A Simple and Convenient Synthesis of 2, 3-dihydroquinazolin-4(1H)-one Derivatives using $MgFe_2O_4@SiO_2$-SO_3H Catalyst

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Table 3. Effect of solvent on synthesis of 2,3-dihydroquinazolin-4(*1H*)-one[a]

Entry	Solvent	Reaction condition	Time (min)	Yield[b] (%)
1	Ethanol	Reflux	300	52
2	THF	Reflux	300	25
3	Acetonitrile	Reflux	300	28
4	Water	Reflux	300	48
5	Toluene	Reflux	300	34
6	DMF	Reflux	300	42
7	Solvent free	110°C/Microwave irradiation	13	70

[a]Reaction conditions: isatoic anhydride: benzaldehyde: ammonium acetate (1:1:1.2) and $MgFe_2O_4@SiO_2$-SO_3H (7.5 Wt%) as catalyst.
[b]Isolated yield.

Table 4. Optimization of the amount of catalyst for synthesis of 2, 3- dihydroquinazolin-4(1H) one[a]

Entry	Catalyst (Wt%)	Temperature (°C)/Condition	Time (min)	Yield[b] (%)
1	-	110°C / solvent free	30	Trace
2	2.5	110°C / solvent free	25	35
3	5	110°C / solvent free	18	62
4	7.5	110°C / solvent free	13	70
5	10	110°C / solvent free	8	88
6	12.5	110°C / solvent free	8	87
7	15	110°C / solvent free	8	88

[a]Reaction conditions: isatoic anhydride: benzaldehyde: ammonium acetate (1:1:1.2) in Microwave and under solvent free condition in presence of $MgFe_2O_4@SiO_2$-SO_3H catalyst.
[b]Isolated yield

Table 5. Optimization of temperature for synthesis of 2,3-dihydroquinazolin-4(1H)-one[a]

Entry	Catalyst (Wt%)	Temperature (°C)/Condition	Time (min)	Yield[b](%)
1	10	30°C/solvent free	60	0
2	10	90°C /solvent free	20	62
3	10	100°C/solvent free	12	71
4	10	110°C /solvent free	8	88
5	10	120°C /solvent free	5	95
6	10	130°C/solvent free	10	95

[a]Reaction conditions: isatoic anhydride: benzaldehyde: ammonium acetate (1:1:1.2) in Microwave and 10 Wt% $MgFe_2O_4@SiO_2$-SO_3H as catalyst.
[b]Isolated yield

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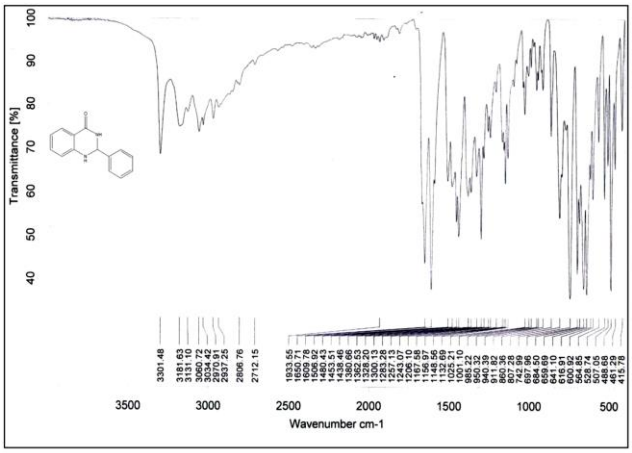
Table 6. Optimization of microwave irradiation for synthesis of 2,3- dihydroquinazolin-4(1H)-one[a]

