

Design and preparation of [4,4'-bipyridine]-1,1'-dium trinitromethanide (BPDNTM) as a novel nanosized ionic liquid catalyst: Application to the synthesis of 1-(benzoimidazolylamino)methyl-2-naphthols

Meysam Yarie, ^{*a} Mohammad Ali Zolfigol, ^{*a} Saeed Baghery, ^a Diego A. Alonso, ^{*b} Abbas Khoshnood, ^{*b} Mehdi Kalhor, ^c Yadollah Bayat, ^d Asiye Asgari, ^d

^aDepartment of Organic Chemistry, Faculty of Chemistry, Bu-Ali Sina University, Hamedan 6517838683, Iran.

^bOrganic Synthesis Institute and Organic Chemistry Department, Alicante University, Apdo. 99, 03080 Alicante, Spain.

^cDepartment of Chemistry, Payame Noor University, Tehran 19395-4697, Iran

^dFaculty of Chemistry and chemical Engineering, Malek Ashtar University of Technology, Tehran, Iran

*Corresponding Authors: Fax: ^a+988138257407, Phone: ^b+34965909841

e-mail: zolfigol@basu.ac.ir & mzolfigol@yahoo.com, (Mohammad Ali Zolfigol), myari.5266@gmail.com (Meysam Yarie), diego.alonso@ua.es (Diego A. Alonso) and abbas.khoshnood@ua.es (Abbas Khoshnood).

Table of contents

¹HNMR, ¹³CNMR; and ¹⁹FNMR	4
¹ HNMR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(4-chlorophenyl)methyl)naphthalen-2-ol (6a):	5
¹³ CNMR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(4-chlorophenyl)methyl)naphthalen-2-ol (6a):	5
¹ HNMR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(4-methoxyphenyl)methyl)naphthalen-2-ol (6b):	6
¹³ CNMR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(4-methoxyphenyl)methyl)naphthalen-2-ol (6b):	6
¹ HNMR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(phenyl)methyl)naphthalen-2-ol (6c):	7
¹³ CNMR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(phenyl)methyl)naphthalen-2-ol (6c):	7
¹ HNMR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(4-bromophenyl)methyl)naphthalen-2-ol (6d):	8
¹³ CNMR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(4-bromophenyl)methyl)naphthalen-2-ol (6d):	8
¹ HNMR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(2,6-difluorophenyl)methyl)naphthalen-2-ol (6e):	9
¹³ CNMR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(2,6-difluorophenyl)methyl)naphthalen-2-ol (6e):	9
¹⁹ FNMR of spectrum 1-(((1H-benzo[d]imidazol-2-yl)amino)(2,6-difluorophenyl)methyl)naphthalen-2-ol (6e):	10
¹ HNMR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(3,5-difluorophenyl)methyl)naphthalen-2-ol (6f):	10
¹³ CNMR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(3,5-difluorophenyl)methyl)naphthalen-2-ol (6f):	11
¹⁹ FNMR of spectrum 1-(((1H-benzo[d]imidazol-2-yl)amino)(3,5-difluorophenyl)methyl)naphthalen-2-ol (6f):	11
¹ HNMR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(4-fluorophenyl)methyl)naphthalen-2-ol (6g):	12
¹³ CNMR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(4-fluorophenyl)methyl)naphthalen-2-ol (6g):	12
¹⁹ FNMR of spectrum 1-(((1H-benzo[d]imidazol-2-yl)amino)(4-fluorophenyl)methyl)naphthalen-2-ol (6g):	13
¹ HNMR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(p-tolyl)methyl)naphthalen-2-ol (6h):	13
¹³ CNMR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(p-tolyl)methyl)naphthalen-2-ol (6h):	14
¹ HNMR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(3-hydroxy-4-methoxyphenyl)methyl)naphthalen-2-ol (6i):	14
¹³ CNMR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(3-hydroxy-4-methoxyphenyl)methyl)naphthalen-2-ol (6i):	15
¹ HNMR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(3-ethoxy-4-hydroxyphenyl)methyl)naphthalen-2-ol (6j):	15
¹³ CNMR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(3-ethoxy-4-hydroxyphenyl)methyl)naphthalen-2-ol (6j):	16
¹ HNMR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(3-nitrophenyl)methyl)naphthalen-2-ol (6k):	16
¹³ CNMR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(3-nitrophenyl)methyl)naphthalen-2-ol (6k):	17
¹ HNMR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(2-chlorophenyl)methyl)naphthalen-2-ol (6l):	17
¹³ CNMR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(2-chlorophenyl)methyl)naphthalen-2-ol (6l):	18
¹ HNMR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(3,4-dimethoxyphenyl)methyl)naphthalen-2-ol (6m):	18
¹³ CNMR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(3,4-dimethoxyphenyl)methyl)naphthalen-2-ol (6m):	19
¹ HNMR spectrum of 1,1'-(1,4-phenylenebis(((1H-benzo[d]imidazol-2-yl)amino)methylene))bis(naphthalen-2-ol) (6n):	19
¹³ CNMR spectrum of 1,1'-(1,4-phenylenebis(((1H-benzo[d]imidazol-2-yl)amino)methylene))bis(naphthalen-2-ol) (6n):	20
¹ HNMR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(naphthalen-1-yl)methyl)naphthalen-2-ol (6o):	20
¹³ CNMR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(naphthalen-1-yl)methyl)naphthalen-2-ol (6o):	21

Low Resolution Mass 22

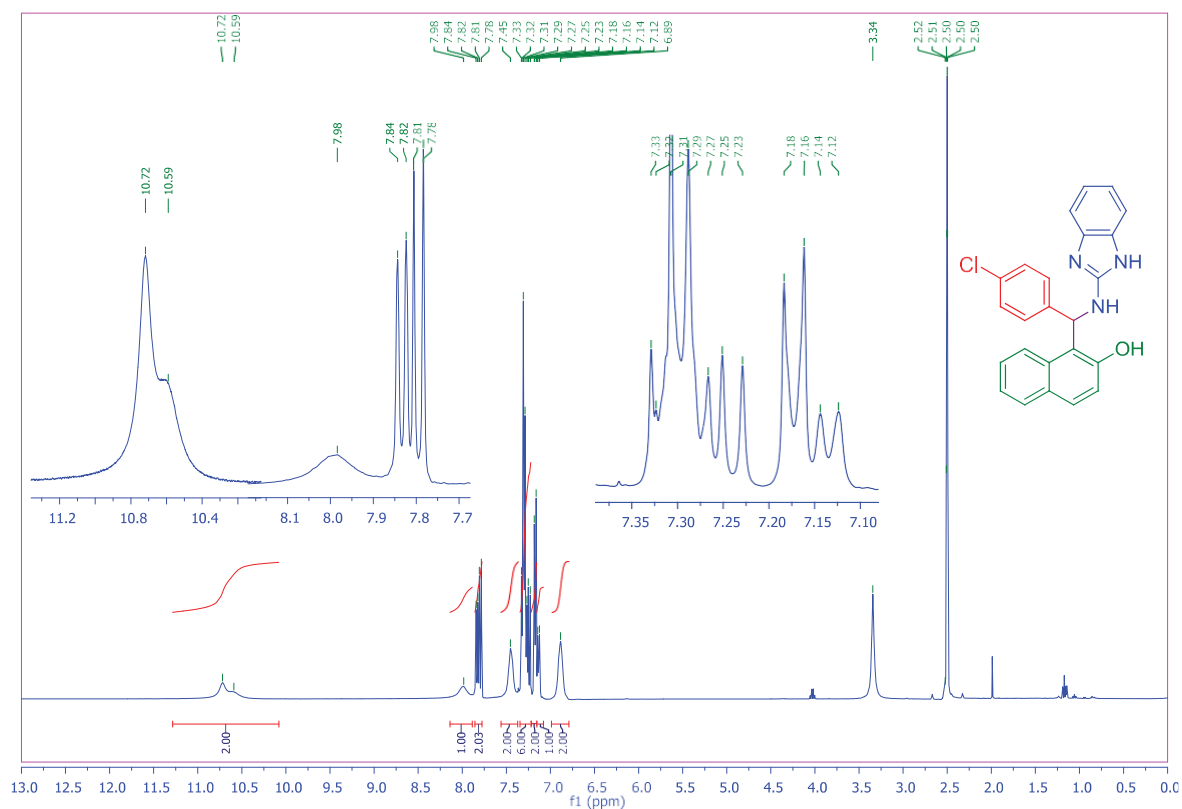
MS spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(4-chlorophenyl)methyl)naphthalen-2-ol (6a):	23
MS spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(4-methoxyphenyl)methyl)naphthalen-2-ol (6b):	23
MS spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(phenyl)methyl)naphthalen-2-ol (6c):	24
MS spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(4-bromophenyl)methyl)naphthalen-2-ol (6d):	24
MS spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(2,6-difluorophenyl)methyl)naphthalen-2-ol (6e):	25
MS spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(3,5-difluorophenyl)methyl)naphthalen-2-ol (6f):	25
MS spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(4-fluorophenyl)methyl)naphthalen-2-ol (6g):	26
MS spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(p-tolyl)methyl)naphthalen-2-ol (6h):	26
MS spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(3-hydroxy-4-methylphenyl)methyl)naphthalen-2-ol (6i):	27
MS spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(3-ethoxy-4-hydroxyphenyl)methyl)naphthalen-2-ol (6j):	27
MS spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(3-nitrophenyl)methyl)naphthalen-2-ol (6k):	28
MS spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(2-chlorophenyl)methyl)naphthalen-2-ol (6l):	28
MS spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(3,4-dimethoxyphenyl)methyl)naphthalen-2-ol (6m):	29
MS spectrum of 1,1'-(1,4-phenylenebis(((1H-benzo[d]imidazol-2-yl)amino)methylene))bis(naphthalen-2-ol) (6n):	29
MS spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(naphthalen-1-yl)methyl)naphthalen-2-ol (6o):	30

FT-IR 31

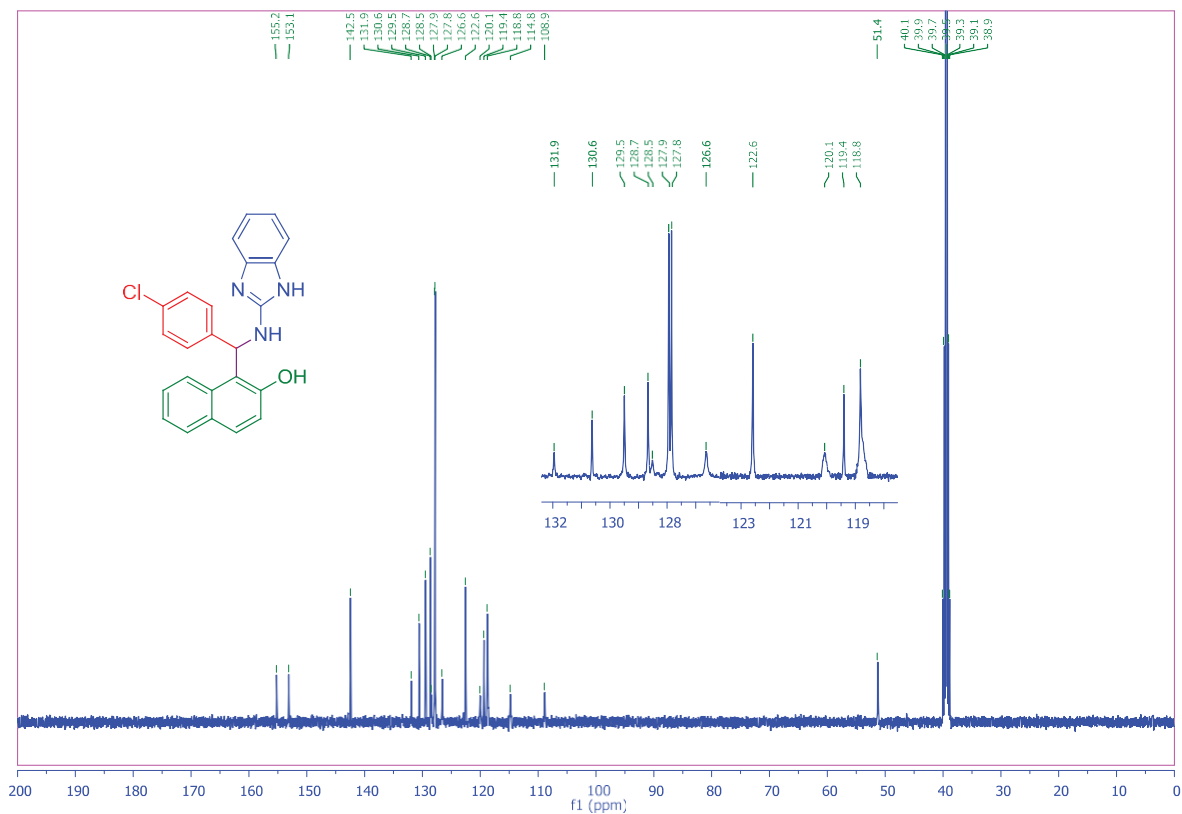
FT-IR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(4-chlorophenyl)methyl)naphthalen-2-ol (6a):	32
FT-IR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(4-methoxyphenyl)methyl)naphthalen-2-ol (6b):	32
FT-IR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(phenyl)methyl)naphthalen-2-ol (6c):	32
FT-IR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(4-bromophenyl)methyl)naphthalen-2-ol (6d):	33
FT-IR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(2,6-difluorophenyl)methyl)naphthalen-2-ol (6e):	33
FT-IR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(3,5-difluorophenyl)methyl)naphthalen-2-ol (6f):	33
FT-IR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(4-fluorophenyl)methyl)naphthalen-2-ol (6g):	34
FT-IR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(p-tolyl)methyl)naphthalen-2-ol (6h):	34
FT-IR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(3-hydroxy-4-methylphenyl)methyl)naphthalen-2-ol (6i):	34
FT-IR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(3-ethoxy-4-hydroxyphenyl)methyl)naphthalen-2-ol (6j):	35
FT-IR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(3-nitrophenyl)methyl)naphthalen-2-ol (6k):	35
FT-IR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(2-chlorophenyl)methyl)naphthalen-2-ol (6l):	35
FT-IR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(3,4-dimethoxyphenyl)methyl)naphthalen-2-ol (6m):	36
FT-IR spectrum of 1,1'-(1,4-phenylenebis(((1H-benzo[d]imidazol-2-yl)amino)methylene))bis(naphthalen-2-ol) (6n): ..	36
FT-IR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(naphthalen-1-yl)methyl)naphthalen-2-ol (6o):	36

