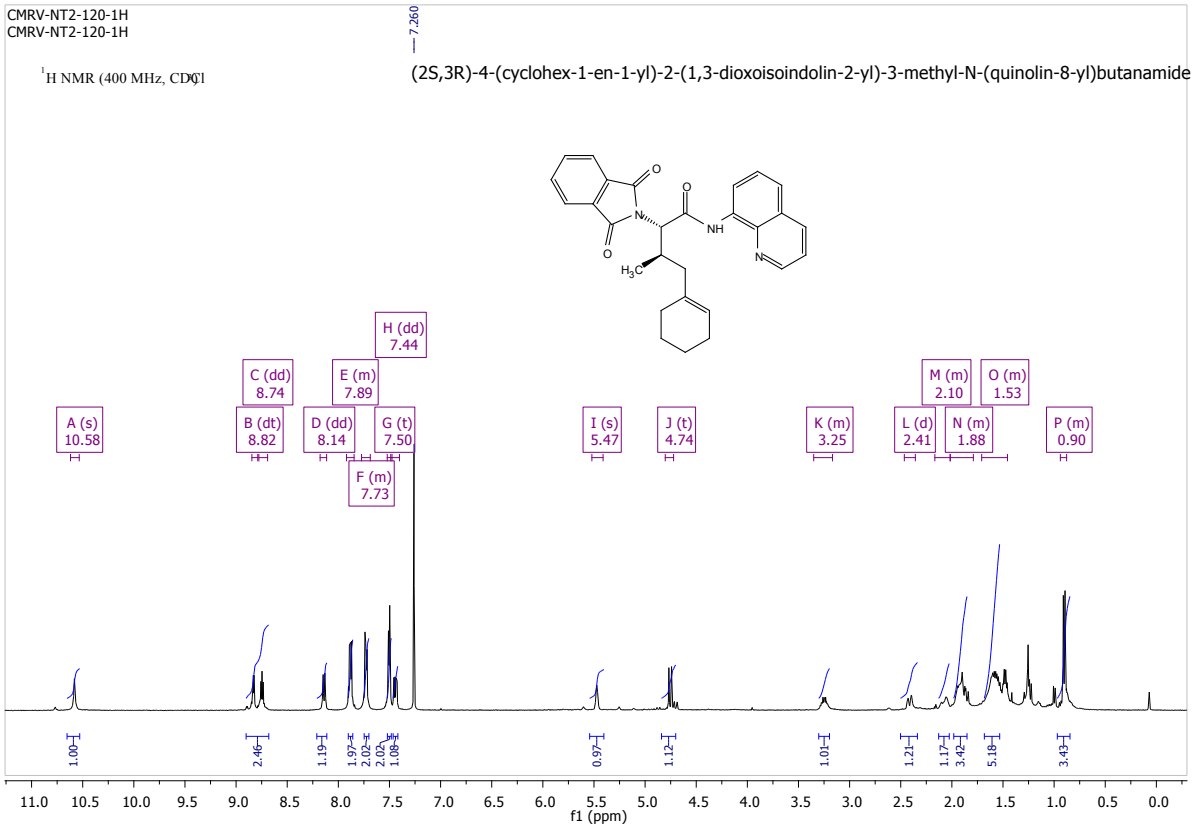

CMRV-NT-2-110-b1-1H
CMRV-NT-2-110-b1-1H
7.260
(2S,3R)-2-(1,3-dioxoisoindolin-2-yl)-3-methyl-4-(6-oxocyclohex-1-en-1-yl)-N-(quinolin-8-yl)butanamide
1H NMR (400 MHz, CDCl3)
A (s) 10.58
B (dd) 8.83
C (m) 8.74
D (dt) 8.12
E (m) 7.88
F (dd) 7.72
G (m) 7.49
H (dt) 7.42
I (t) 6.92
J (d) 4.83
K (m) 3.23
L (m) 2.38
N (qd) 1.86
O (s) 1.69
P (d) 0.91
1.00
1.08
1.14
1.17
2.08
2.25
2.43
1.19
1.09
0.95
1.01
3.31
3.92
2.06
1.60
3.19
f1 (ppm)

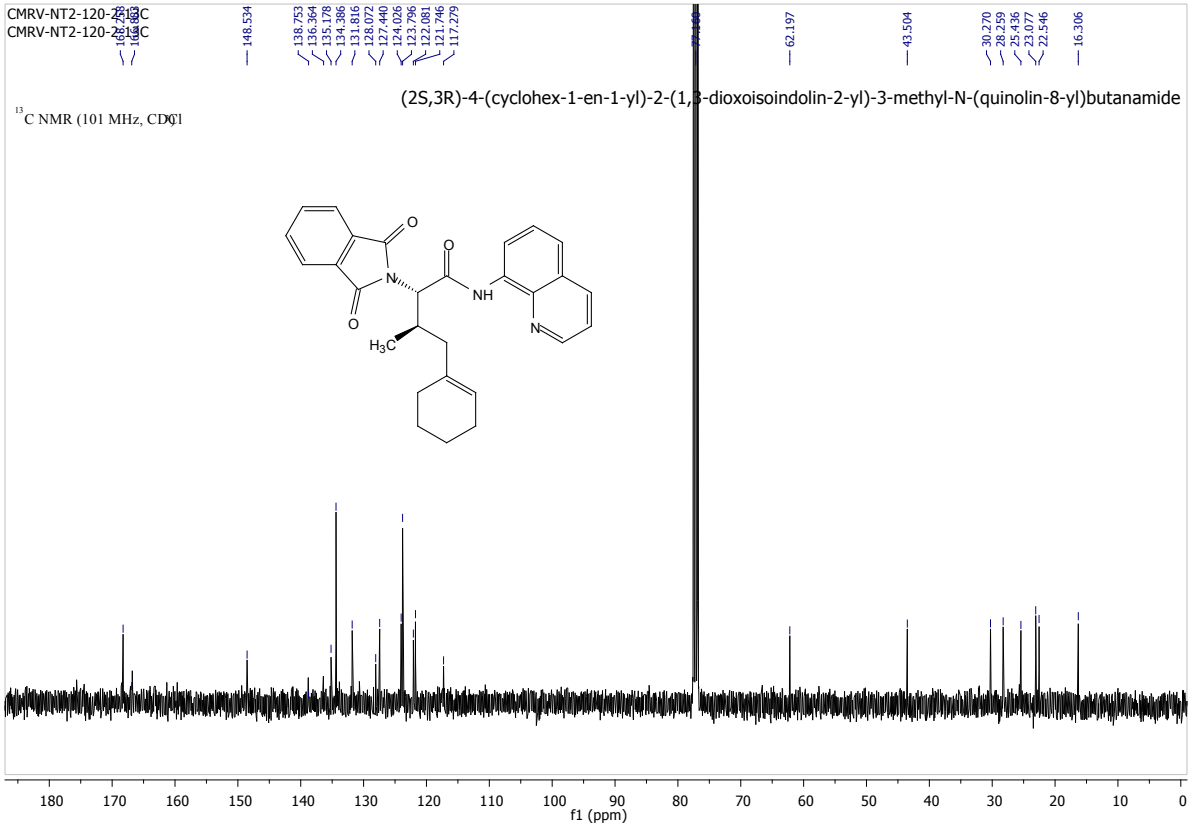

CMRV-NT-2-110-b1-13c
CMRV-NT-2-110-b1-13c
168.196
166.743
164.643
148.686
147.498
138.874
137.400
136.239
134.390
131.787
128.037
127.319
123.798
122.113
121.765
117.144
77.160
61.536
38.444
33.891
32.280
26.226
23.021
16.718
(2S,3R)-2-(1,3-dioxoisoindolin-2-yl)-3-methyl-4-(6-oxocyclohex-1-en-1-yl)-N-(quinolin-8-yl)butanamide
13C NMR (126 MHz, CDCl3)
f1 (ppm)