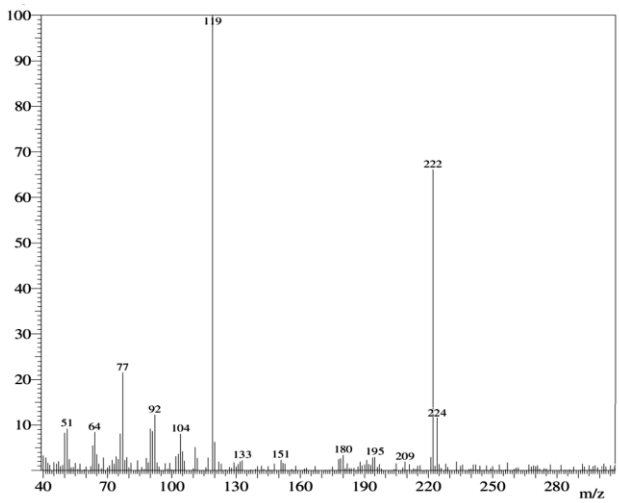
Entry	Catalyst (wt%)	Microwave irradiation (watts)	Temp.(°C)/Condition	Time (min)	Yield[b] (%)
1	10	140 W	120°C /solvent free	5	25
2	10	240W	120°C /solvent free	5	43
3	10	350 W	120°C /solvent free	5	71
4	10	420 W	120°C /solvent free	5	88
5	10	450W	120°C /solvent free	5	95
6	10	490 W	120°C /solvent free	5	95

[a]Reaction conditions: isatoic anhydride: benzaldehyde: ammonium acetate (1:1:1.2) in Microwave and 10 Wt% $MgFe_2O_4$@SiO_2-SO_3H catalyst.
[b]Isolated yield

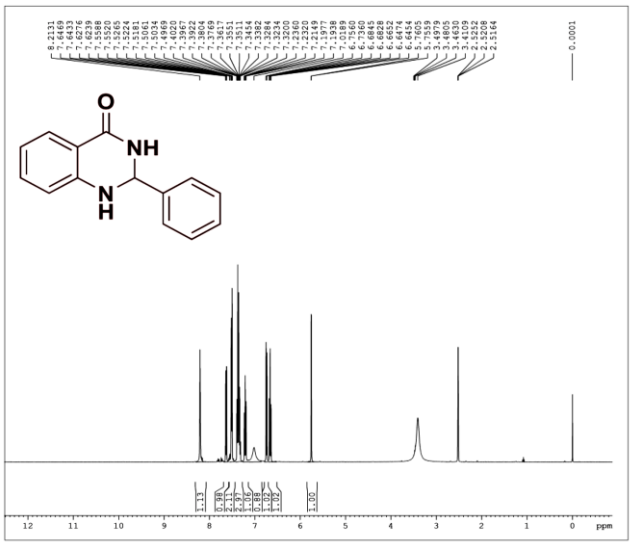
Spectral data of synthesised compounds



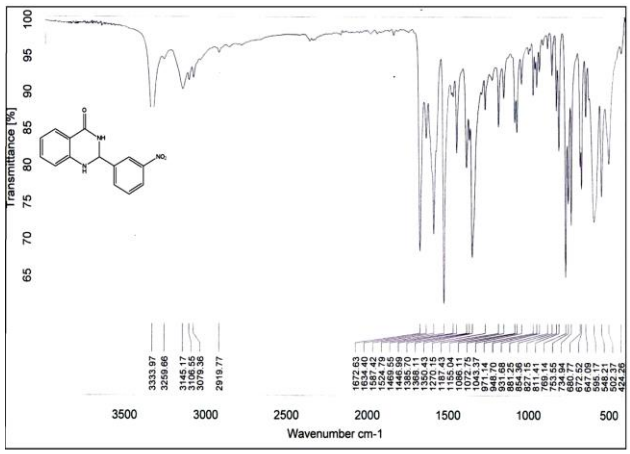
FTIR of 2-phenyl-2,3-dihydroquinazolin-4(1H)-one (4a)