^1H NMR; ^{13}C NMR; and ^{19}F NMR

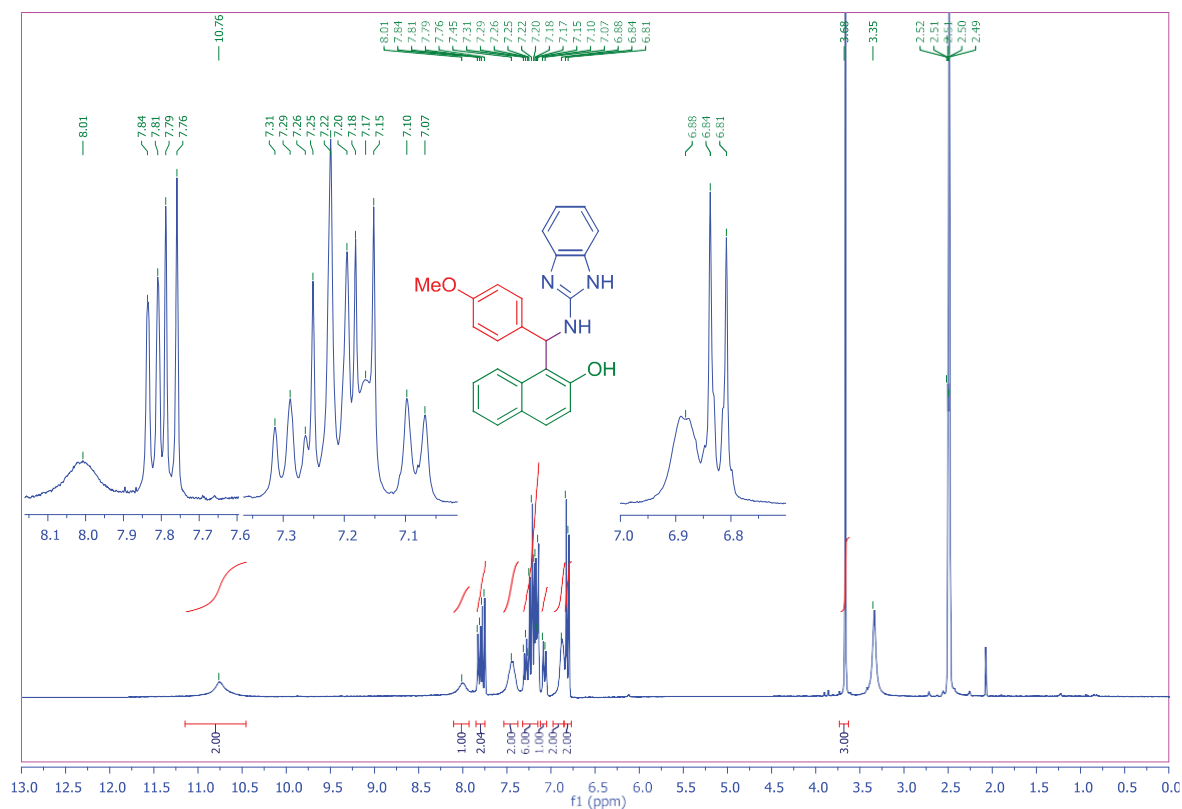
¹H NMR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(4-chlorophenyl)methyl)naphthalen-2-ol (6a):



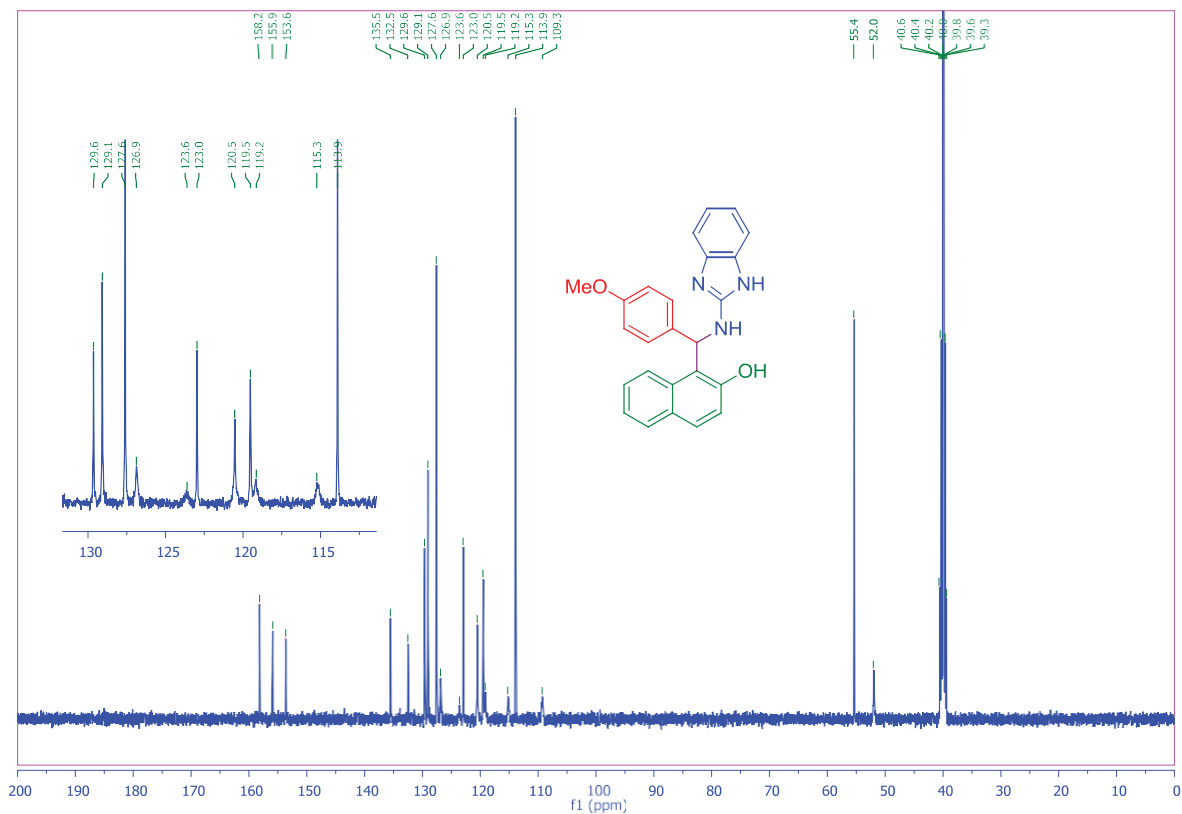
¹³C NMR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(4-chlorophenyl)methyl)naphthalen-2-ol (6a):



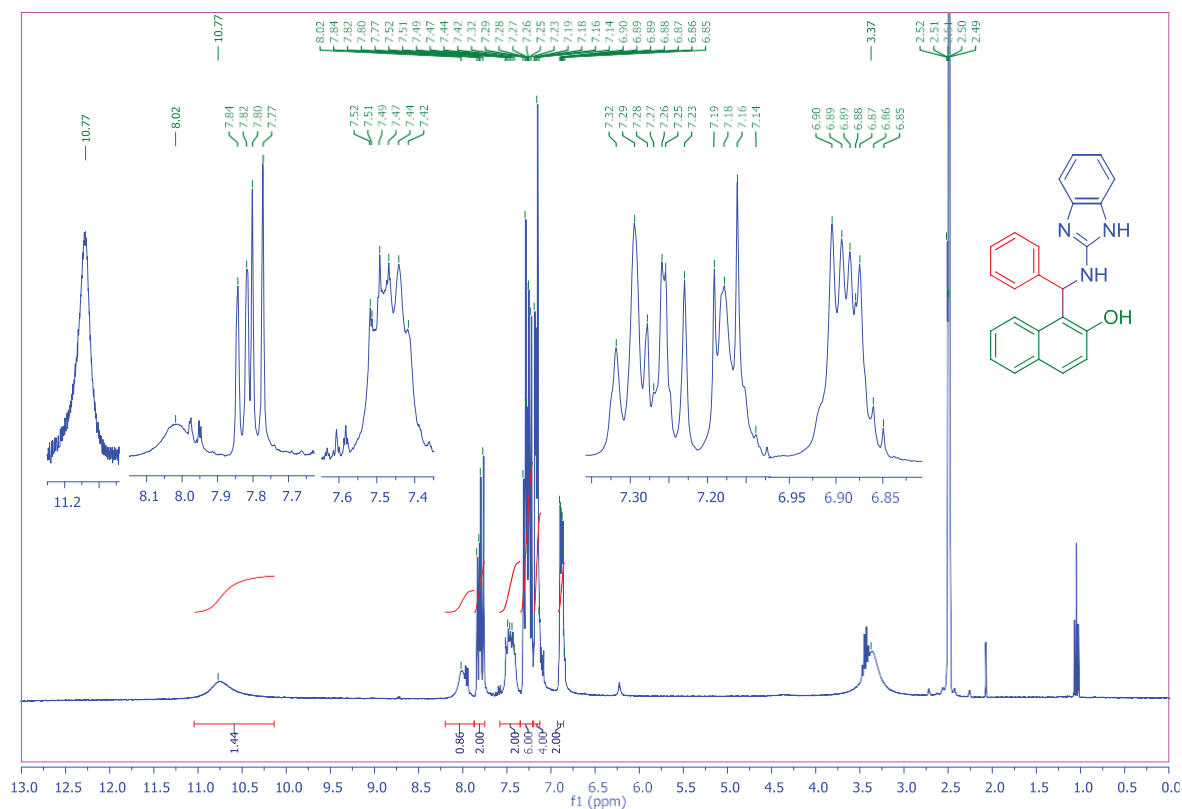
¹H NMR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(4-methoxyphenyl)methyl)naphthalen-2-ol (6b):



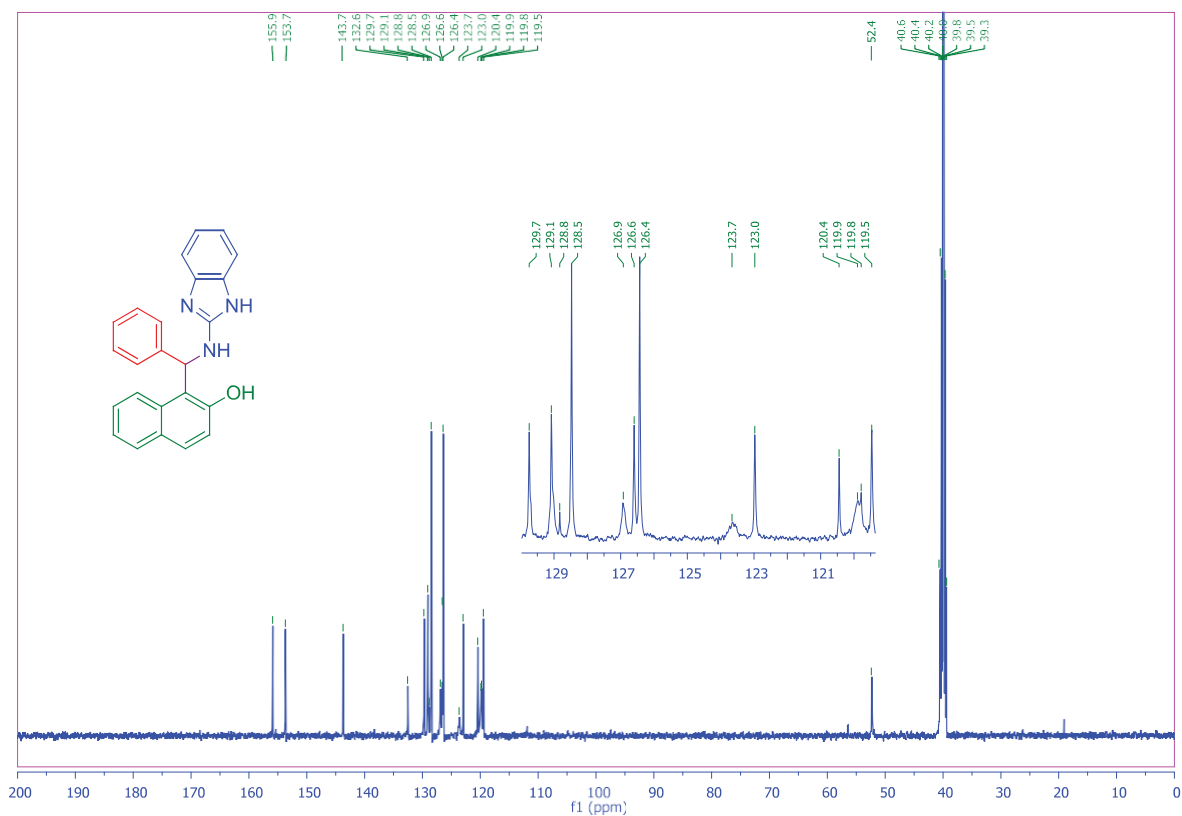
¹³C NMR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(4-methoxyphenyl)methyl)naphthalen-2-ol (6b):



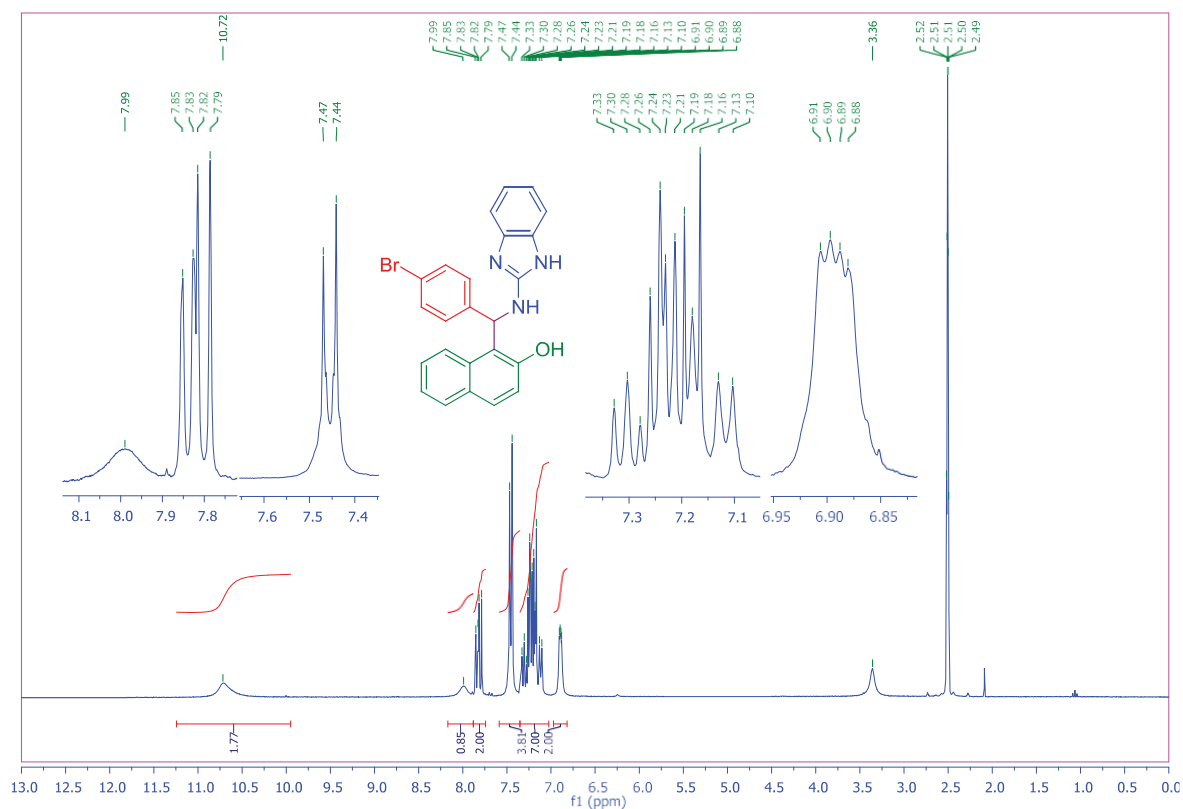
¹H NMR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(phenyl)methyl)naphthalen-2-ol (6c):