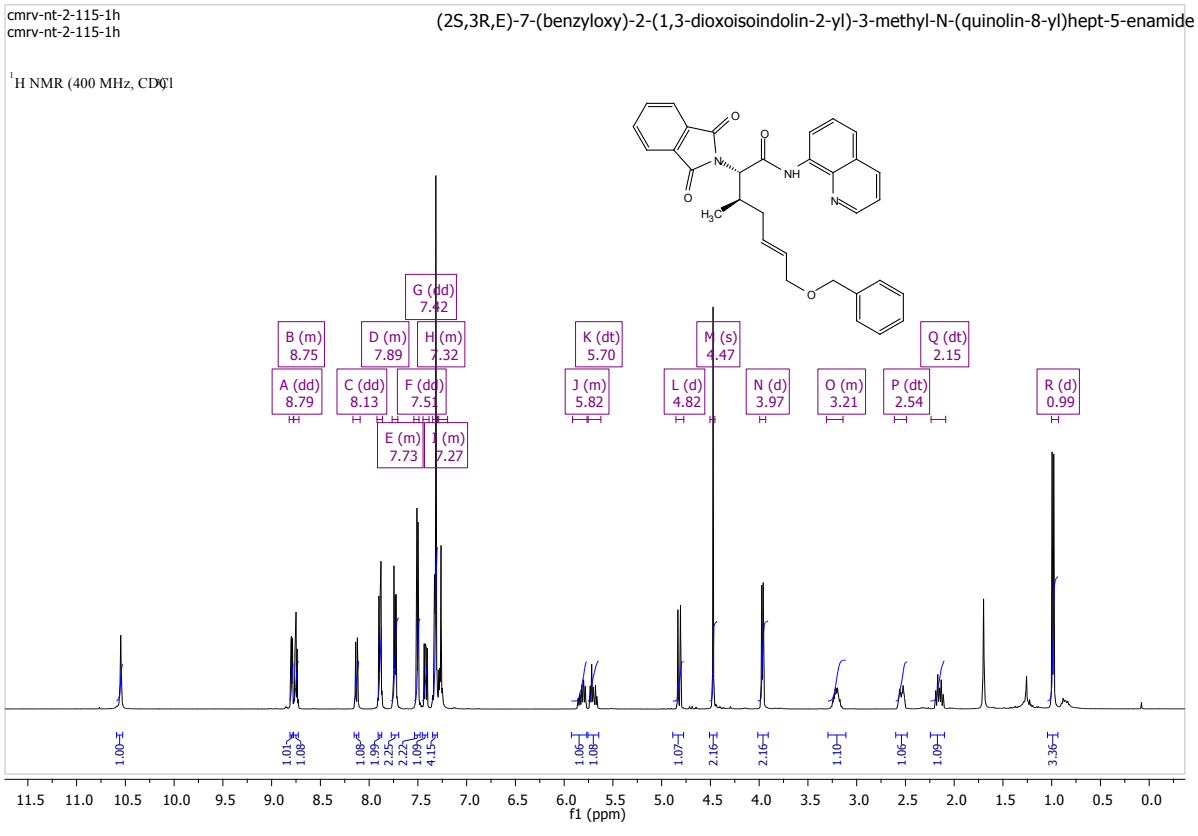

CMRV-NT-2-123-P1-1H
CMRV-NT-2-123-P1-1H
ethyl (5R,6S)-6-(1,3-dioxoisoindolin-2-yl)-5-methyl-7-oxo-7-(quinolin-8-ylamino)hept-2-enoate
A (s) 10.54
B (d) 8.81
C (d) 8.21
D (d) 7.92
E (s) 7.77
F (d) 7.53
G (s) 6.37
H (d) 5.87
I (m) 4.85
J (d) 4.07
K (s) 3.30
L (s) 3.04
M (s) 2.92
N (d) 0.89
O (d) 1.03
f1 (ppm)

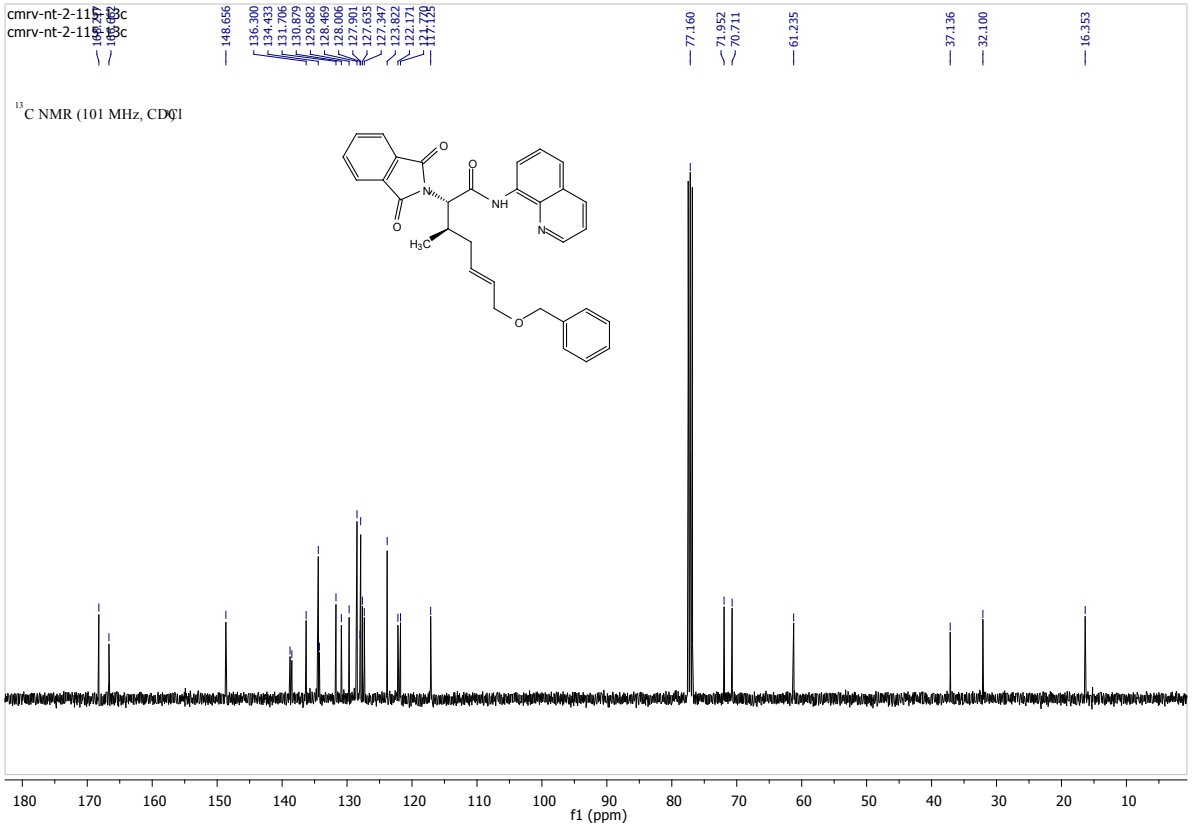

CMRV-NT-2-109-B1-1H
CMRV-NT-2-109-B1-1H
(2S,3R,E)-2-(1,3-dioxoisoindolin-2-yl)-3-methyl-N-(quinolin-8-yl)dec-5-enamide
grease
A (s) 10.54
B (m) 8.85
C (m) 8.76
D (dd) 8.13
E (m) 7.87
F (m) 7.73
G (m) 7.50
H (m) 7.44
K (m) 5.49
L (d) 4.80
M (m) 3.17
N (dt) 2.43
O (m) 2.02
I (dd) 0.87
J (d) 0.95
f1 (ppm)