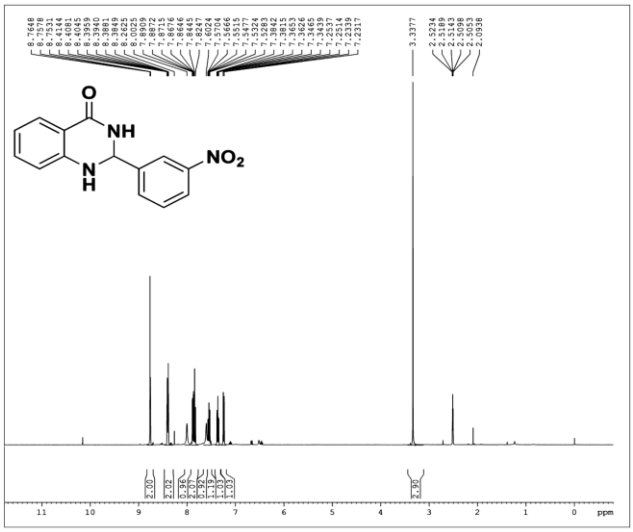
Mass spectrum of 2-phenyl-2,3-dihydroquinazolin-4(1H)-one (4a)



^{1}H-NMR of 2-phenyl-2,3-dihydroquinazolin-4(1H)-one (4a)



FTIR of 2-(3-nitrophenyl)-2,3-dihydroquinazolin-4(1H)-one(4c)



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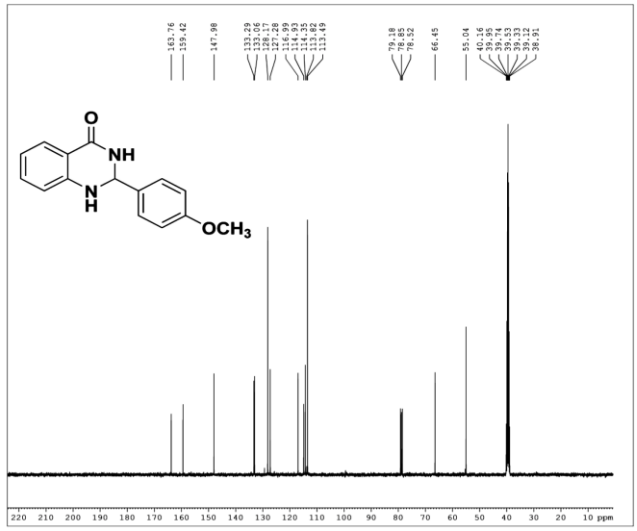
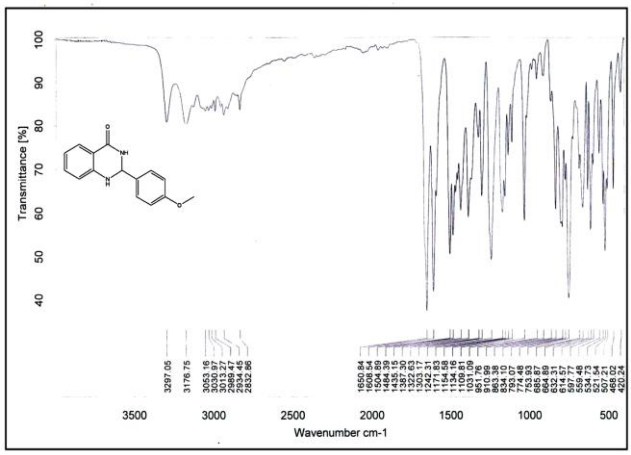


^{13}C-NMR of 2-(4-methoxyphenyl)-2,3-dihydroquinazolin-4(1H)-one(4f)