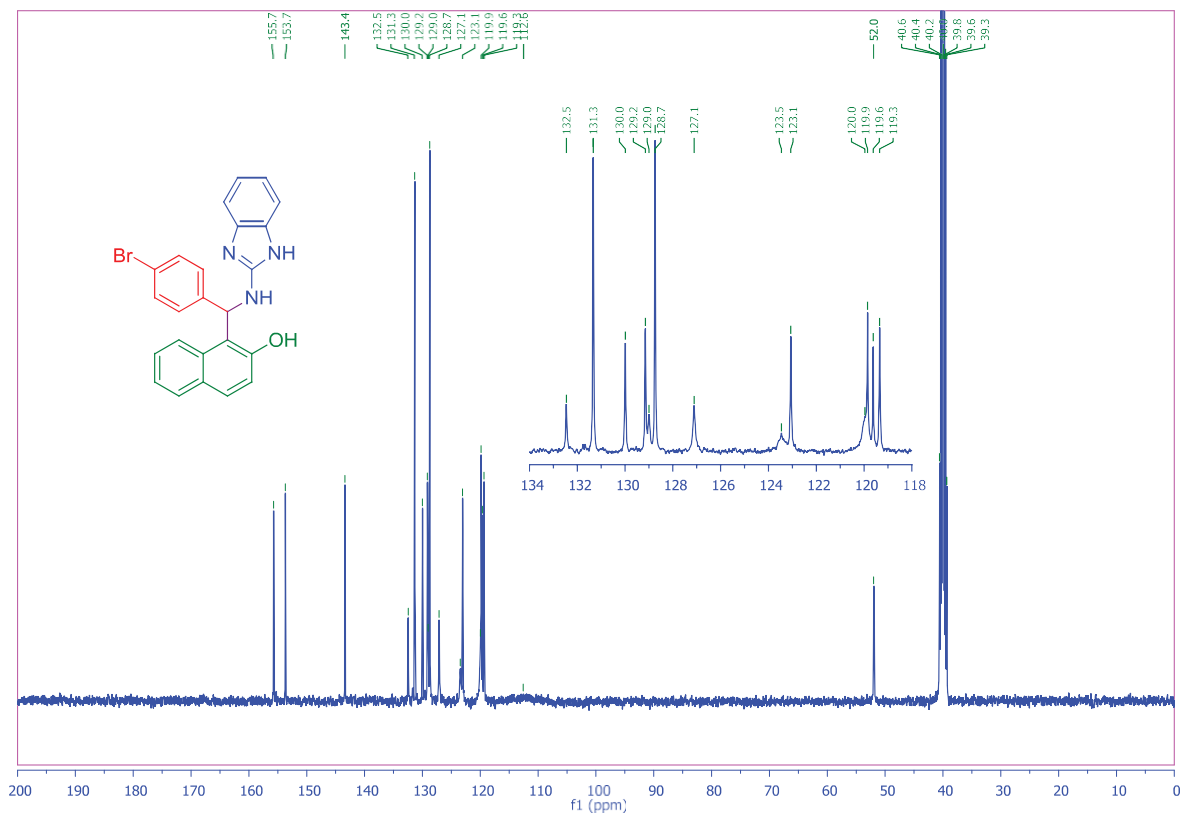
¹³C NMR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(phenyl)methyl)naphthalen-2-ol (6c):



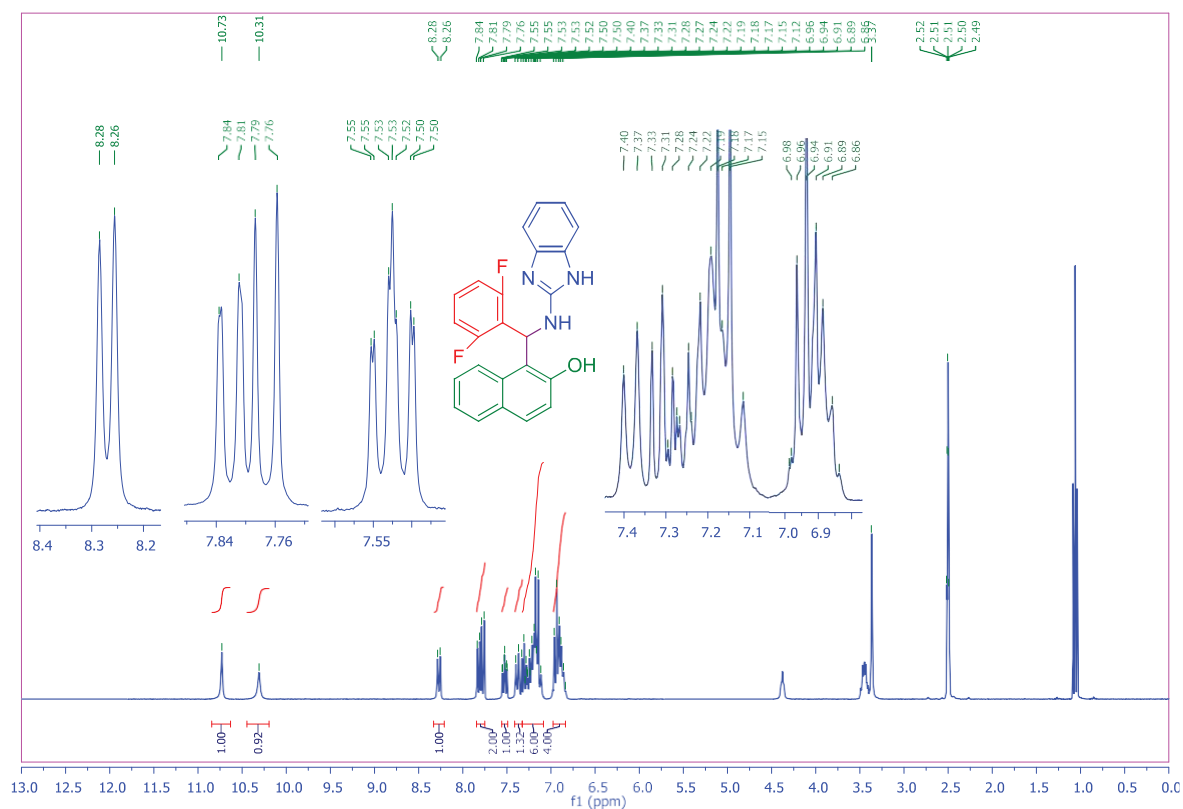
¹H NMR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(4-bromophenyl)methyl)naphthalen-2-ol (6d):



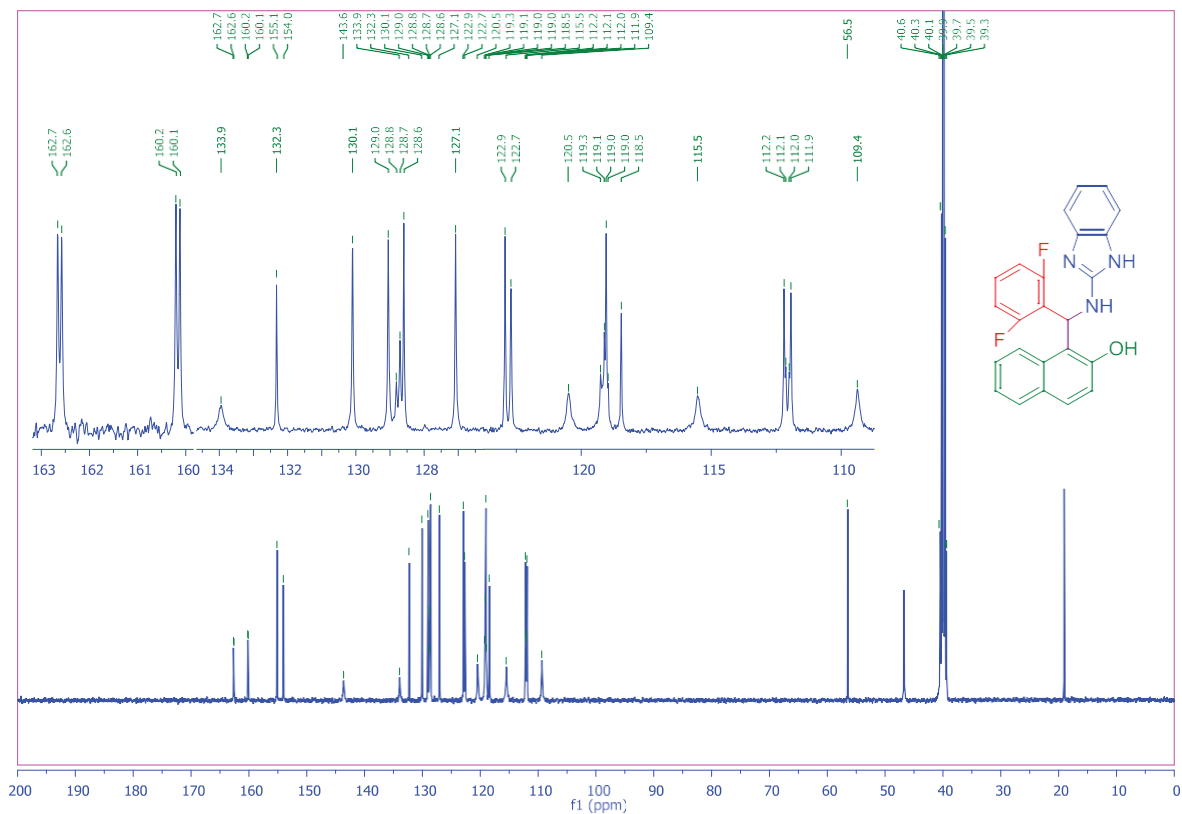
¹³C NMR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(4-bromophenyl)methyl)naphthalen-2-ol (6d):



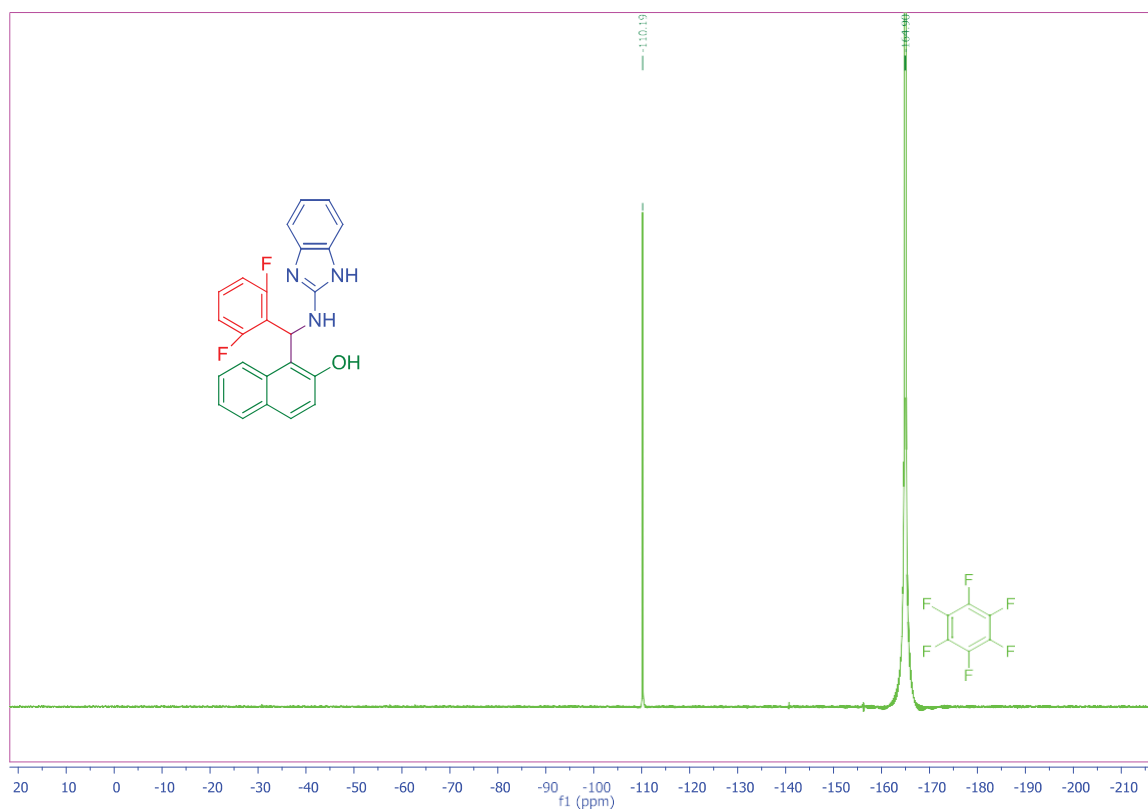
¹H NMR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(2,6-difluorophenyl)methyl)naphthalen-2-ol (6e):