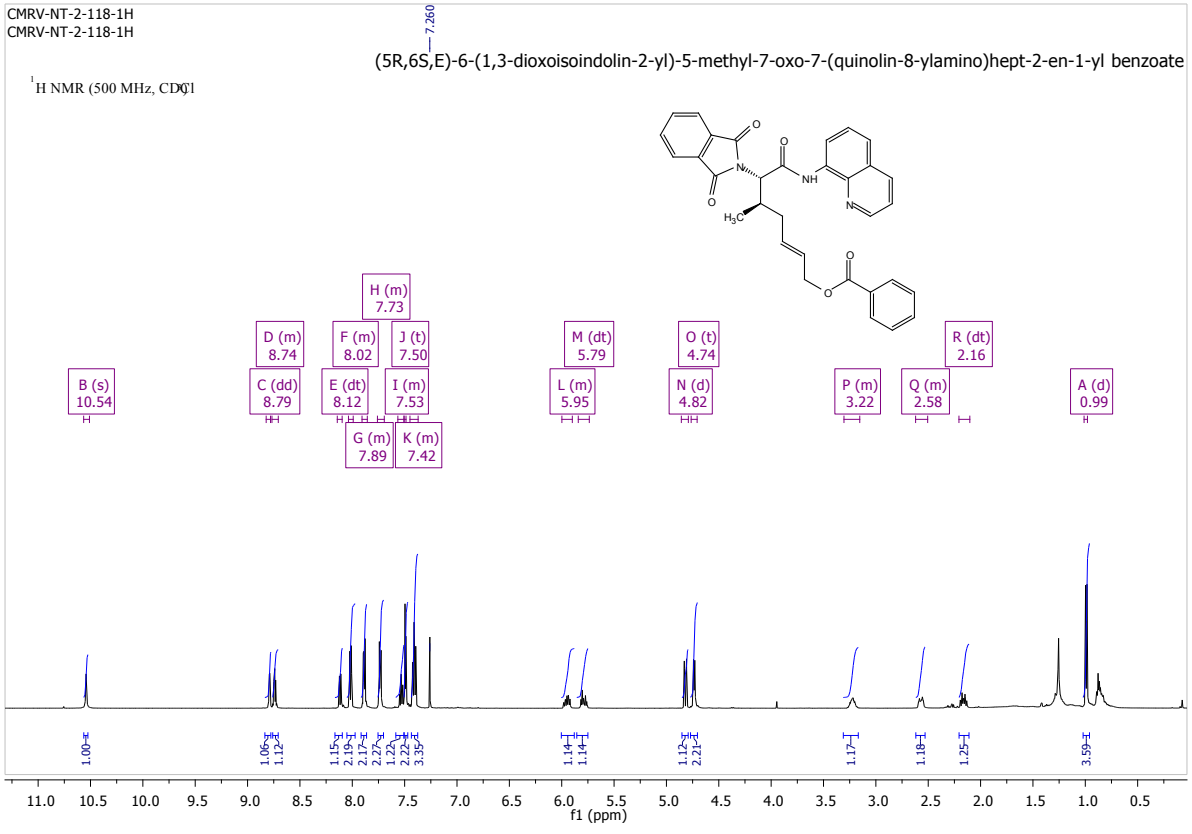

CMRV-NT-2-109-B1-13C
CMRV-NT-2-109-B1-13C
148.619
138.871
136.295
134.385
134.366
134.008
131.809
131.791
128.046
127.392
126.379
123.782
122.076
121.735
117.146
77.160
61.359
37.339
32.350
32.068
31.698
29.497
22.828
22.319
16.256
14.244
14.053
(2S,3R,E)-2-(1,3-dioxoisoindolin-2-yl)-3-methyl-N-(quinolin-8-yl)dec-5-enamide
13C NMR (101 MHz, CDCl3)
f1 (ppm)

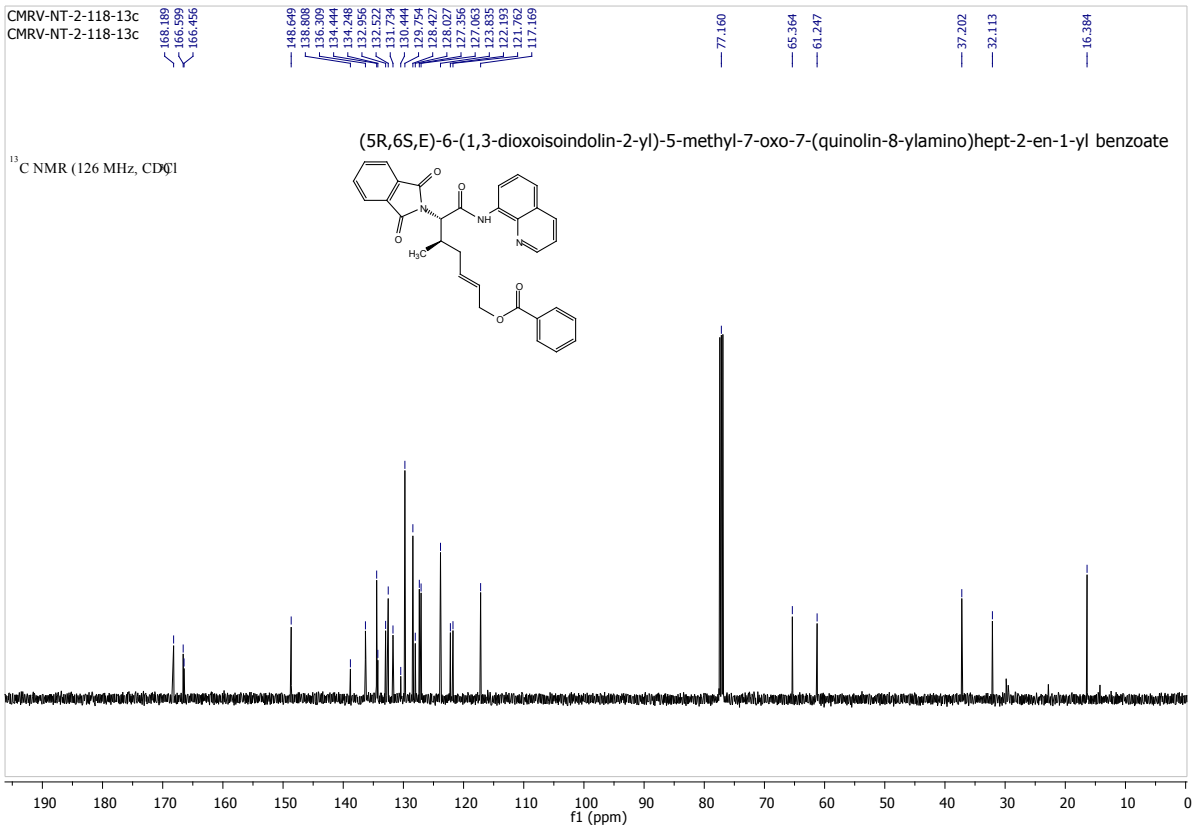

CMRV-NT2-120-1H
CMRV-NT2-120-1H
7.260
1H NMR (400 MHz, CDCl3)
(2S,3R)-4-(cyclohex-1-en-1-yl)-2-(1,3-dioxoisoindolin-2-yl)-3-methyl-N-(quinolin-8-yl)butanamide
A (s) 10.58
B (dt) 8.82
C (dd) 8.74
D (dd) 8.14
E (m) 7.89
F (m) 7.73
G (t) 7.50
H (dd) 7.44
I (s) 5.47
J (t) 4.74
K (m) 3.25
L (d) 2.41
M (m) 2.10
N (m) 1.88
O (m) 1.53
P (m) 0.90
f1 (ppm)

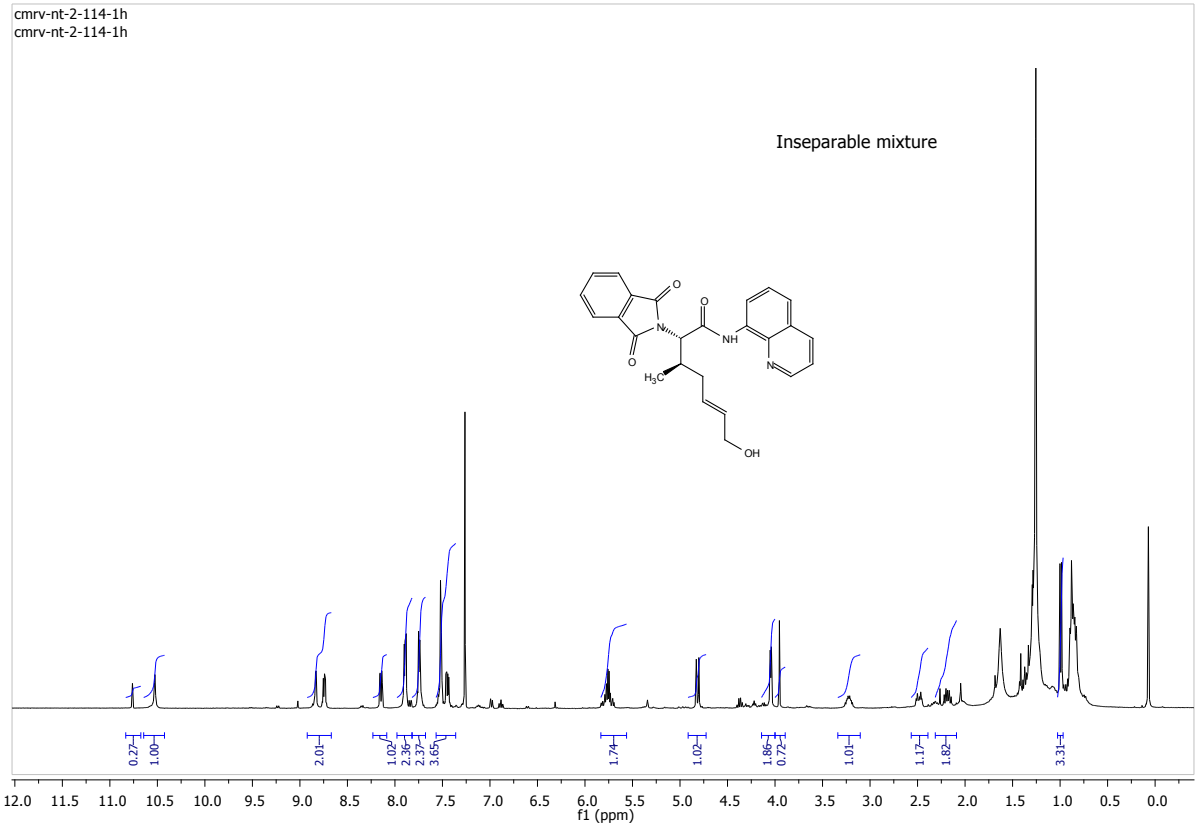

CMRV-NT2-120-2-13C
CMRV-NT2-120-2-13C
148.534
138.753
136.364
135.178
134.386
131.816
128.072
127.440
124.026
123.796
122.081
121.746
117.279
62.197
43.504
30.270
28.259
25.436
23.077
22.546
16.306
(2S,3R)-4-(cyclohex-1-en-1-yl)-2-(1,3-dioxoisoindolin-2-yl)-3-methyl-N-(quinolin-8-yl)butanamide
13C NMR (101 MHz, CDCl3)
f1 (ppm)

