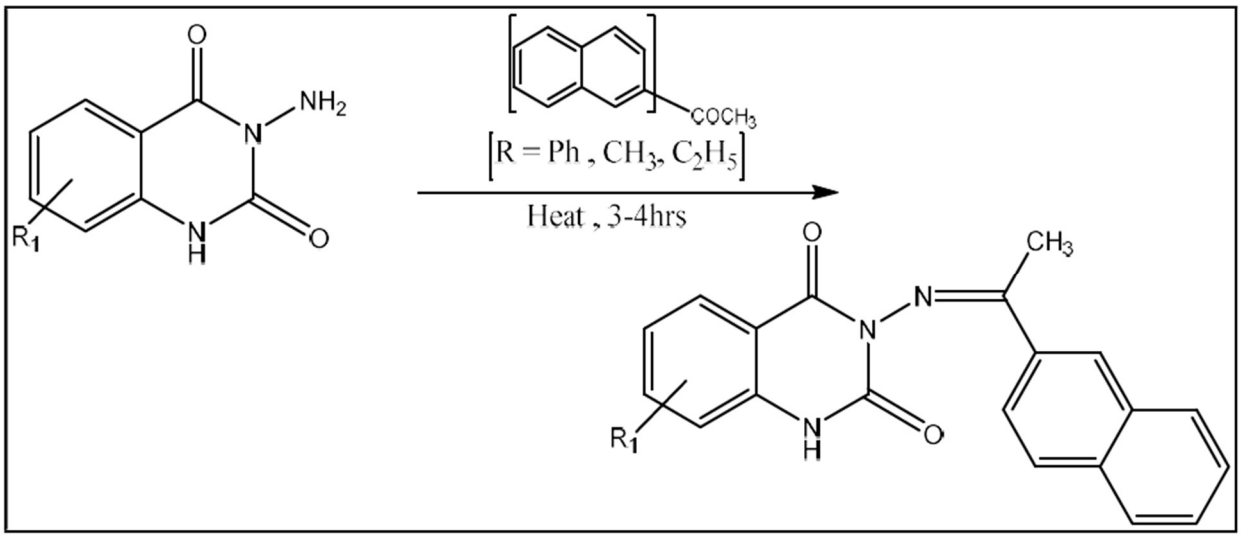
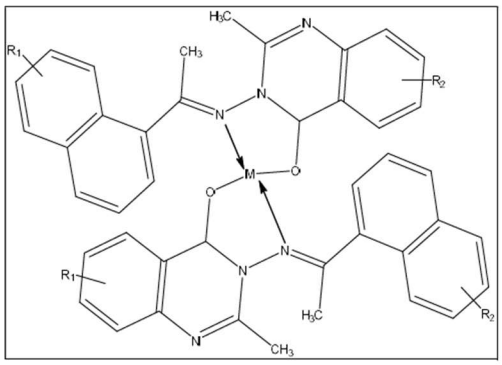
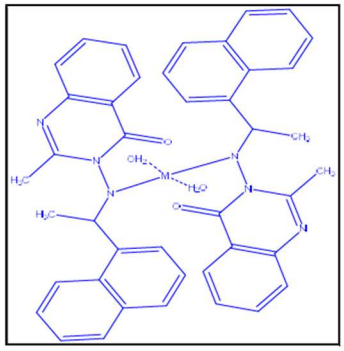
Supplementary Data File

1. Reaction:



2. Metal complex:





3. Characterizations Data :

a. IR Data:

Wavenumber (cm^{-1})	Peak Description	Possible Functional Group(s)
3000-3500	Broad peak	-OH (alcohol/phenol) or -NH (amine)
3000	Sharp peaks	C-H stretching (alkanes, organic C-H bonds)
1700	Strong absorption	C=O (carbonyl) - possible ketone, ester, or carboxylic acid
1600-1500	Complex absorptions	C=C (aromatic ring) or C=N (imine)
1500-500	(Fingerprint Region) Multiple peaksUnique	structural features and confirmations

Wavenumber (cm^{-1})	Peak Description	Possible Functional Group(s)
3200-3350	Sharp peaks	-OH (hydroxyl) or -NH (amine) group
2900-3000	Sharp peaks	C-H stretching (alkanes or organic C-H bonds)
1650-1700	Strong absorption	C=O (carbonyl) - possibly ketone, amide, or ester
1550-1600	Sharp peaks	C=C (aromatic ring) or C=N (imine)
1300-1450	Moderate peaks	C-N stretching or aromatic ring bending
1000-1300	Moderate to weak peaks	C-O stretching (alcohol, ester) or aromatic ring vibrations
Below 1000	Multiple peaks	Fingerprint region (unique structural features)

b. Mass spectroscopy:

m/z Value	Observation / Interpretation
329	Molecular ion peak (consistent with molecular weight of the compound)
277	Fragment ion – loss of substituent group from parent compound
153	Characteristic fragment, indicating quinazoline moiety
127	Fragment ion corresponding to naphthyl group cleavage
41	Base peak, small stable fragment ion

c. H^1NMR Data:

Chemical Shift (ppm)	Type of Proton	Assignment
10.00 – 8.00	Aromatic protons	Naphthalene and quinazolinone ring protons
8.00 – 7.50	Imine proton (C=NH)	Imine group proton connected to Schiff base
~5.00	Methine proton (-CH=)	Proton adjacent to imine and naphthalene group
~3.00	Methyl group (-CH3)	Methyl group on quinazolinone moiety
~2.00	Methyl group (-CH3)	Methyl group near sp3 carbon or imine carbon

d. XRD :

2θ Range (degrees)	Intensity	Interpretation
~10–30	Moderate to high	Indicates dominant crystalline planes, reflecting strong Cu-ligand coordination and ordered structure.
~30–50	Moderate intensity	Represents secondary crystalline planes, suggesting some level of order but with lower packing density.
~50–80	Low intensity	Associated with weaker reflections, likely due to less prominent planes or partial structural disorder.
~80–100	Very low intensity	May indicate background noise or amorphous contributions, with minimal crystallographic reflections.