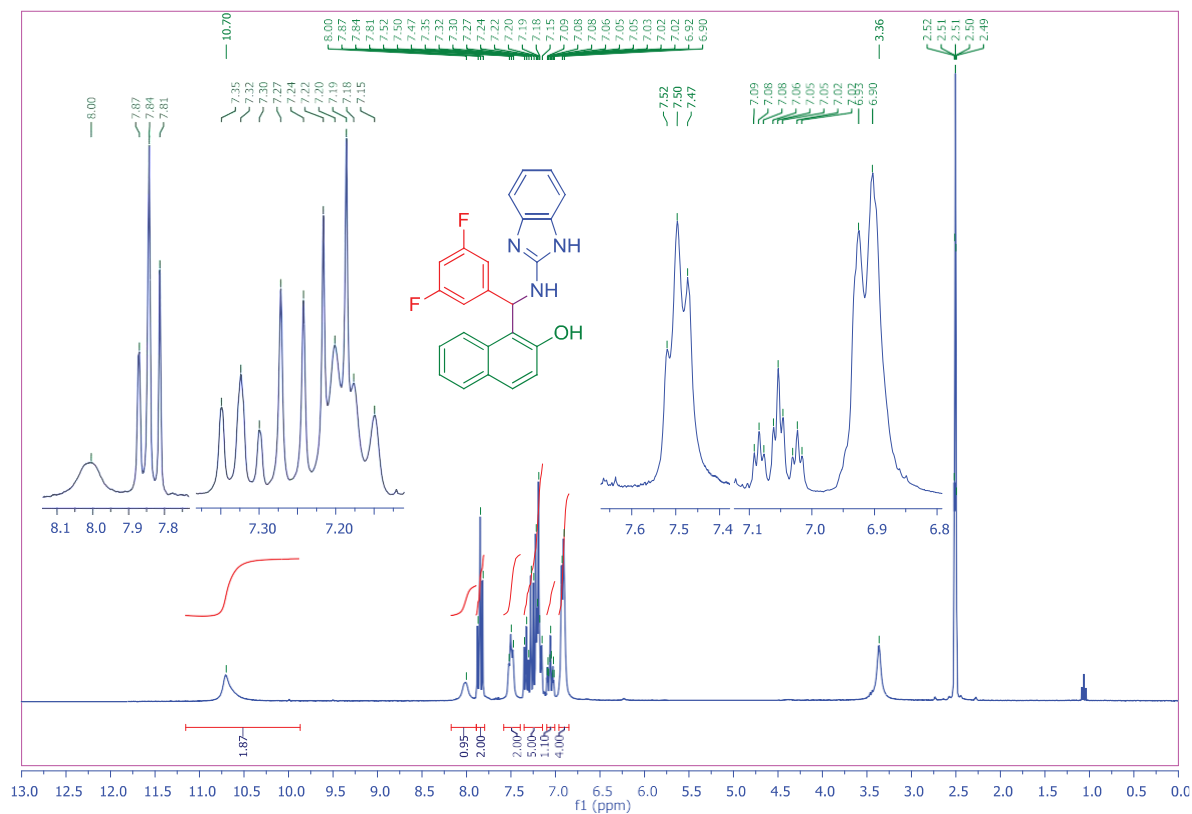
¹³C NMR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(2,6-difluorophenyl)methyl)naphthalen-2-ol (6e):



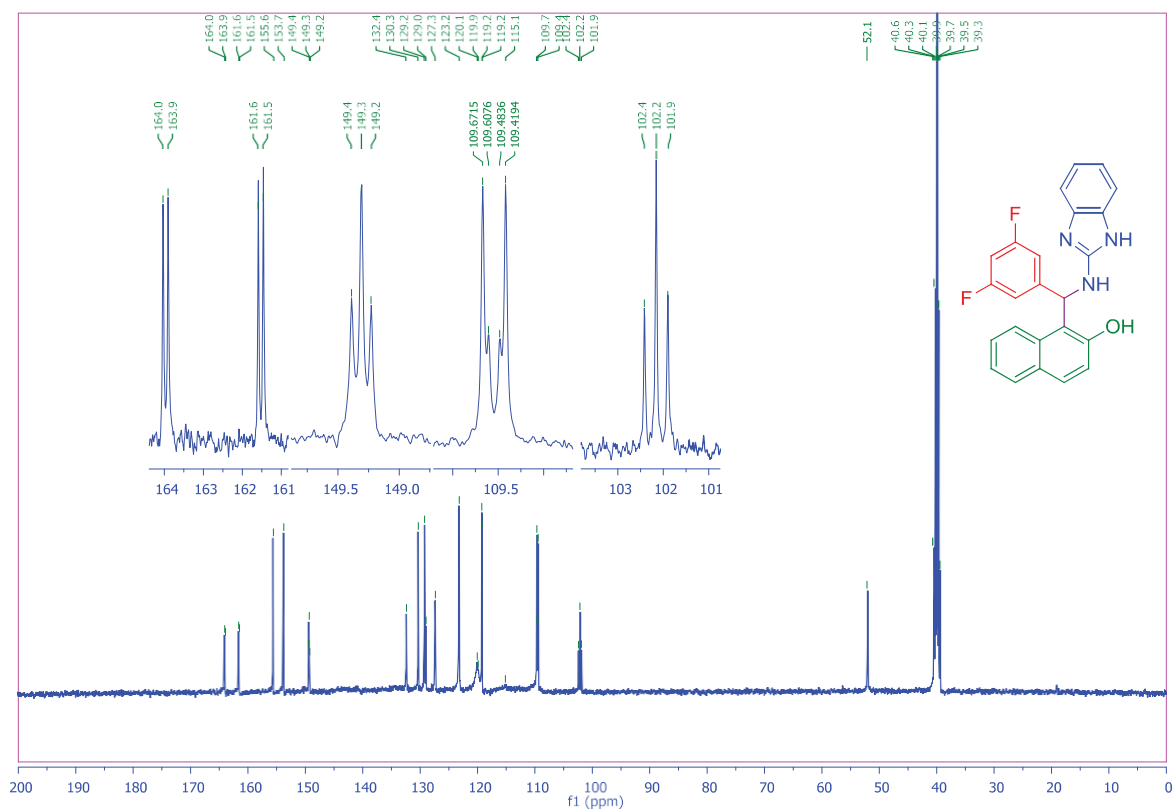
¹⁹F NMR of spectrum 1-(((1H-benzo[d]imidazol-2-yl)amino)(2,6-difluorophenyl)methyl)naphthalen-2-ol (6e):



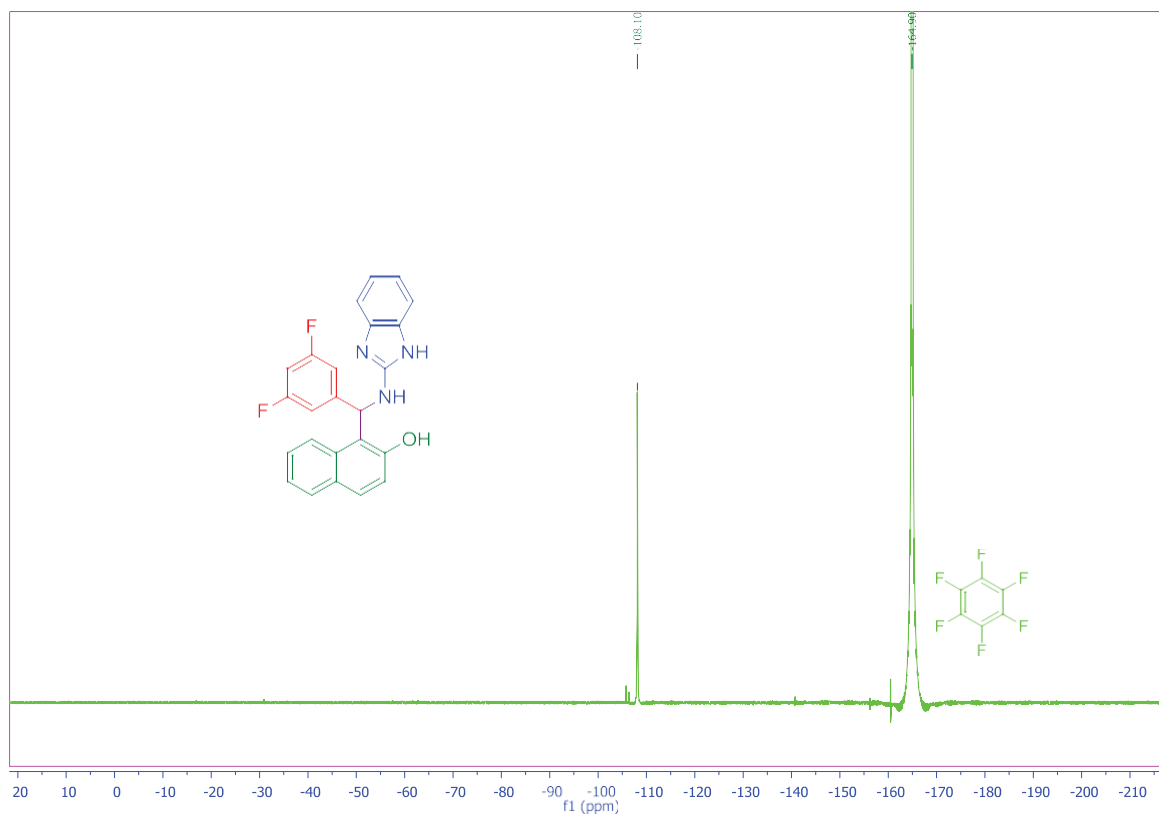
¹H NMR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(3,5-difluorophenyl)methyl)naphthalen-2-ol (6f):



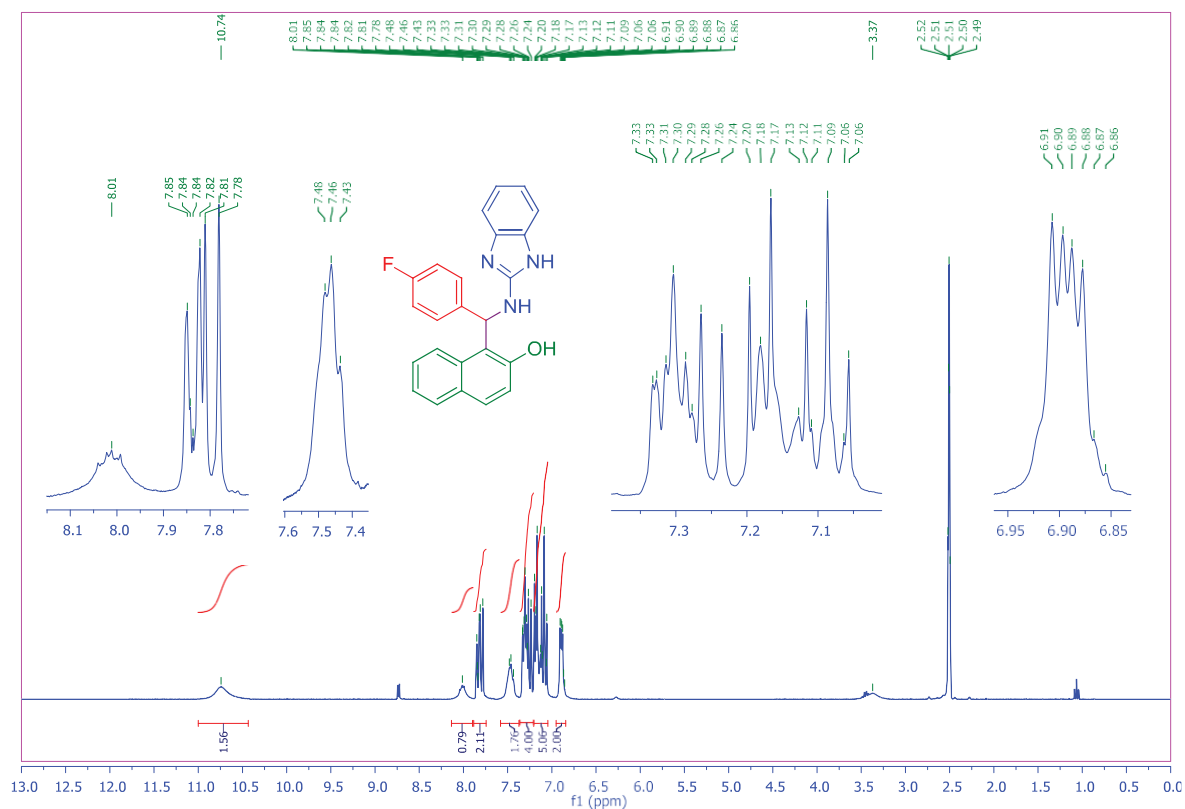
¹³CNMR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(3,5-difluorophenyl)methyl)naphthalen-2-ol (6f):



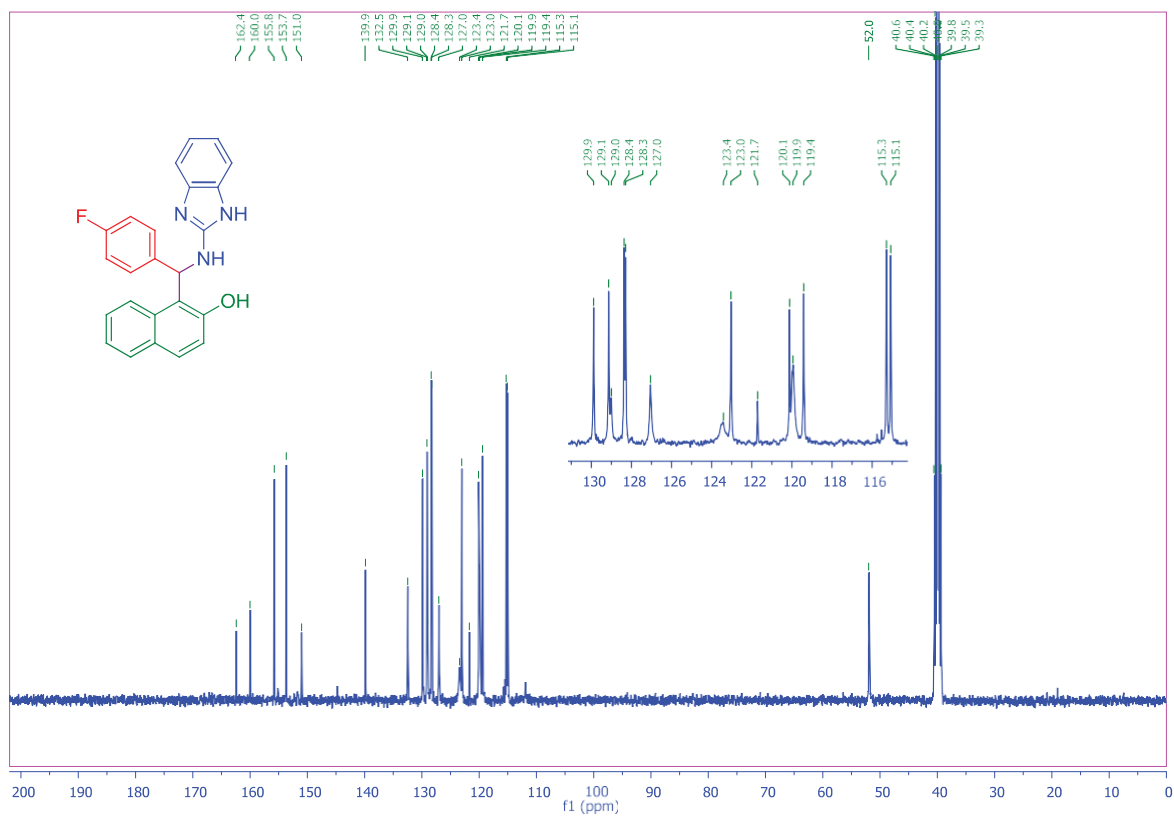
¹⁹F NMR of spectrum 1-(((1H-benzo[d]imidazol-2-yl)amino)(3,5-difluorophenyl)methyl)naphthalen-2-ol (6f):