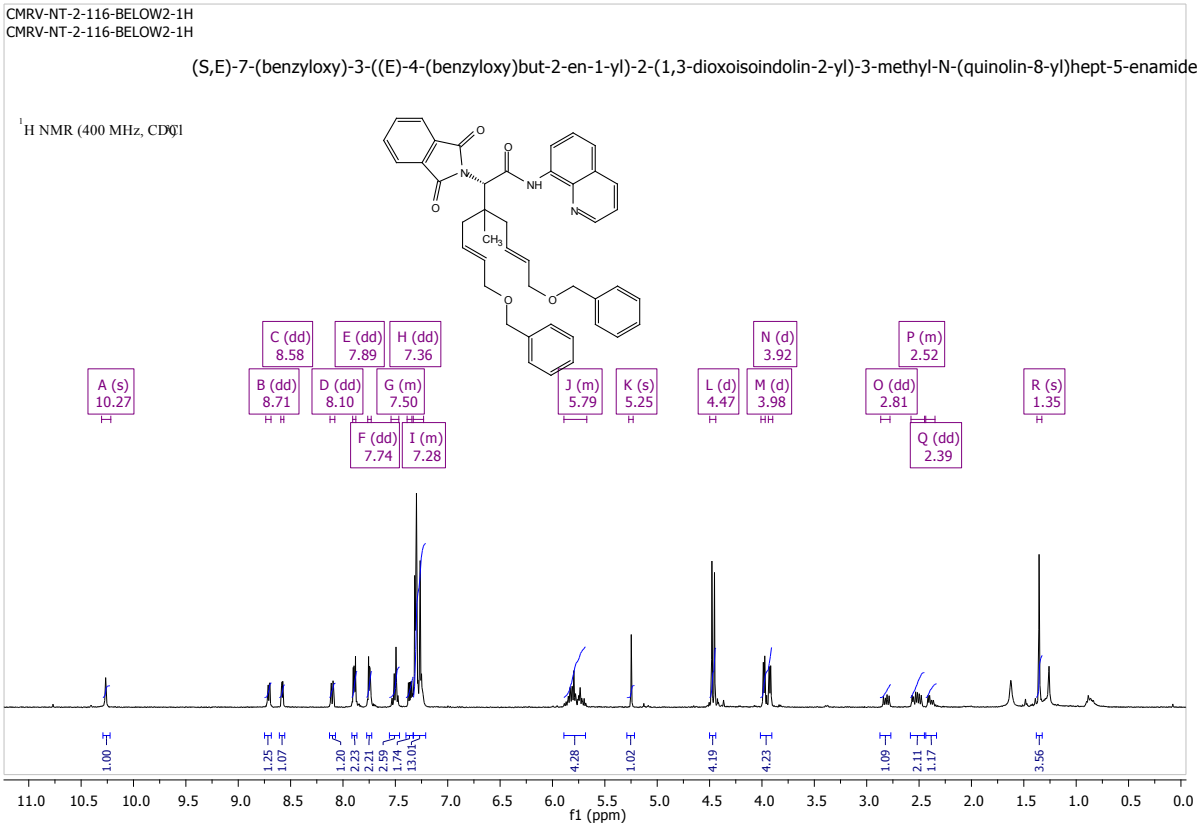

cmrv-nt-2-115-1h
cmrv-nt-2-115-1h
(2S,3R,E)-7-(benzyloxy)-2-(1,3-dioxoisoindolin-2-yl)-3-methyl-N-(quinolin-8-yl)hept-5-enamide
1H NMR (400 MHz, CDCl3)
G (dd) 7.42
B (m) 8.75
D (m) 7.89
H (m) 7.32
K (dt) 5.70
M (s) 4.47
Q (dt) 2.15
A (dd) 8.79
C (dd) 8.13
F (dd) 7.51
J (m) 5.82
L (d) 4.82
N (d) 3.97
O (m) 3.21
P (dt) 2.54
R (d) 0.99
E (m) 7.73
I (m) 7.27
f1 (ppm)

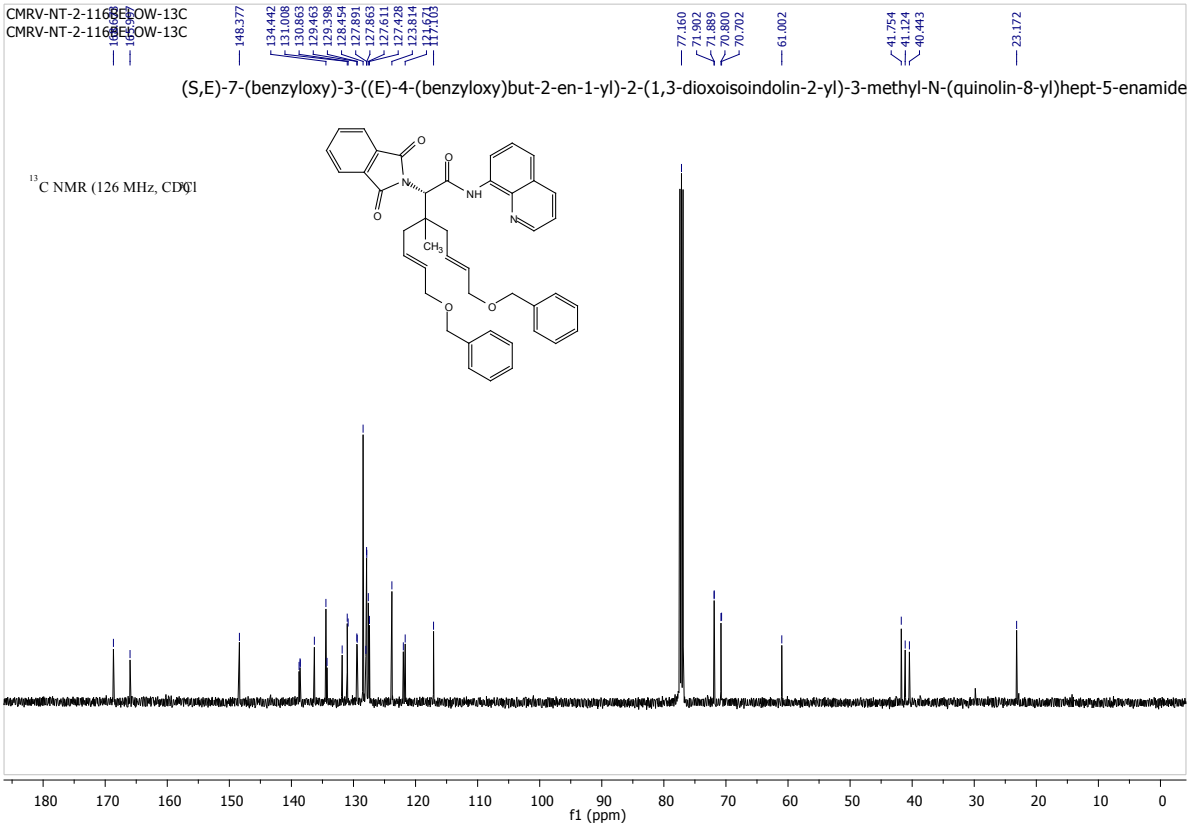

cmrv-nt-2-115-13c
cmrv-nt-2-115-13c
148.656
136.300
134.433
131.706
130.879
129.682
128.469
128.006
127.901
127.635
127.347
123.822
122.171
77.160
71.952
70.711
61.235
37.136
32.100
16.353
13C NMR (101 MHz, CDCl3)
f1 (ppm)