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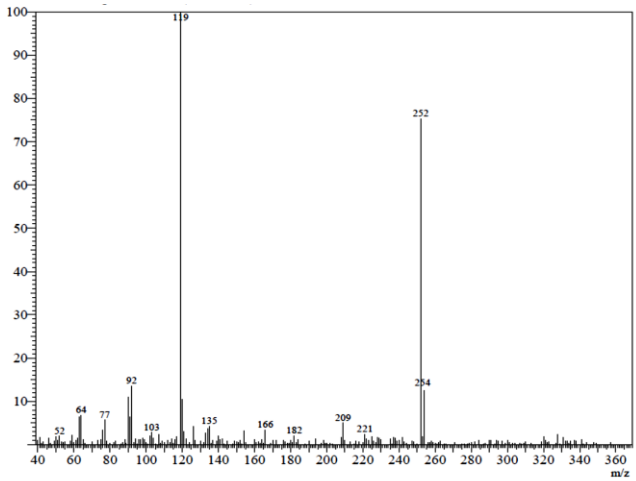
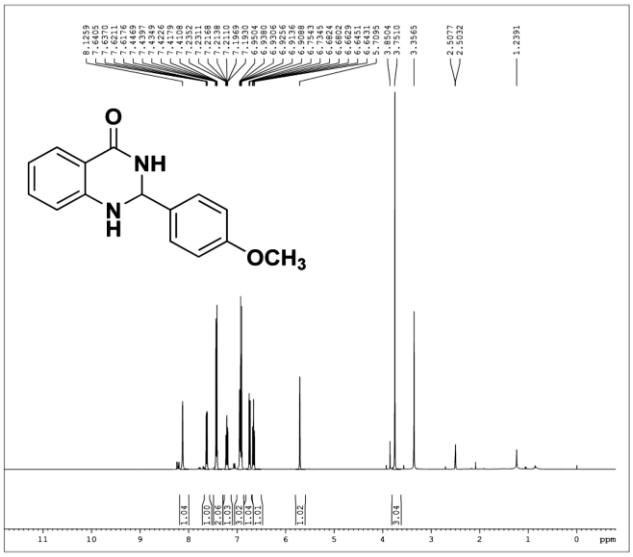


Mass spectrum of 2-(4-methoxyphenyl)-2,3-dihydroquinazolin-4(1H)-one(4f)



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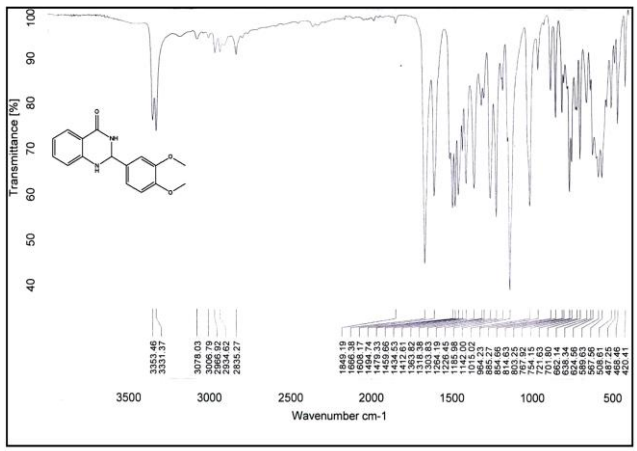
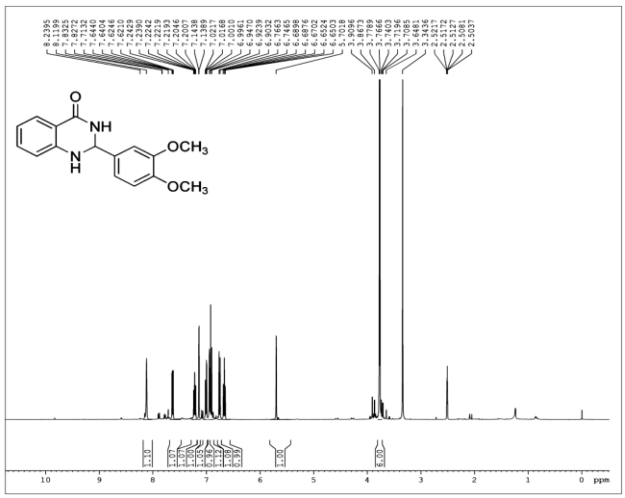