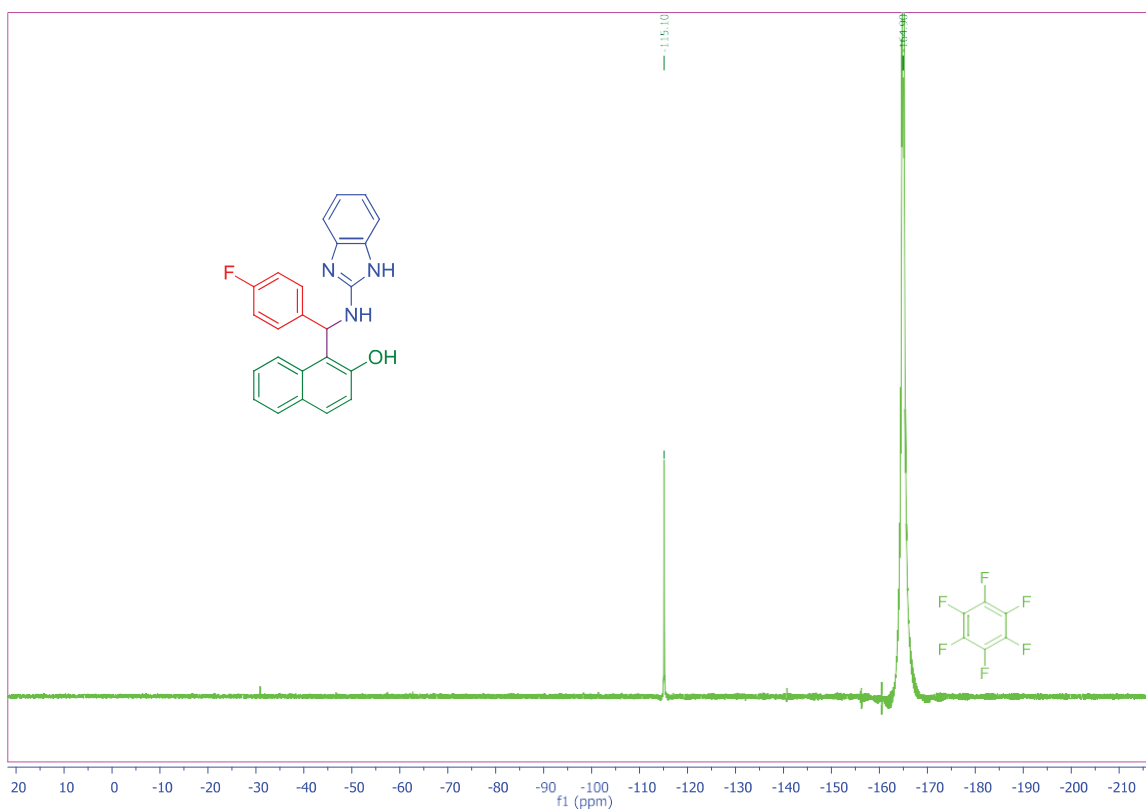
¹H NMR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(4-fluorophenyl)methyl)naphthalen-2-ol (6g):



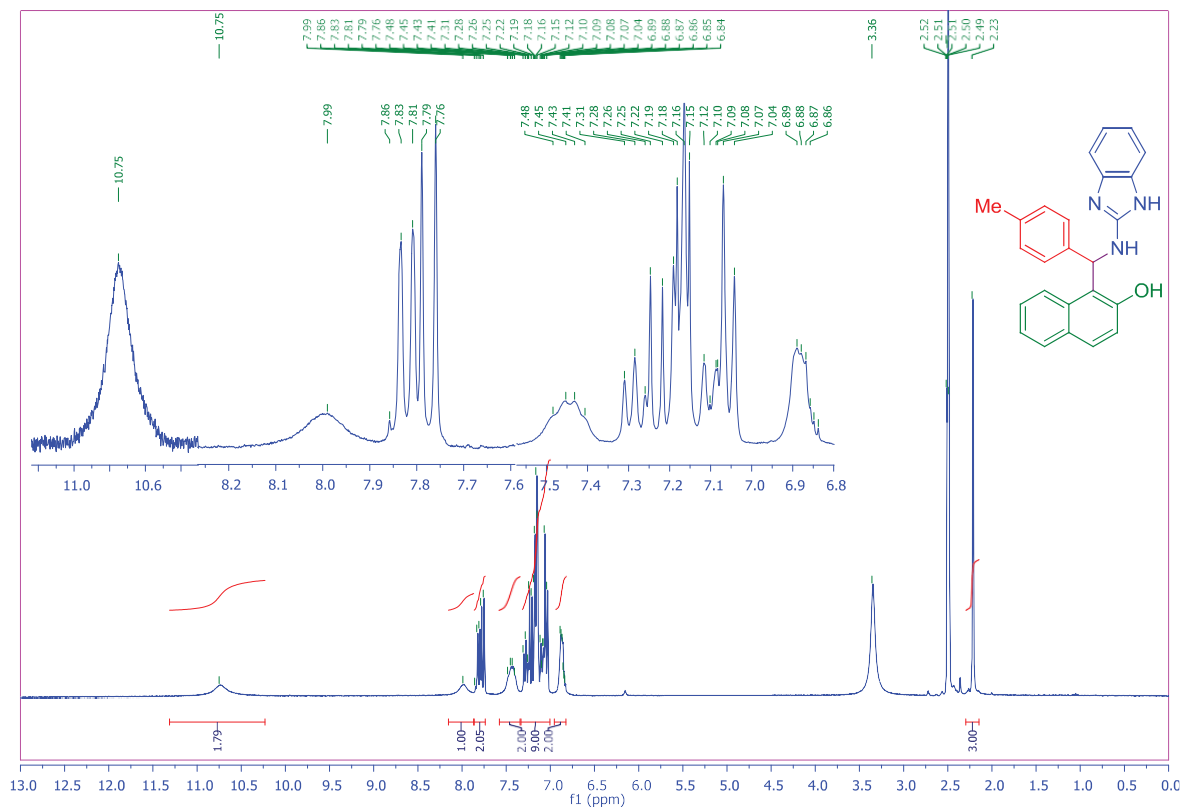
¹³C NMR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(4-fluorophenyl)methyl)naphthalen-2-ol (6g):



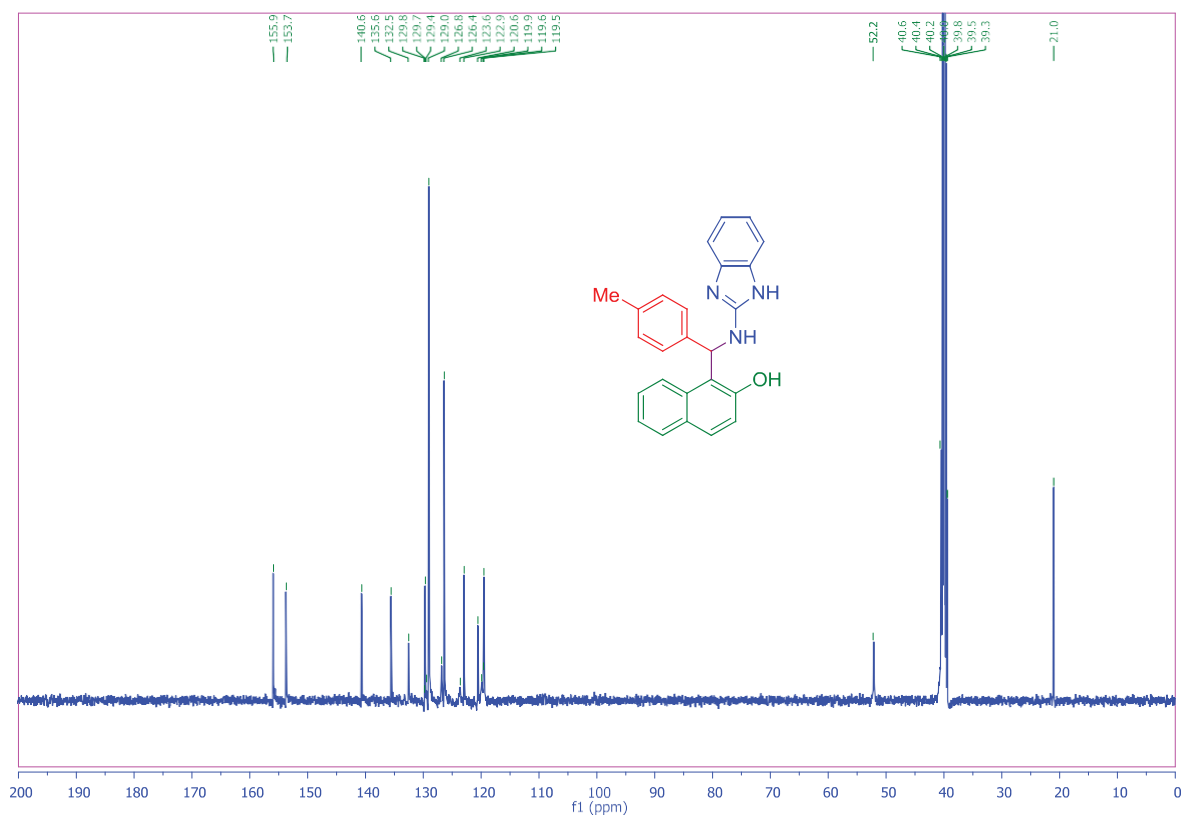
¹⁹F NMR of spectrum 1-(((1H-benzo[d]imidazol-2-yl)amino)(4-fluorophenyl)methyl)naphthalen-2-ol (6g):



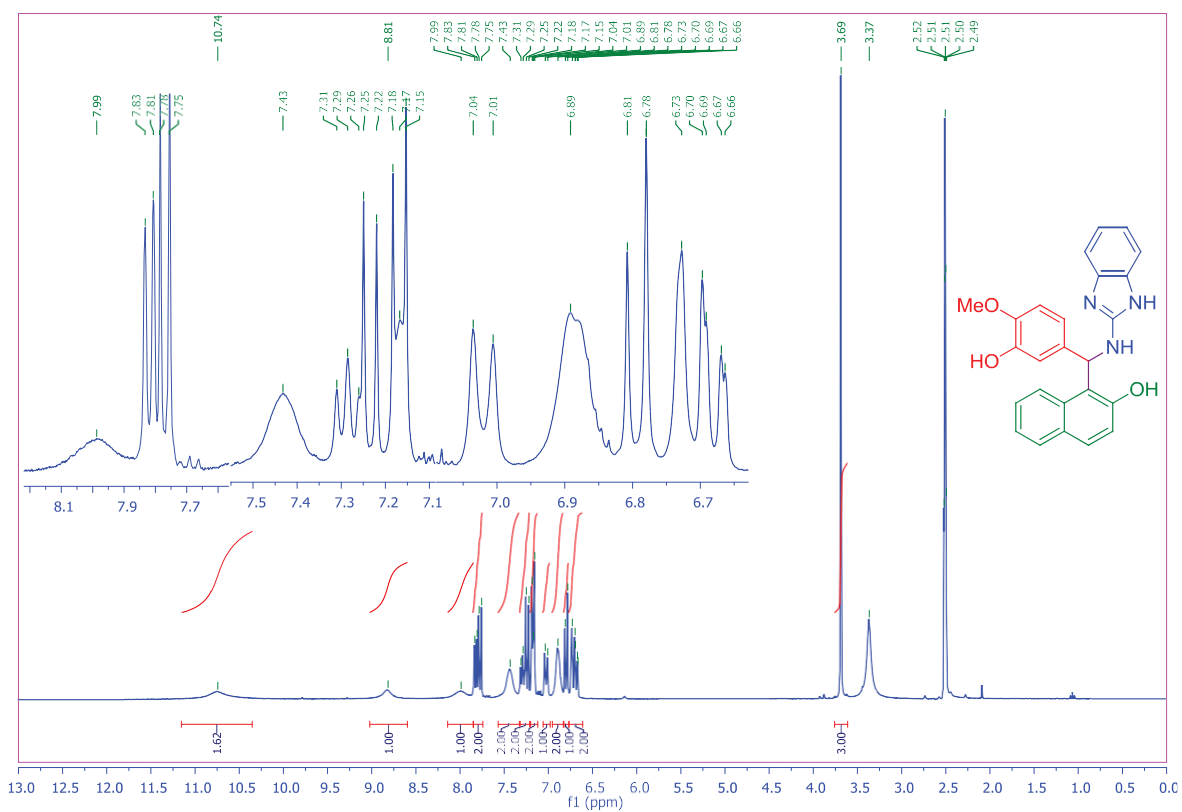
¹H NMR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(p-tolyl)methyl)naphthalen-2-ol (6h):



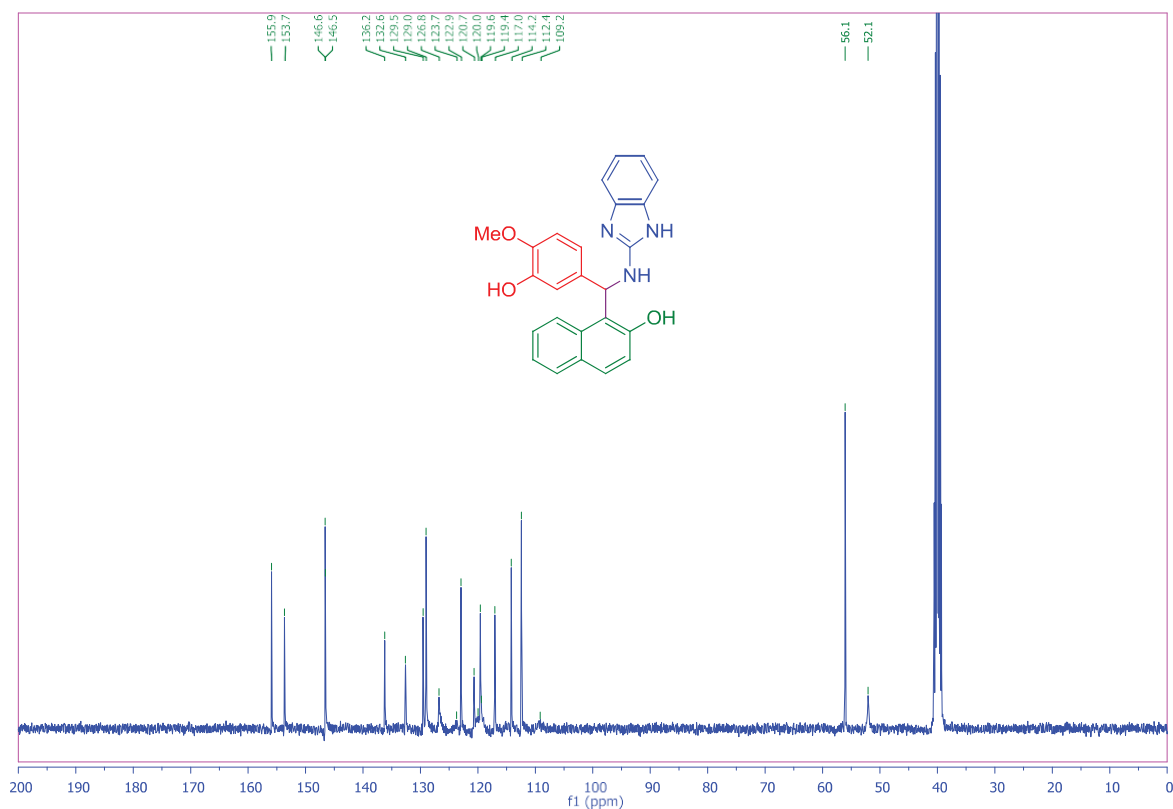
¹³CNMR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(p-tolyl)methyl)naphthalen-2-ol (6h):