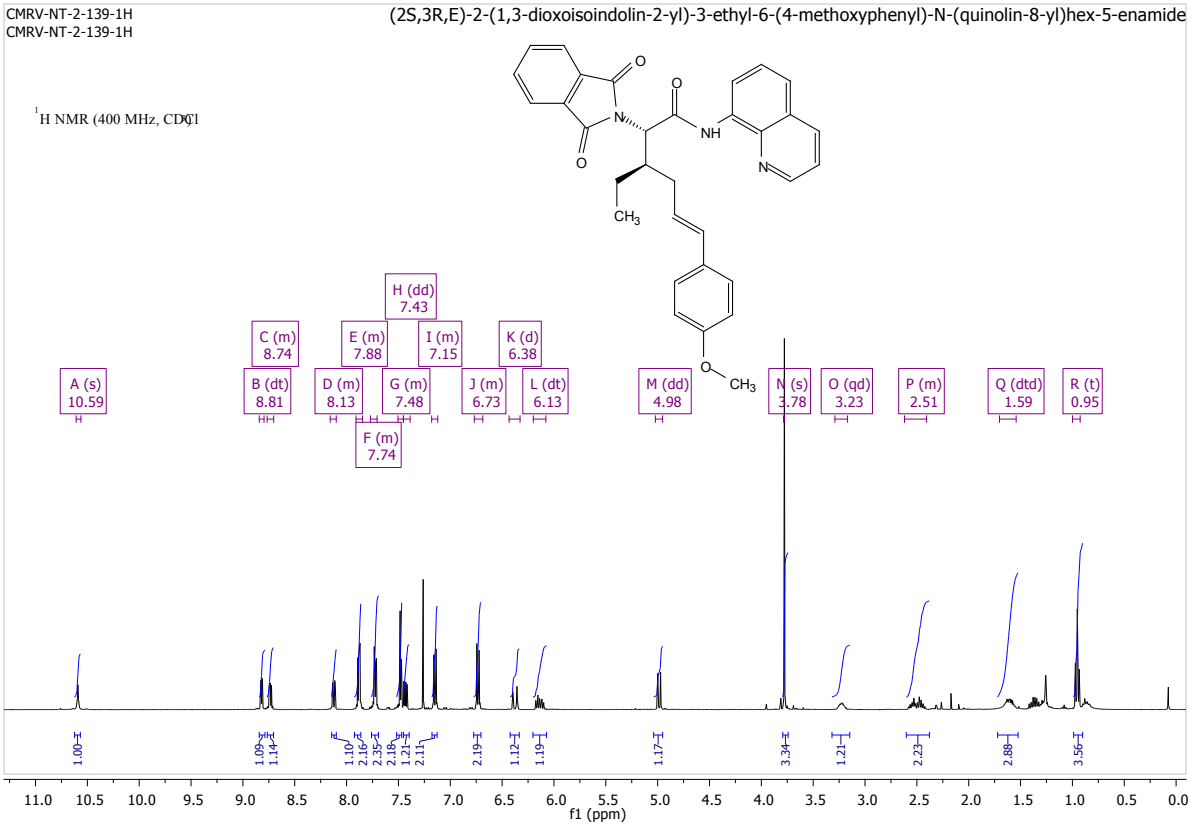

CMRV-NT-2-118-1H
CMRV-NT-2-118-1H
7.260
(5R,6S,E)-6-(1,3-dioxoisoindolin-2-yl)-5-methyl-7-oxo-7-(quinolin-8-ylamino)hept-2-en-1-yl benzoate
1H NMR (500 MHz, CDCl3)
H (m) 7.73
D (m) 8.74
F (m) 8.02
J (t) 7.50
M (dt) 5.79
O (t) 4.74
R (dt) 2.16
B (s) 10.54
C (dd) 8.79
E (dt) 8.12
I (m) 7.53
L (m) 5.95
N (d) 4.82
P (m) 3.22
Q (m) 2.58
A (d) 0.99
G (m) 7.89
K (m) 7.42
f1 (ppm)

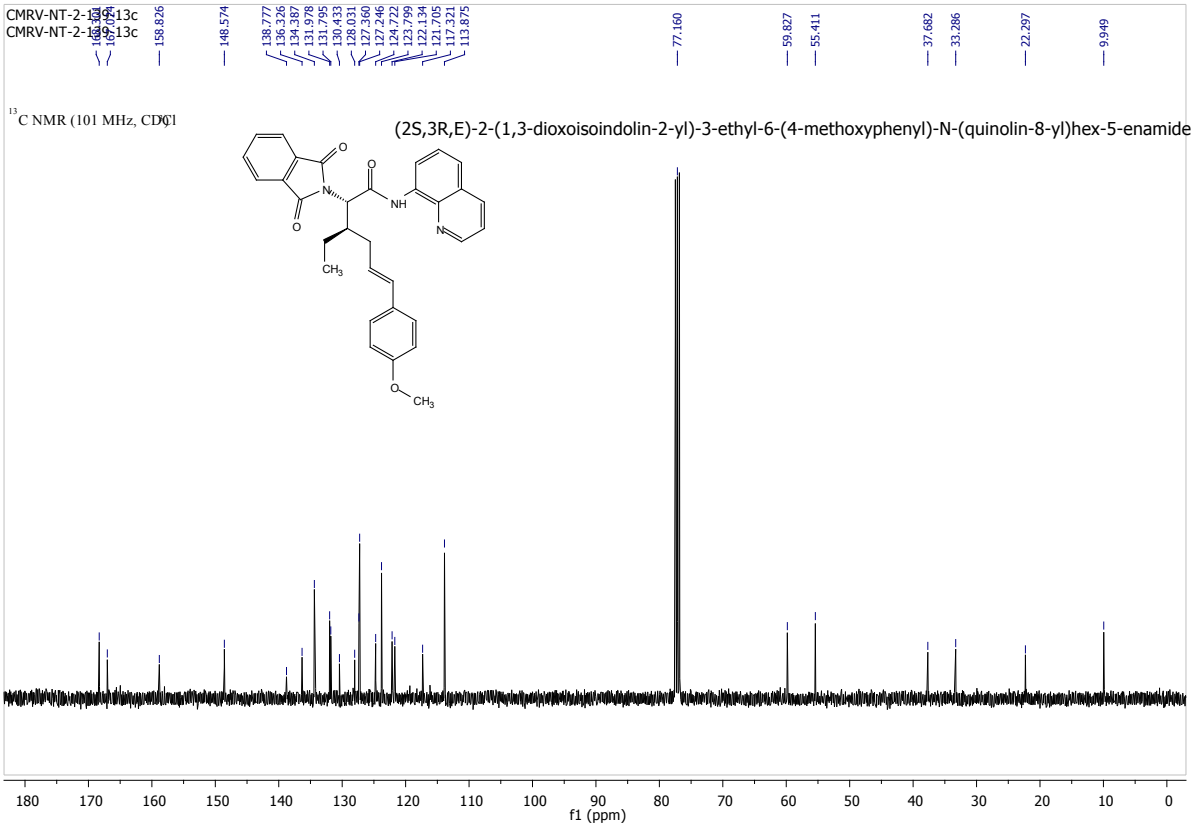

CMRV-NT-2-118-13c
CMRV-NT-2-118-13c
168.189
166.599
166.456
148.649
138.808
136.309
134.444
134.248
132.595
132.522
131.734
130.444
129.754
128.427
128.027
127.356
127.063
123.835
122.193
121.762
117.169
77.160
65.364
61.247
37.202
32.113
16.384
(5R,6S,E)-6-(1,3-dioxoisoindolin-2-yl)-5-methyl-7-oxo-7-(quinolin-8-ylamino)hept-2-en-1-yl benzoate
13C NMR (126 MHz, CDCl
f1 (ppm)

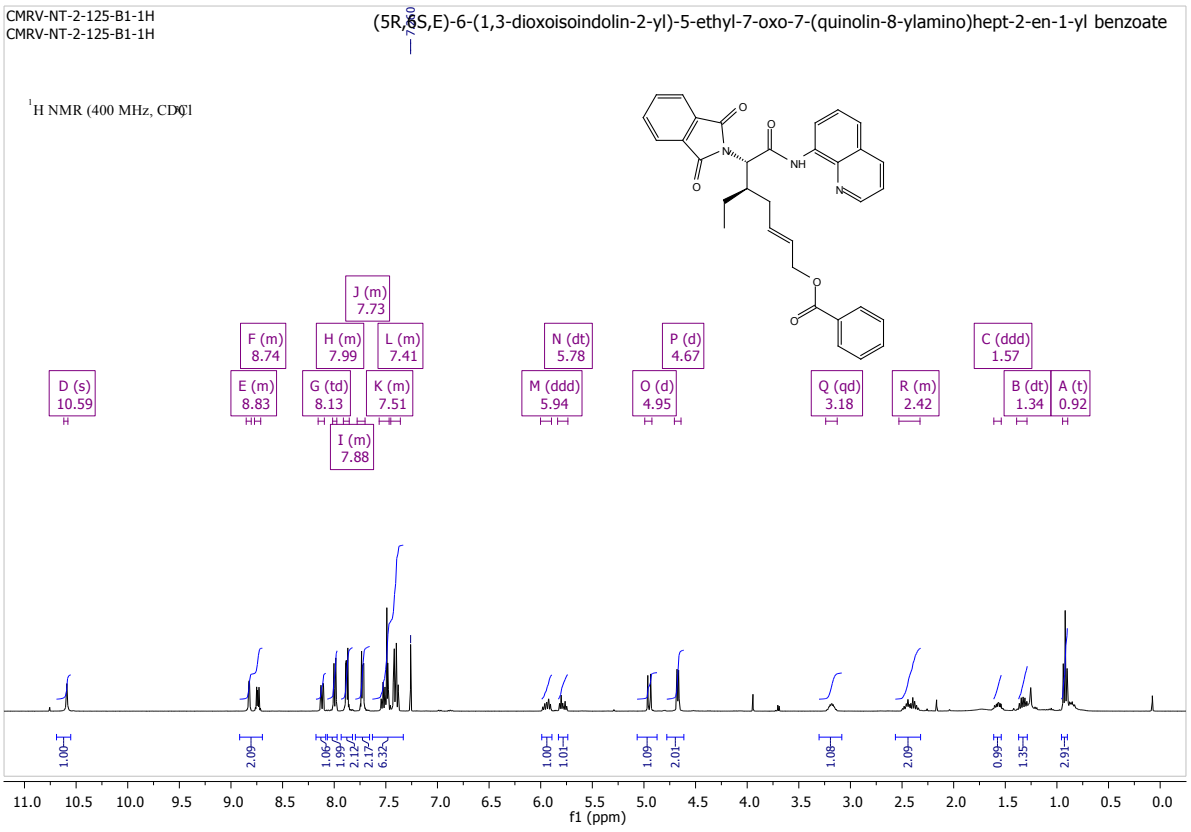

cmrv-nt-2-114-1h
cmrv-nt-2-114-1h
Inseparable mixture
OH
0.27
1.00
2.01
1.02
2.36
2.37
3.65
1.74
1.02
1.86
0.72
1.01
1.17
1.82
3.31
f1 (ppm)