FTIR of 2-(3,4-dimethoxyphenyl)-2,3-dihydroquinazolin-4(1H)-one (4g)



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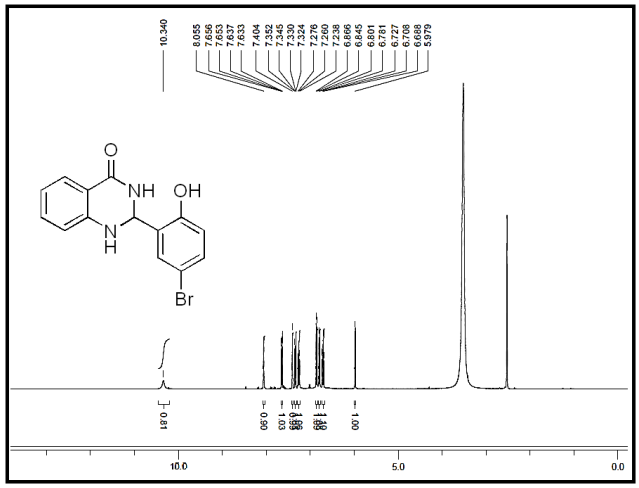
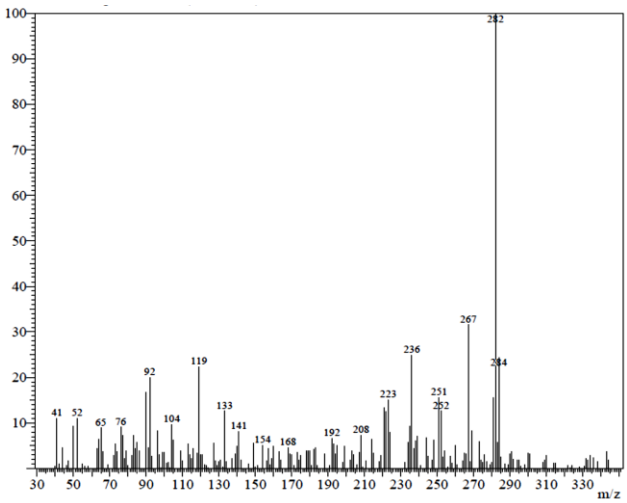
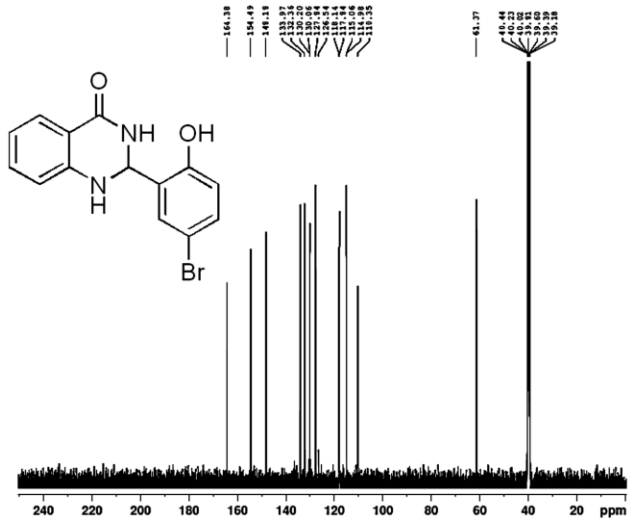