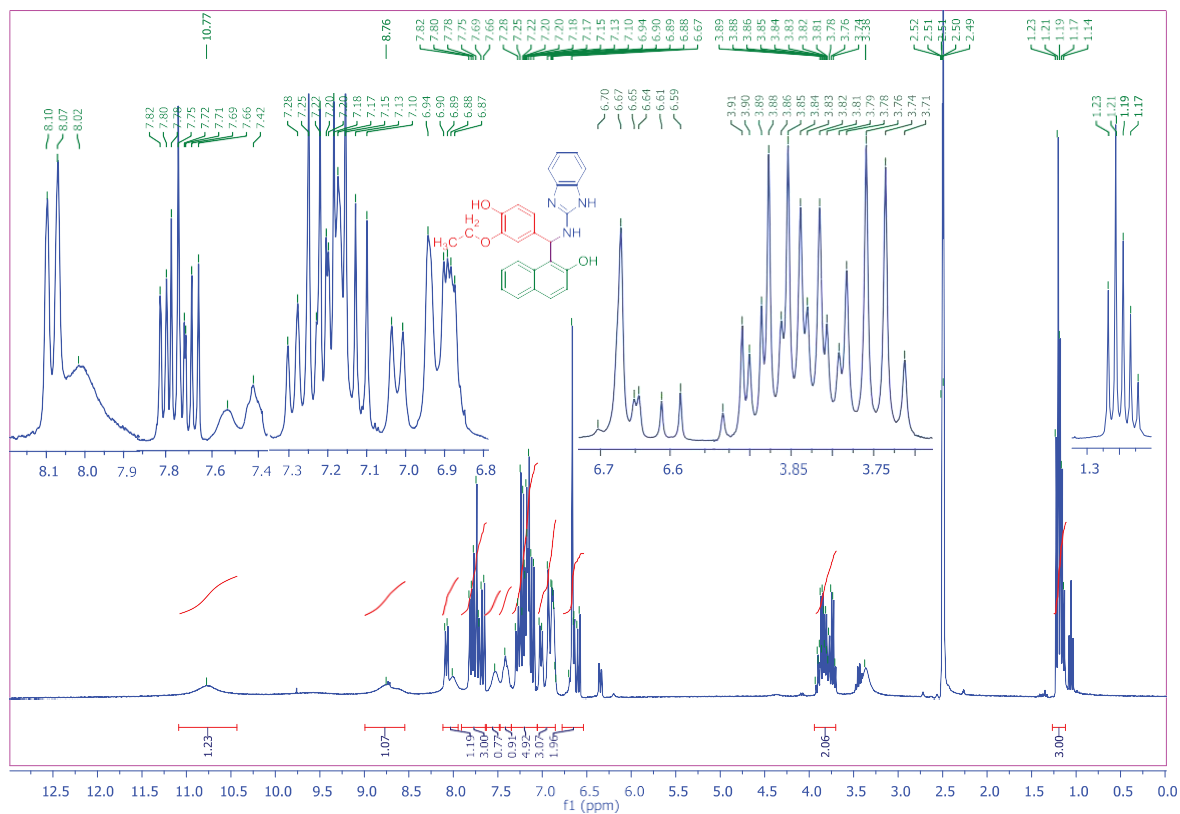
¹HNMR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(3-hydroxy-4-methoxyphenyl)methyl)naphthalen-2-ol (6i):



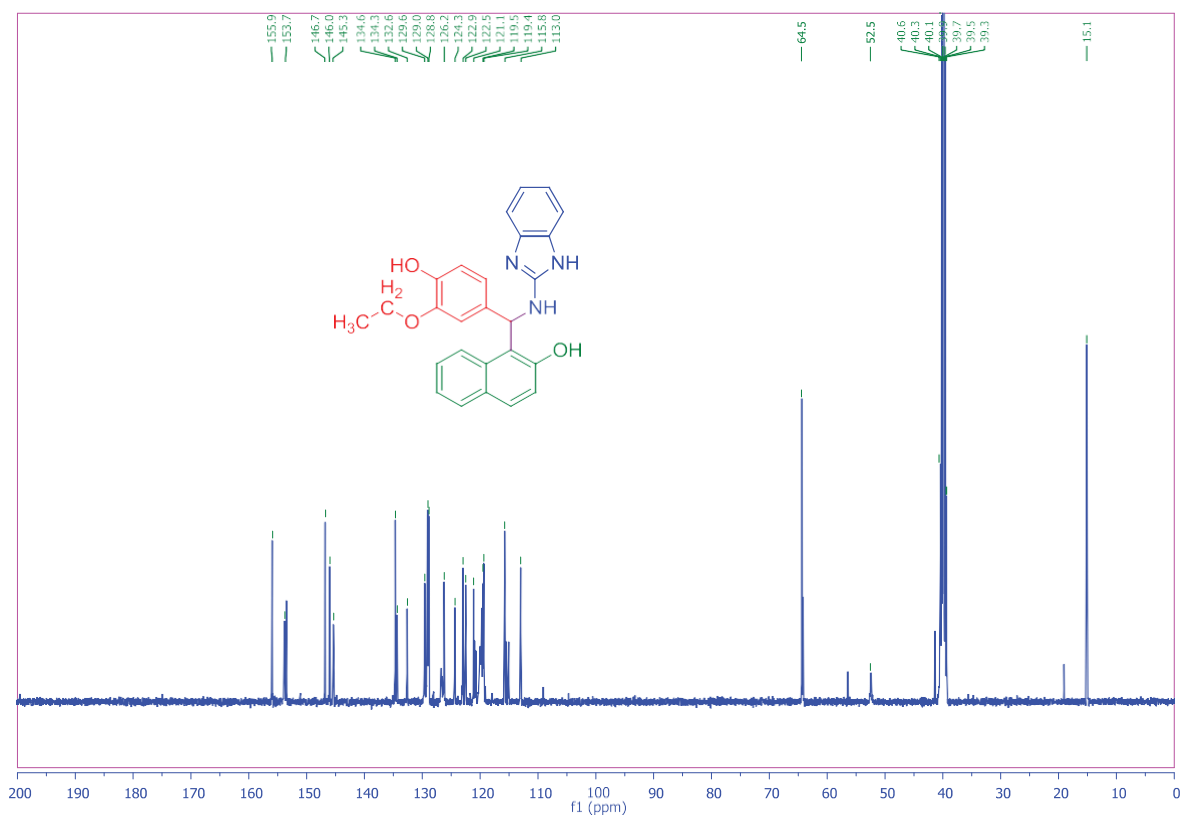
¹³CNMR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(3-hydroxy-4-methoxyphenyl)methyl)naphthalen-2-ol (6i):



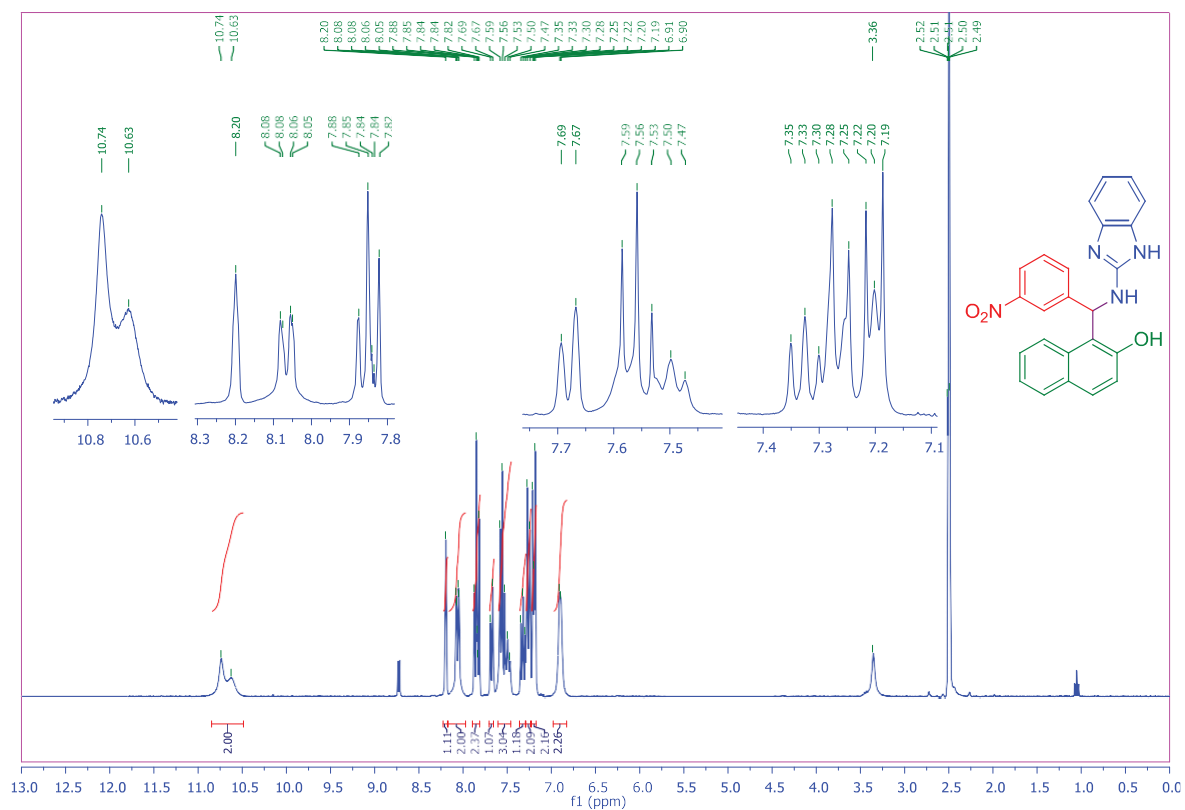
¹HNMR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(3-ethoxy-4-hydroxyphenyl)methyl)naphthalen-2-ol (6j):



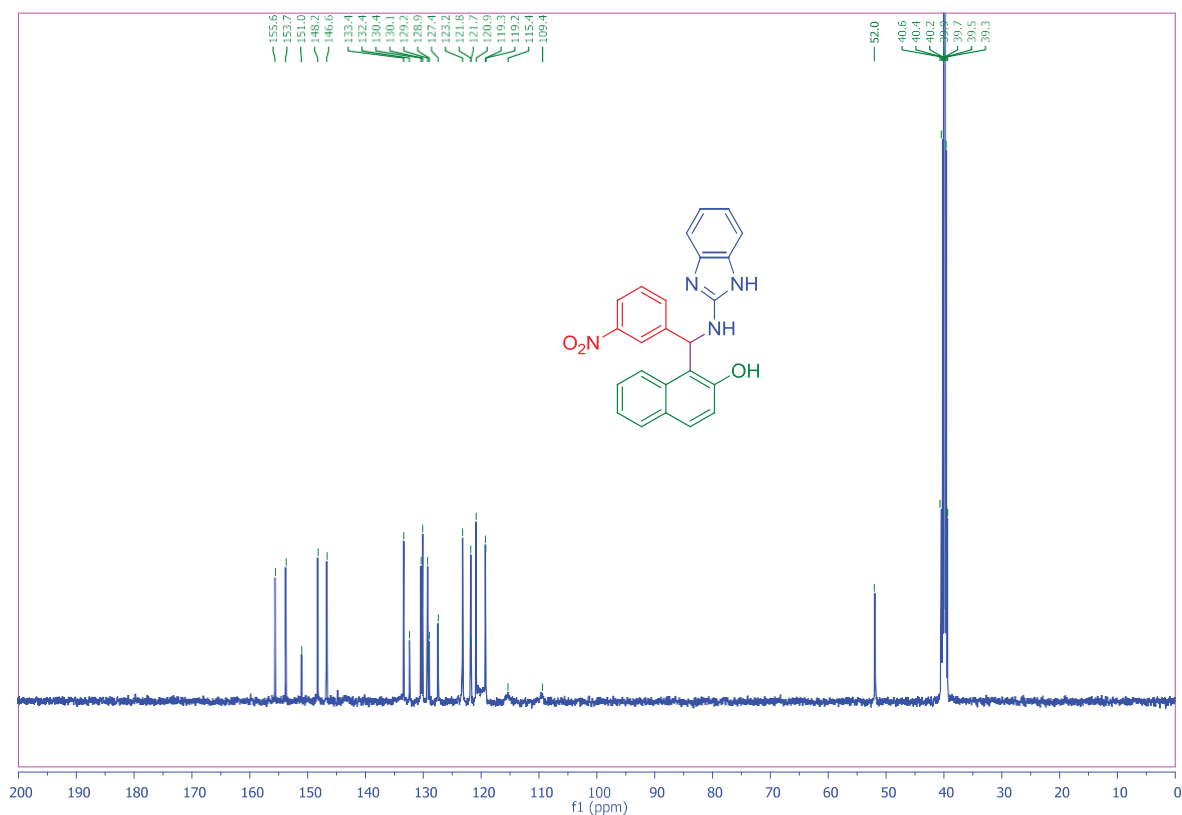
¹³CNMR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(3-ethoxy-4-hydroxyphenyl)methyl)naphthalen-2-ol (6j):



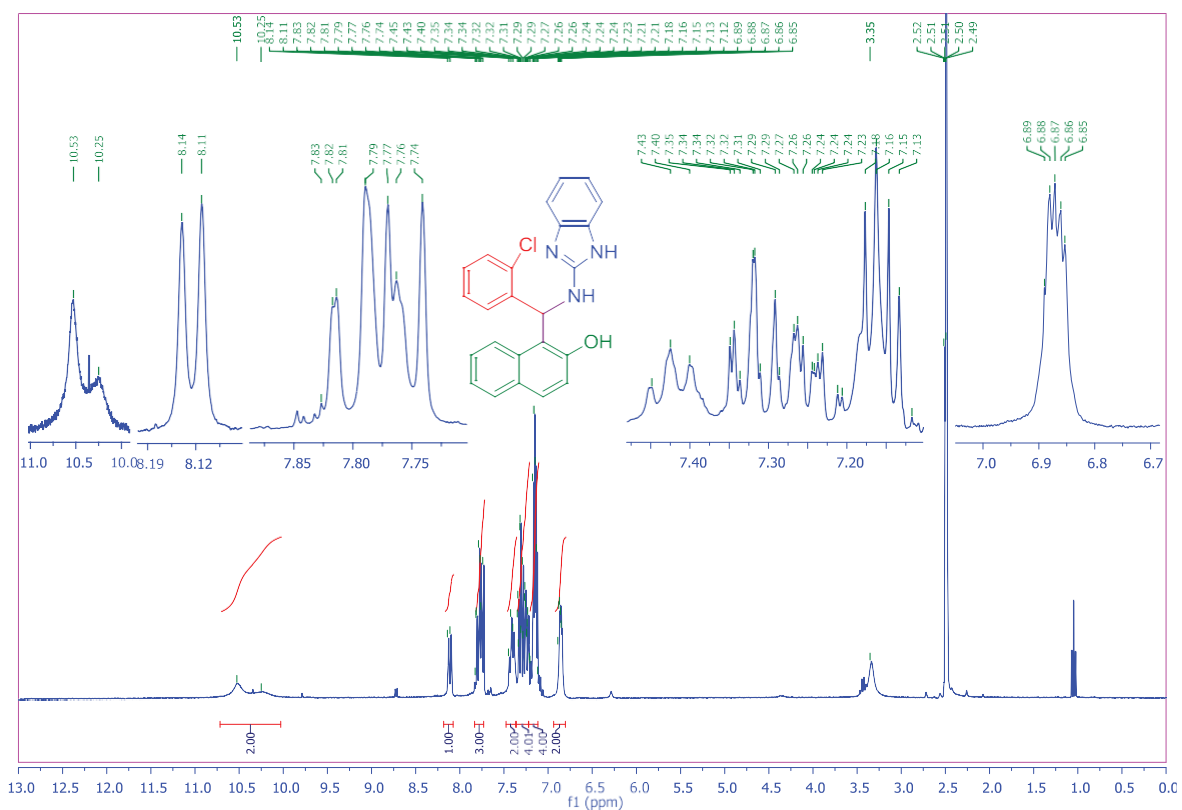
¹HNMR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(3-nitrophenyl)methyl)naphthalen-2-ol (6k):