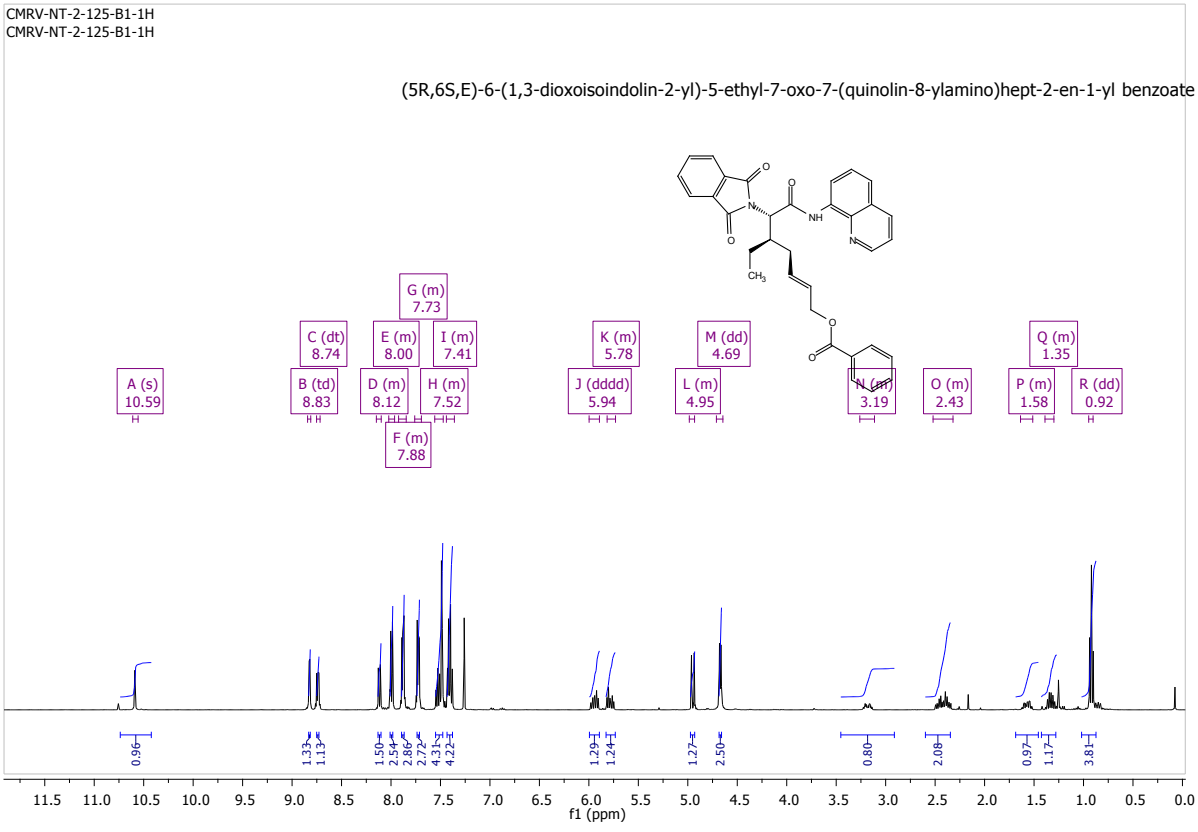

CMRV-NT-2-116-BELOW2-1H
CMRV-NT-2-116-BELOW2-1H
(S,E)-7-(benzyloxy)-3-((E)-4-(benzyloxy)but-2-en-1-yl)-2-(1,3-dioxoisoindolin-2-yl)-3-methyl-N-(quinolin-8-yl)hept-5-enamide
1H NMR (400 MHz, CDCl3)
A (s) 10.27
B (dd) 8.71
C (dd) 8.58
D (dd) 8.10
E (dd) 7.89
F (dd) 7.74
G (m) 7.50
H (dd) 7.36
I (m) 7.28
J (m) 5.79
K (s) 5.25
L (d) 4.47
M (d) 3.98
N (d) 3.92
O (dd) 2.81
P (m) 2.52
Q (dd) 2.39
R (s) 1.35
1.00
1.25
1.07
1.20
2.23
2.21
2.59
1.74
13.01
4.28
1.02
4.19
4.23
1.09
2.11
1.17
3.56
f1 (ppm)

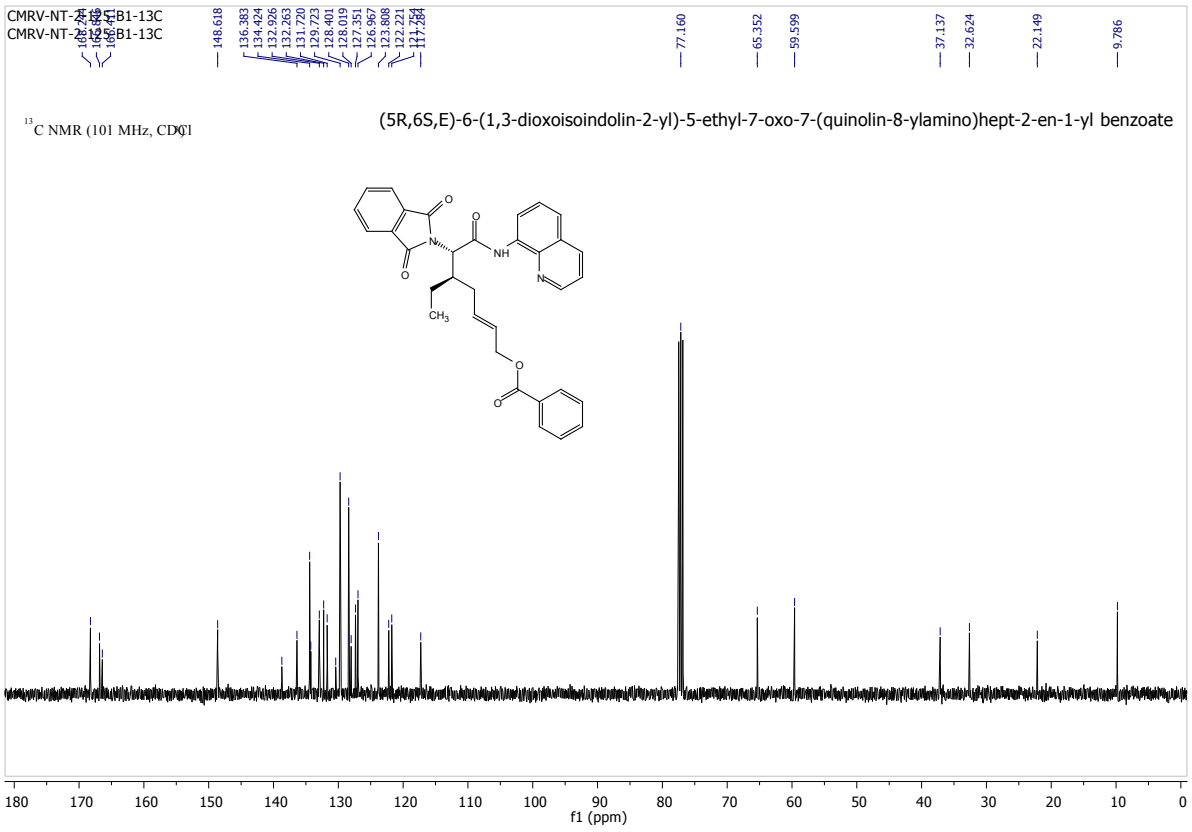

CMRV-NT-2-116BELOW-13C
CMRV-NT-2-116BELOW-13C
148.377
134.442
131.008
130.863
129.463
129.398
128.454
127.891
127.863
127.611
127.428
123.814
117.671
117.103
77.160
71.902
71.889
70.800
70.702
61.002
41.754
41.124
40.443
23.172
(S,E)-7-(benzyloxy)-3-((E)-4-(benzyloxy)but-2-en-1-yl)-2-(1,3-dioxoisoindolin-2-yl)-3-methyl-N-(quinolin-8-yl)hept-5-enamide
13C NMR (126 MHz, CDCl3)
f1 (ppm)