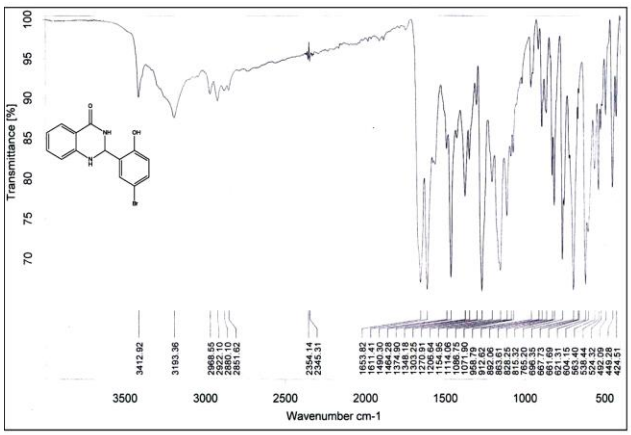
^{1}H-NMR of 2-(5-bromo-2-hydroxyphenyl)-2,3-dihydroquinazolin-4(1H)-one(4i)



Mass spectrum of 2-(3,4-dimethoxyphenyl)-2,3-dihydroquinazolin-4(1H)-one(4g)



^{13}C-NMR of 2-(5-bromo-2-hydroxyphenyl)-2,3-dihydroquinazolin-4(1H)-one(4i)



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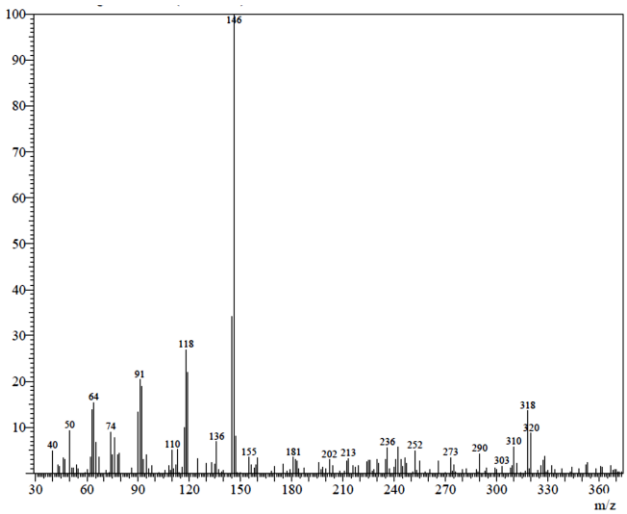
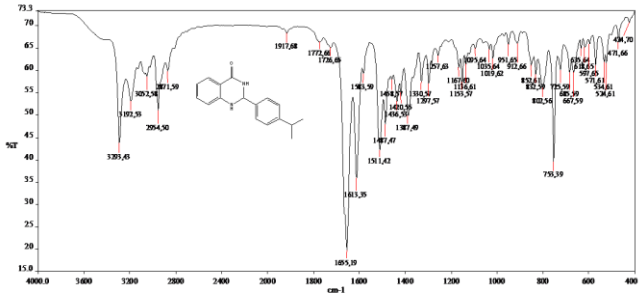
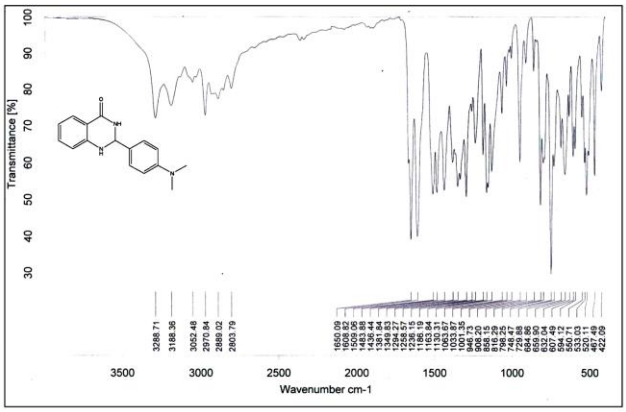


Mass spectrum of 2-(5-bromo-2-hydroxyphenyl)-2,3-dihydroquinazolin-4(1H)-one(4i)