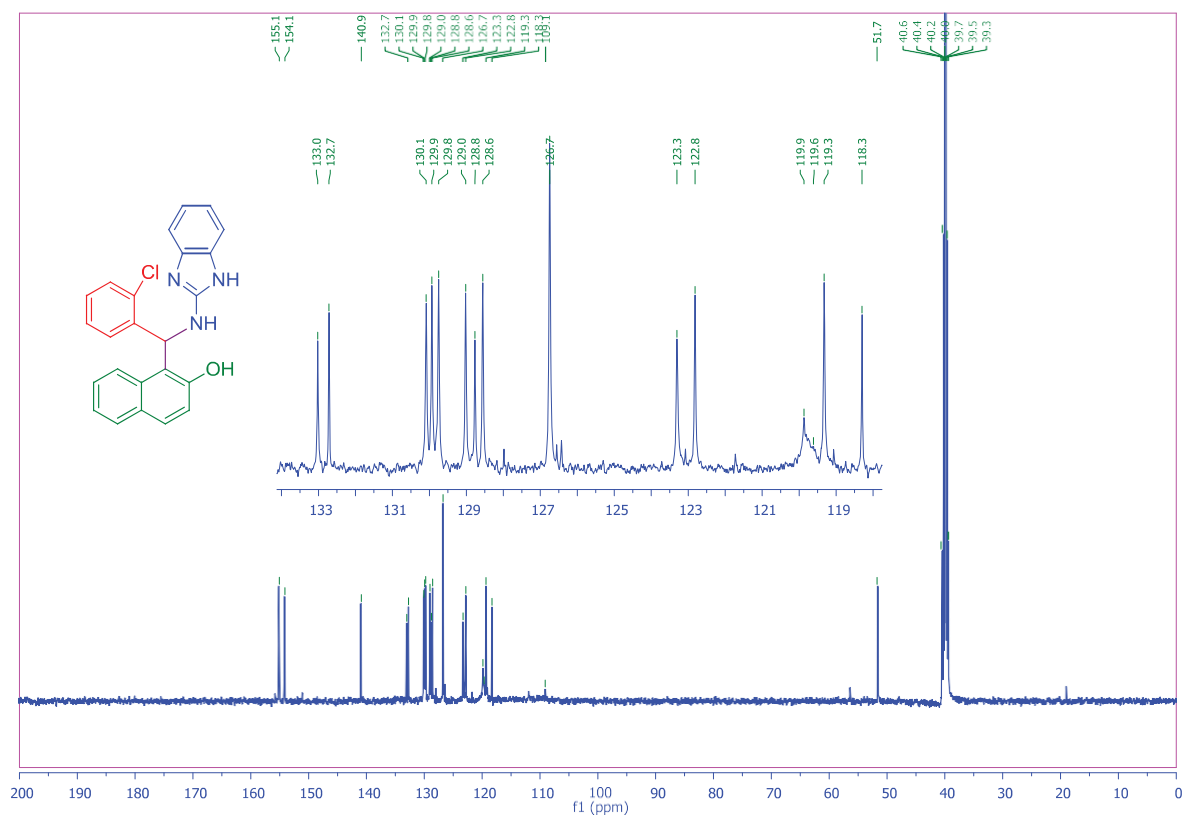
¹³CNMR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(3-nitrophenyl)methyl)naphthalen-2-ol (6k):



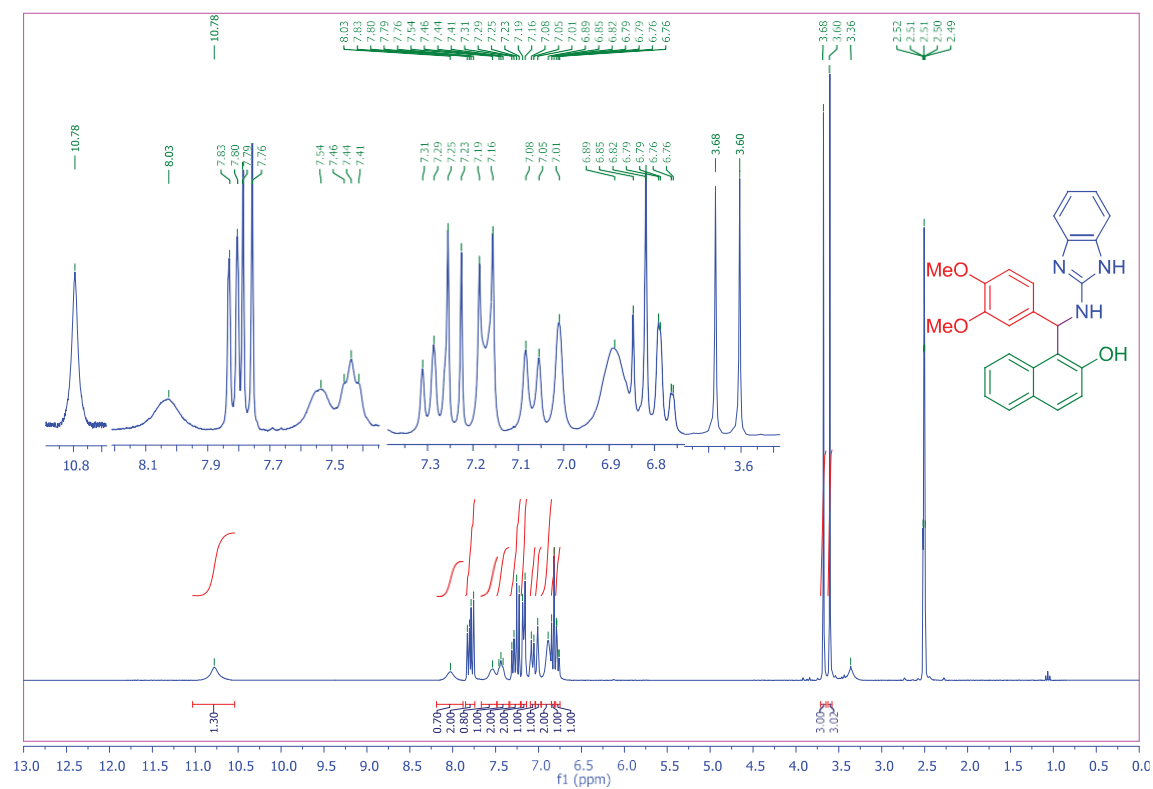
¹H NMR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(2-chlorophenyl)methyl)naphthalen-2-ol (6l):



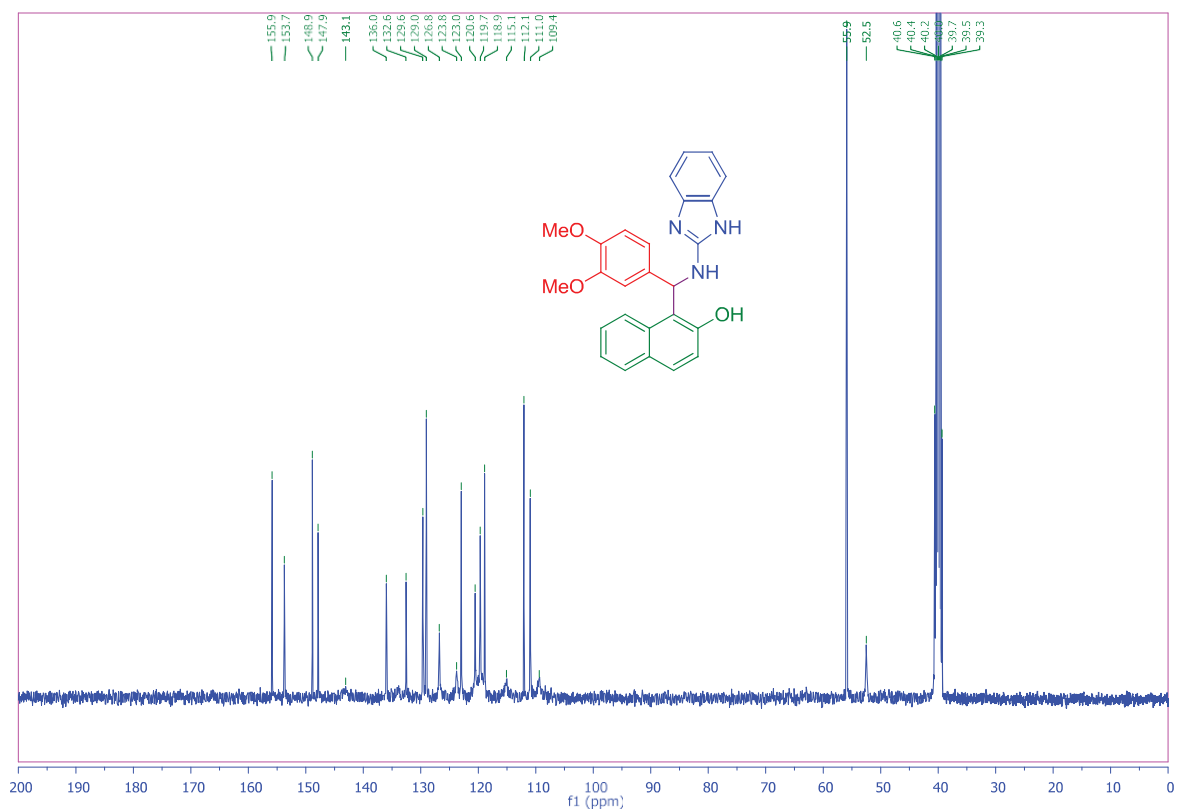
¹³CNMR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(2-chlorophenyl)methyl)naphthalen-2-ol (6l):



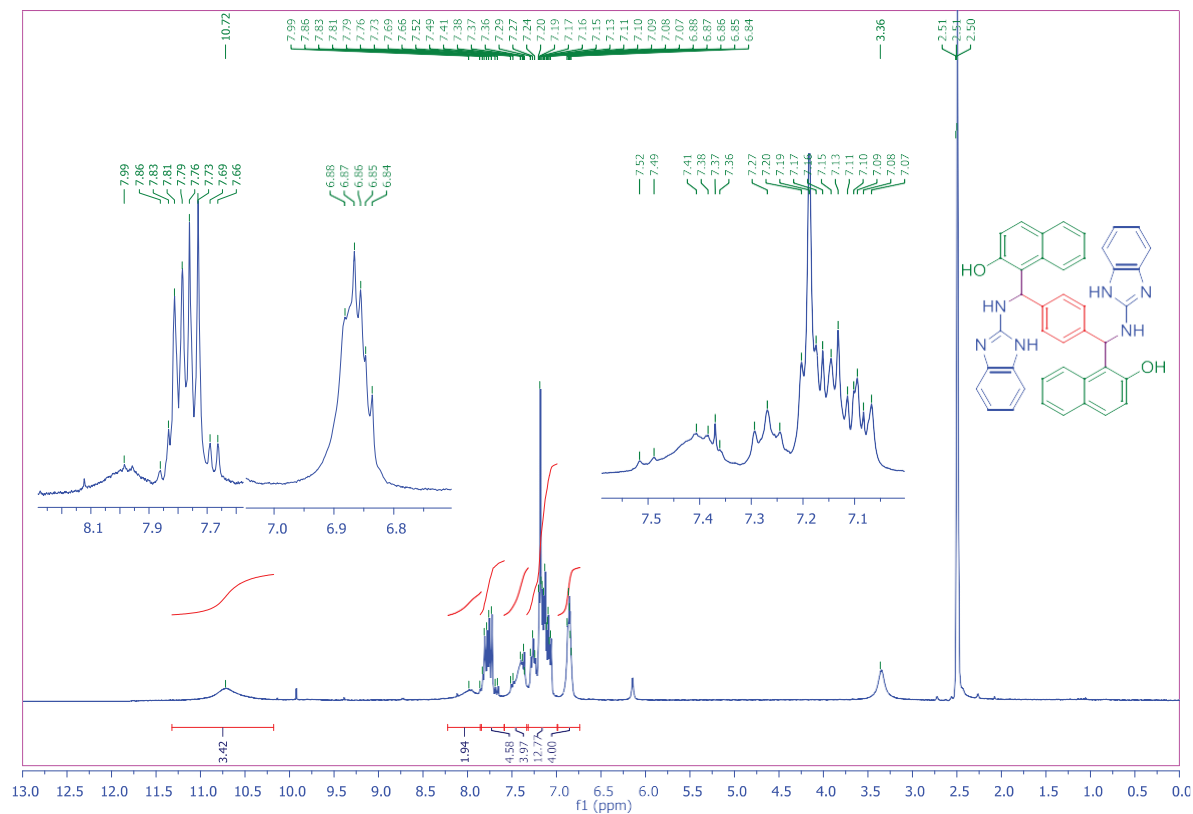
¹H NMR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(3,4-dimethoxyphenyl)methyl)naphthalen-2-ol (6m):