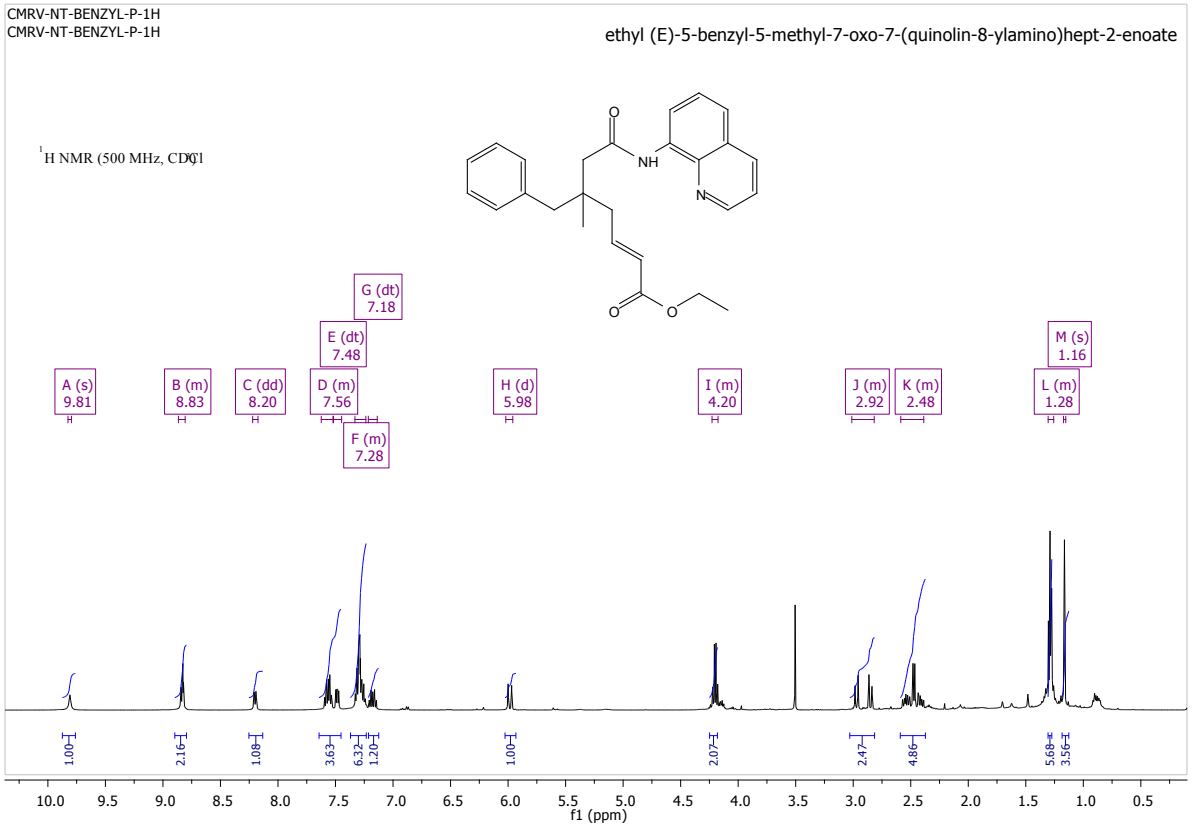

CMRV-NT-2-139-1H
CMRV-NT-2-139-1H
(2S,3R,E)-2-(1,3-dioxoisoindolin-2-yl)-3-ethyl-6-(4-methoxyphenyl)-N-(quinolin-8-yl)hex-5-enamide
1H NMR (400 MHz, CDCl3)
A (s) 10.59
B (dt) 8.81
C (m) 8.74
D (m) 8.13
E (m) 7.88
F (m) 7.74
G (m) 7.48
H (dd) 7.43
I (m) 7.15
J (m) 6.73
K (d) 6.38
L (dt) 6.13
M (dd) 4.98
N (s) 3.78
O (qd) 3.23
P (m) 2.51
Q (dtd) 1.59
R (t) 0.95
f1 (ppm)

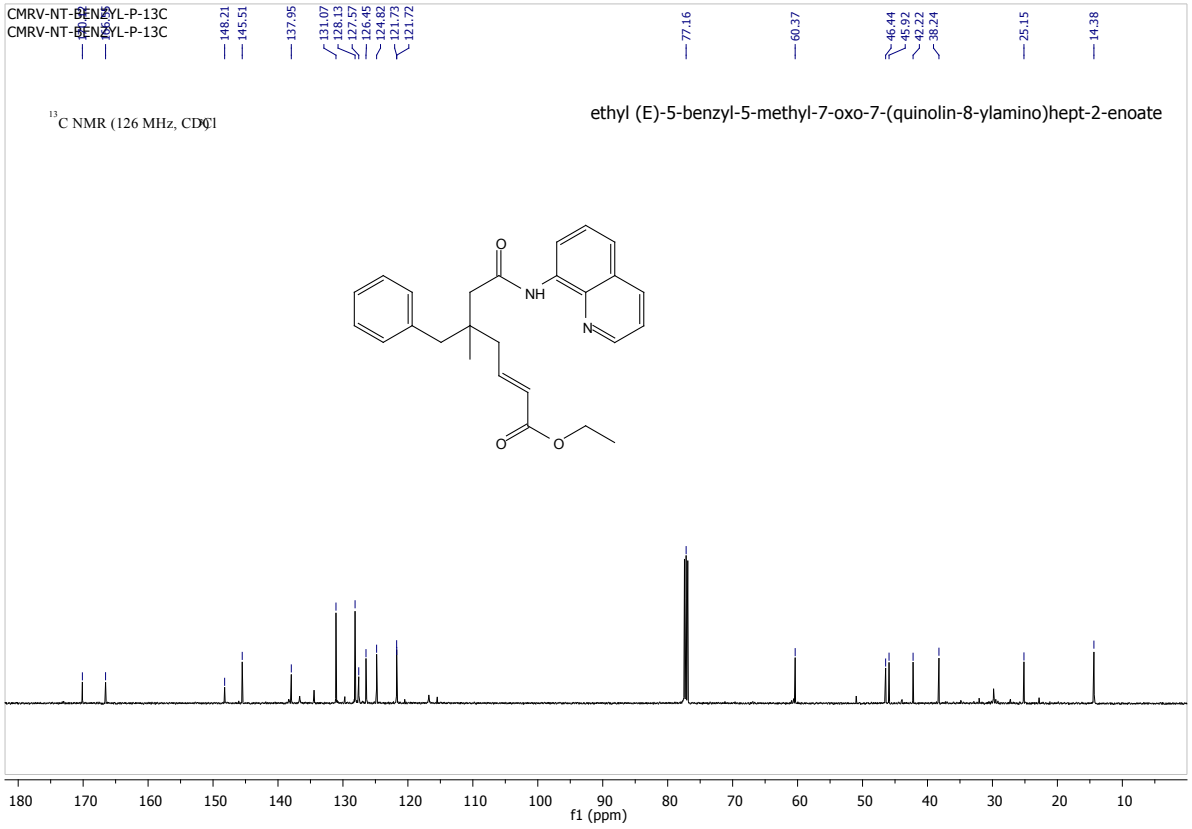

CMRV-NT-2-139-13c
CMRV-NT-2-139-13c
158.826
148.574
138.777
136.326
134.387
131.978
131.795
130.433
128.031
127.360
127.246
124.722
123.799
122.134
121.705
117.321
113.875
77.160
59.827
55.411
37.682
33.286
22.297
9.949
13C NMR (101 MHz, CDCl3)
(2S,3R,E)-2-(1,3-dioxoisoindolin-2-yl)-3-ethyl-6-(4-methoxyphenyl)-N-(quinolin-8-yl)hex-5-enamide
f1 (ppm)