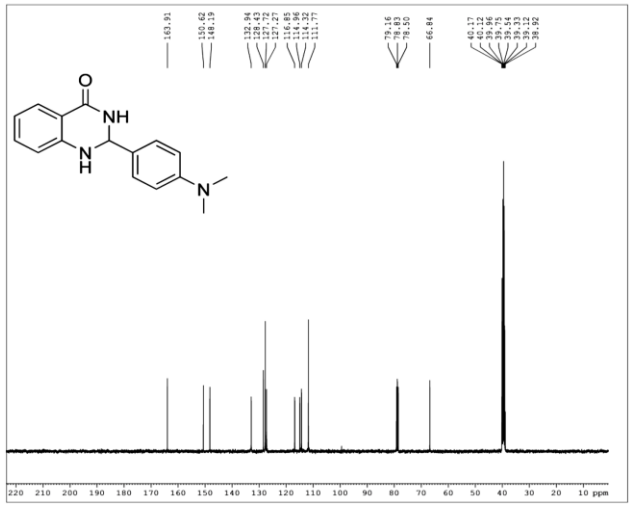
FTIR of 2-(4-isopropylphenyl)-2,3-dihydroquinazolin-4(1H)-one(4j)

^{1}H-NMR of 2-(4-isopropylphenyl)-2,3-dihydroquinazolin-4(*1H*)-one(4j)

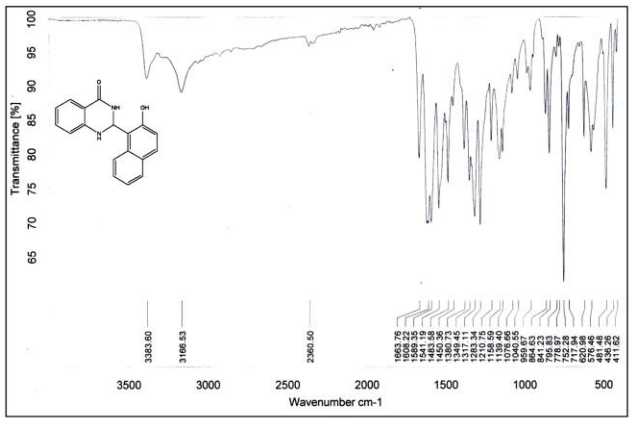


FTIR of 2-(4-(dimethylamino)phenyl)-2,3-dihydroquinazolin-4(1H)-one(4k)

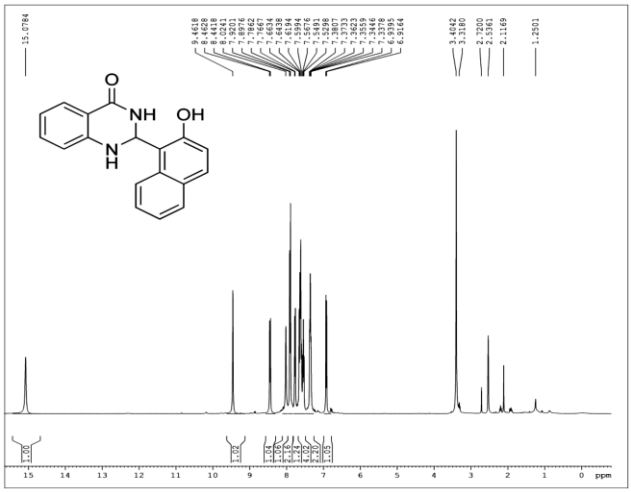
^{1}H-NMR of 2-(4-(dimethylamino)phenyl)-2,3-dihydroquinazolin-4(1H)-one(4k)



^{13}C-NMR of 2-(4-(dimethylamino)phenyl)-2,3-dihydroquinazolin-4(1H)-one(4k)



FTIR of 2-(2-hydroxynaphthalen-1-yl)-2,3-dihydroquinazolin-4(1H)-one(4l)



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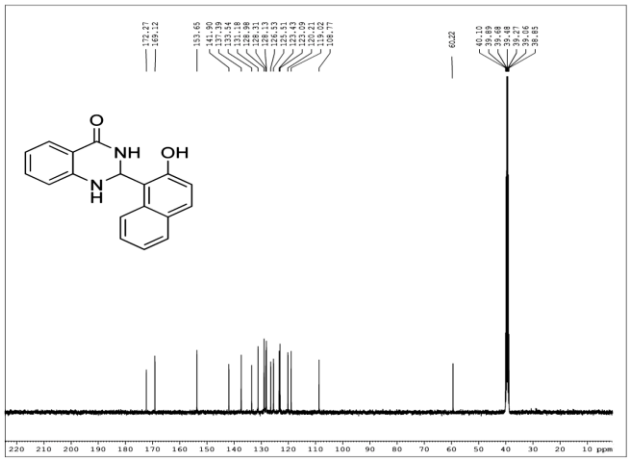

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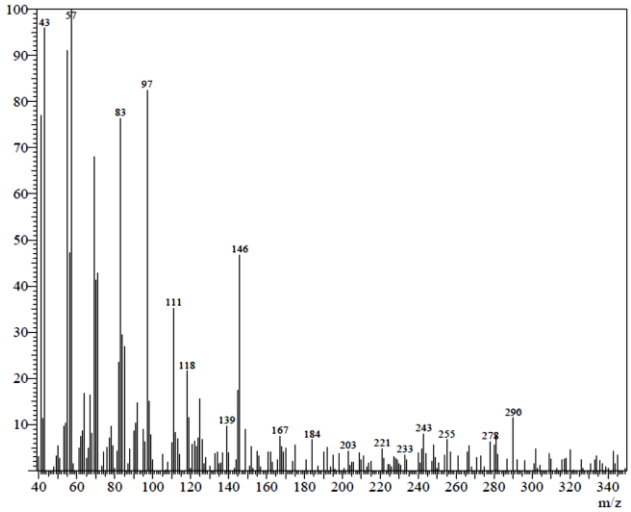
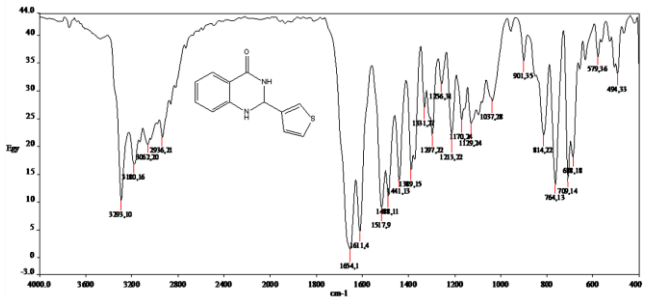


Mass spectrum of 2-(2-hydroxynaphthalen-1-yl)-2,3-dihydroquinazolin-4(1H)-one(4l)



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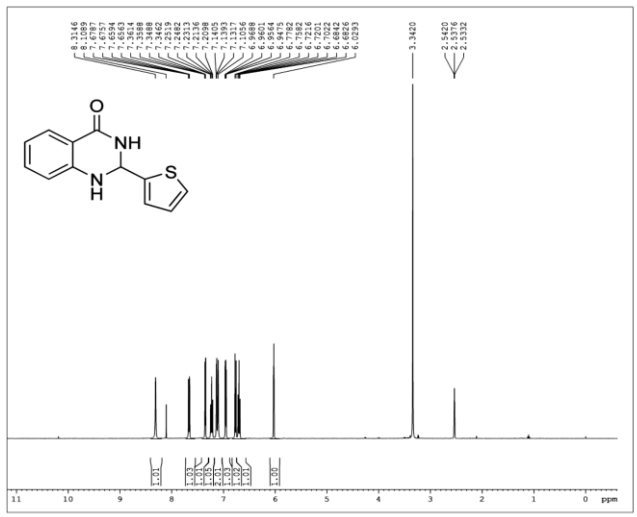

^{1}H-NMR of 2-(thiophen-3-yl)-2,3-dihydroquinazolin-4(1H)-one(4n)