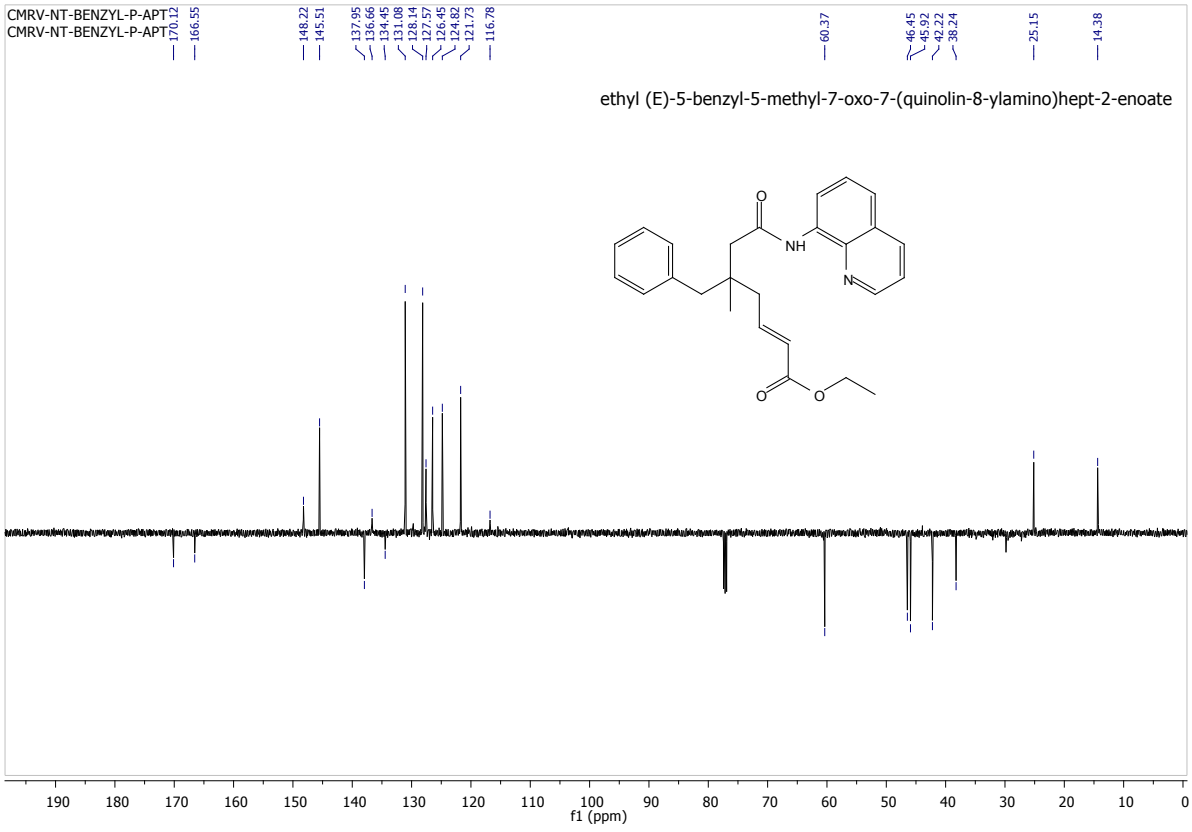

CMRV-NT-2-125-B1-1H
CMRV-NT-2-125-B1-1H
(5R,6S,E)-6-(1,3-dioxoisoindolin-2-yl)-5-ethyl-7-oxo-7-(quinolin-8-ylamino)hept-2-en-1-yl benzoate
1H NMR (400 MHz, CDCl
D (s) 10.59
E (m) 8.83
F (m) 8.74
G (td) 8.13
H (m) 7.99
I (m) 7.88
J (m) 7.73
K (m) 7.51
L (m) 7.41
M (ddd) 5.94
N (dt) 5.78
O (d) 4.95
P (d) 4.67
Q (qd) 3.18
R (m) 2.42
A (t) 0.92
B (dt) 1.34
C (ddd) 1.57
f1 (ppm)


CMRV-NT-2-125-B1-1H
CMRV-NT-2-125-B1-1H
(5R,6S,E)-6-(1,3-dioxoisoindolin-2-yl)-5-ethyl-7-oxo-7-(quinolin-8-ylamino)hept-2-en-1-yl benzoate
A (s) 10.59
B (td) 8.83
C (dt) 8.74
D (m) 8.12
E (m) 8.00
F (m) 7.88
G (m) 7.73
H (m) 7.52
I (m) 7.41
J (dddd) 5.94
K (m) 5.78
L (m) 4.95
M (dd) 4.69
N (m) 3.19
O (m) 2.43
P (m) 1.58
Q (m) 1.35
R (dd) 0.92
f1 (ppm)


CMRV-NT-2-125-B1-13C
CMRV-NT-2-125-B1-13C
148.618
136.383
134.424
132.926
132.263
131.720
129.723
128.401
128.019
127.351
126.967
123.808
122.221
77.160
65.352
59.599
37.137
32.624
22.149
9.786
13C NMR (101 MHz, CDCl3)
(5R,6S,E)-6-(1,3-dioxoisoindolin-2-yl)-5-ethyl-7-oxo-7-(quinolin-8-ylamino)hept-2-en-1-yl benzoate
f1 (ppm)


CMRV-NT-BENZYL-P-1H
CMRV-NT-BENZYL-P-1H
1H NMR (500 MHz, CDCl3)
ethyl (E)-5-benzyl-5-methyl-7-oxo-7-(quinolin-8-ylamino)hept-2-enoate
A (s) 9.81
B (m) 8.83
C (dd) 8.20
D (m) 7.56
E (dt) 7.48
F (m) 7.28
G (dt) 7.18
H (d) 5.98
I (m) 4.20
J (m) 2.92
K (m) 2.48
L (m) 1.28
M (s) 1.16
1.00
2.16
1.08
3.63
6.32
1.20
1.00
2.07
2.47
4.86
5.68
3.56
f1 (ppm)

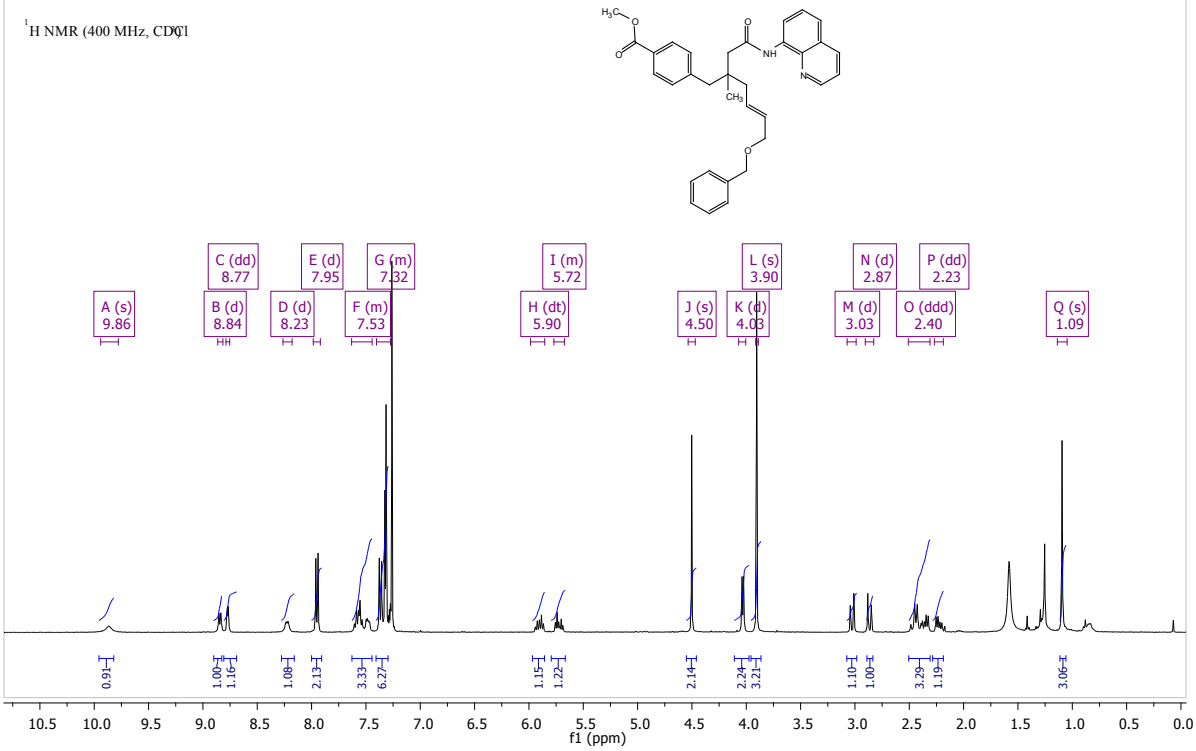

CMRV-NT-BENZYL-P-13C
CMRV-NT-BENZYL-P-13C
148.21
145.51
137.95
131.07
128.13
127.57
126.45
124.82
121.73
121.72
77.16
60.37
46.44
45.92
42.22
38.24
25.15
14.38
13C NMR (126 MHz, CDCl3)
ethyl (E)-5-benzyl-5-methyl-7-oxo-7-(quinolin-8-ylamino)hept-2-enoate
O
NH
N
O
O
180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10
f1 (ppm)


CMRV-NT-BENZYL-P-APT
CMRV-NT-BENZYL-P-APT
170.12
166.55
148.22
145.51
137.95
136.66
134.45
131.08
128.14
127.57
126.45
124.82
121.73
116.78
60.37
46.45
45.92
42.22
38.24
25.15
14.38
ethyl (E)-5-benzyl-5-methyl-7-oxo-7-(quinolin-8-ylamino)hept-2-enoate
O
NH
N
O
O
190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0
f1 (ppm)

CMRV-NT-2-141-2-1H
CMRV-NT-2-141-2-1H

methyl (E)-4-(6-(benzyloxy)-2-methyl-2-(2-oxo-2-(quinolin-8-ylamino)ethyl)hex-4-en-1-yl)benzoate

^{1}H NMR (400 MHz, CDCl)



CMRV-NT-2-141-2-13C
CMRV-NT-2-141-2-13C

^{13}C NMR (101 MHz, CDCl)