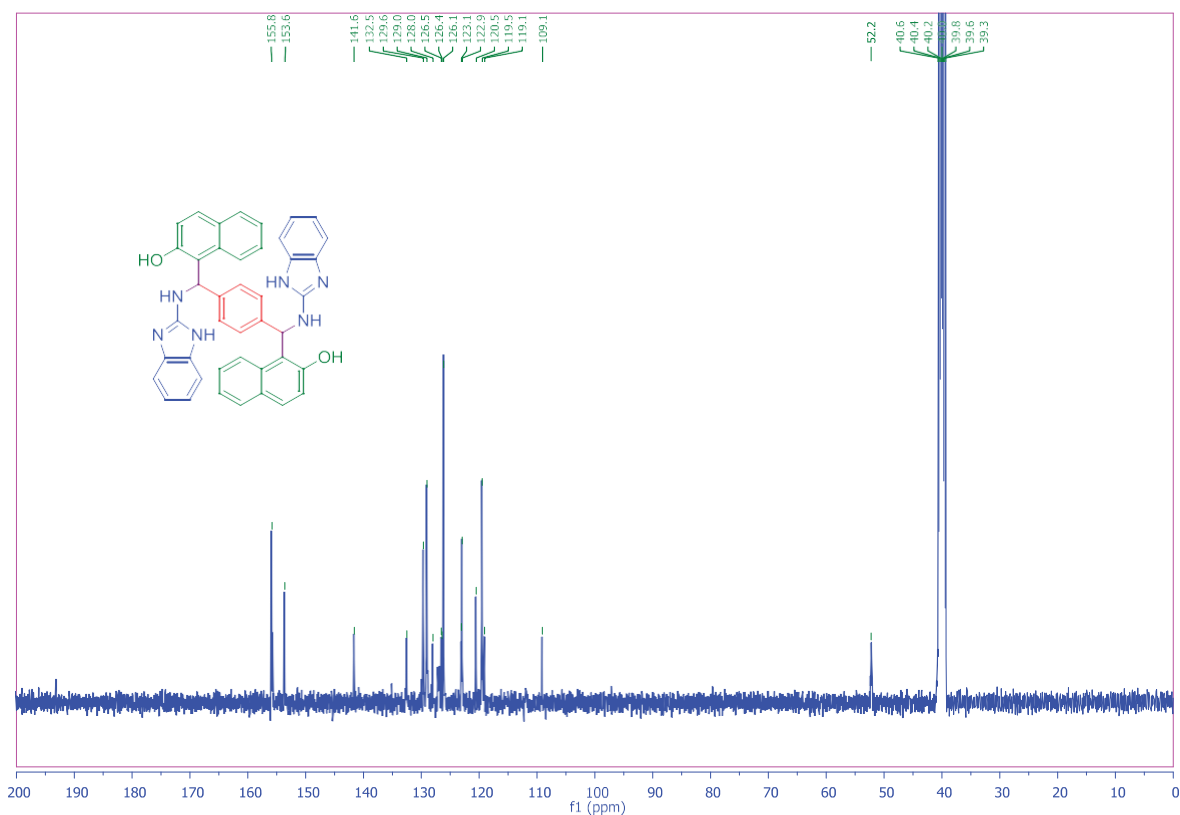
¹³CNMR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(3,4-dimethoxyphenyl)methyl)naphthalen-2-ol (6m):



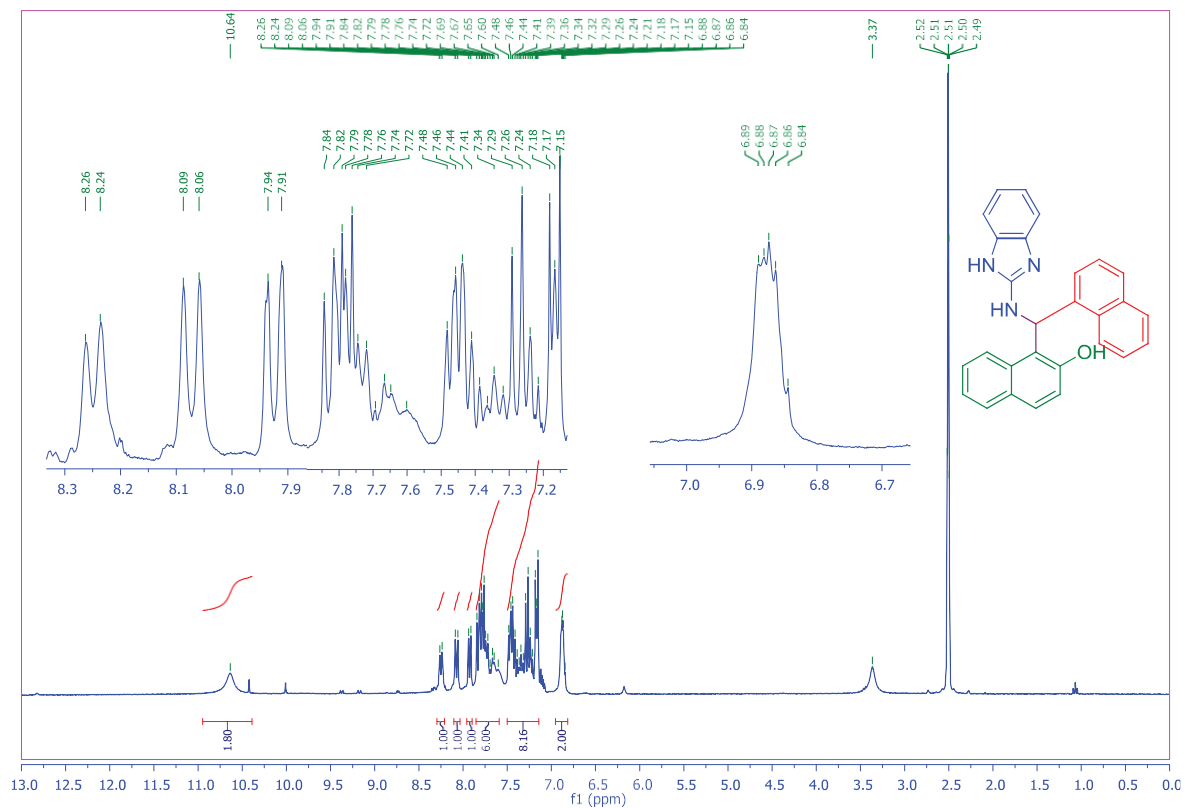
¹HNMR spectrum of 1,1'-(1,4-phenylenebis(((1H-benzo[d]imidazol-2-yl)amino)methylene))bis(naphthalen-2-ol) (6n):



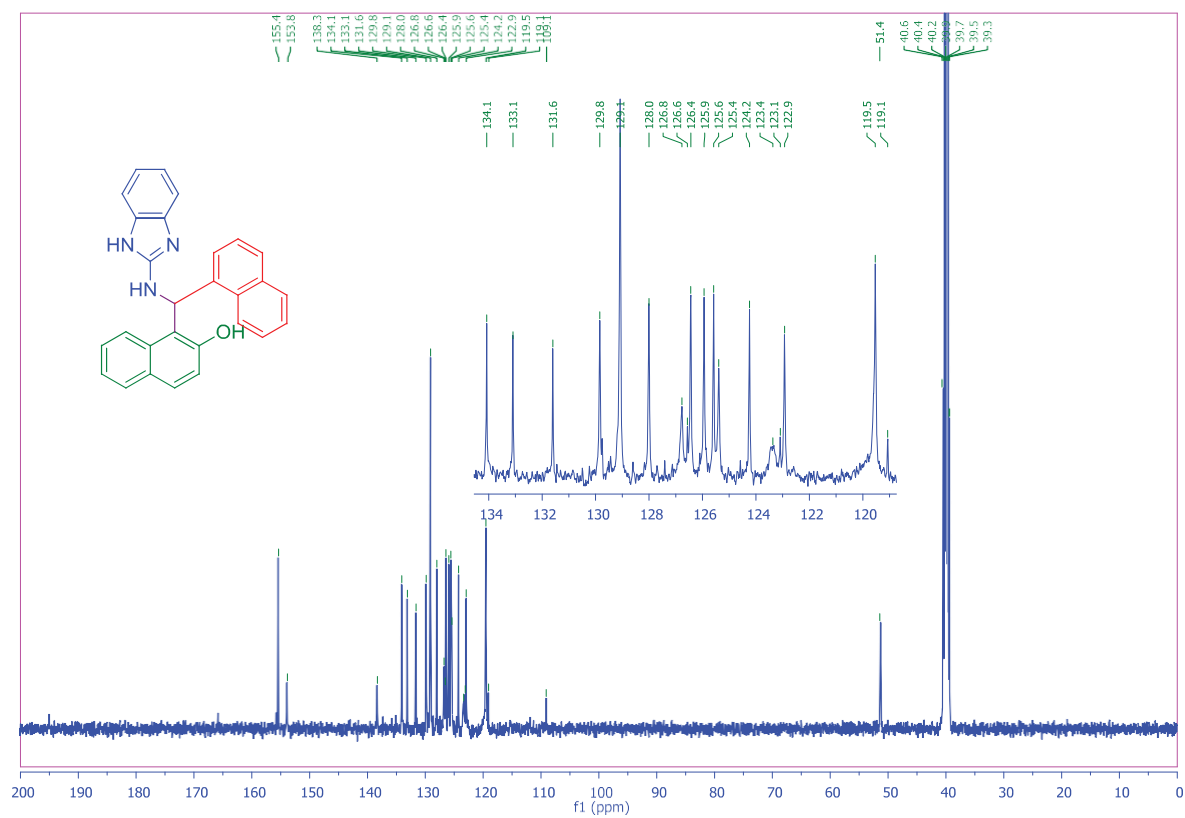
¹³CNMR spectrum of 1,1'-(1,4-phenylenebis(((1H-benzo[d]imidazol-2-yl)amino)methylene))bis(naphthalen-2-ol) (6n):



¹H NMR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(naphthalen-1-yl)methyl)naphthalen-2-ol (6o):



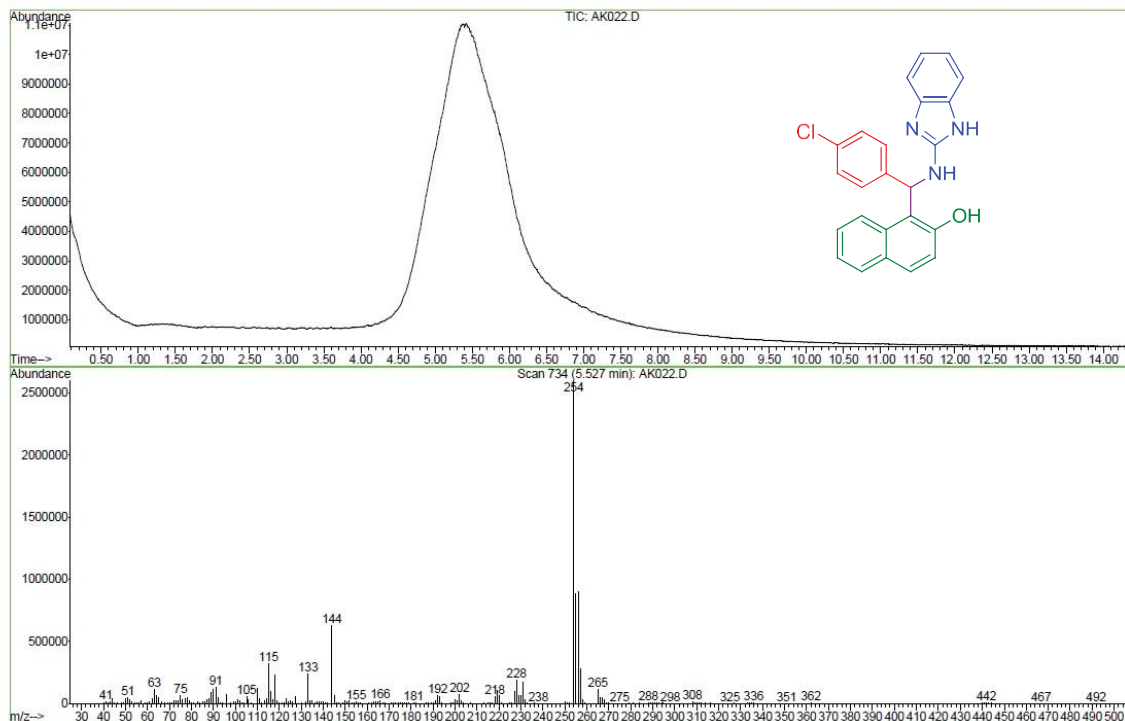
¹³CNMR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(naphthalen-1-yl)methyl)naphthalen-2-ol (6o):



Low Resolution Mass

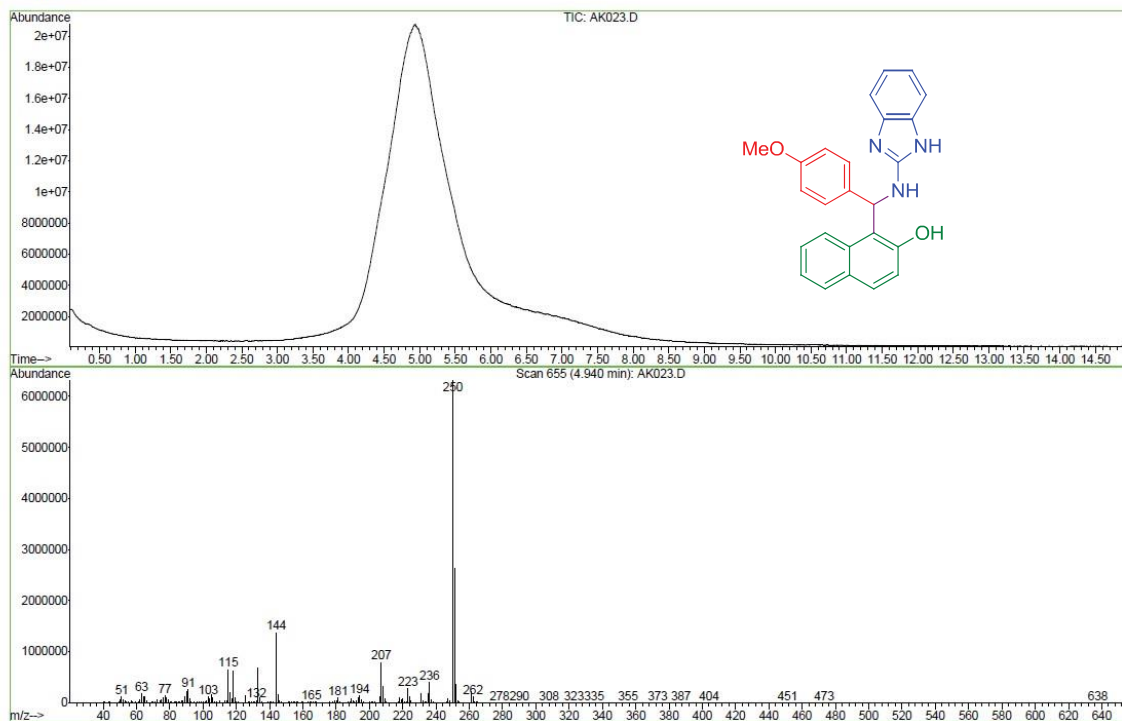
MS spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(4-chlorophenyl)methyl)naphthalen-2-ol (6a):

Acquired : 17 Oct 2016 12:06 using AcqMethod MSALTA
 Instrument : Instrumen
 Sample Name: B1, MW=399.11
 Misc Info : msalta, dip350
 Vial Number: 1



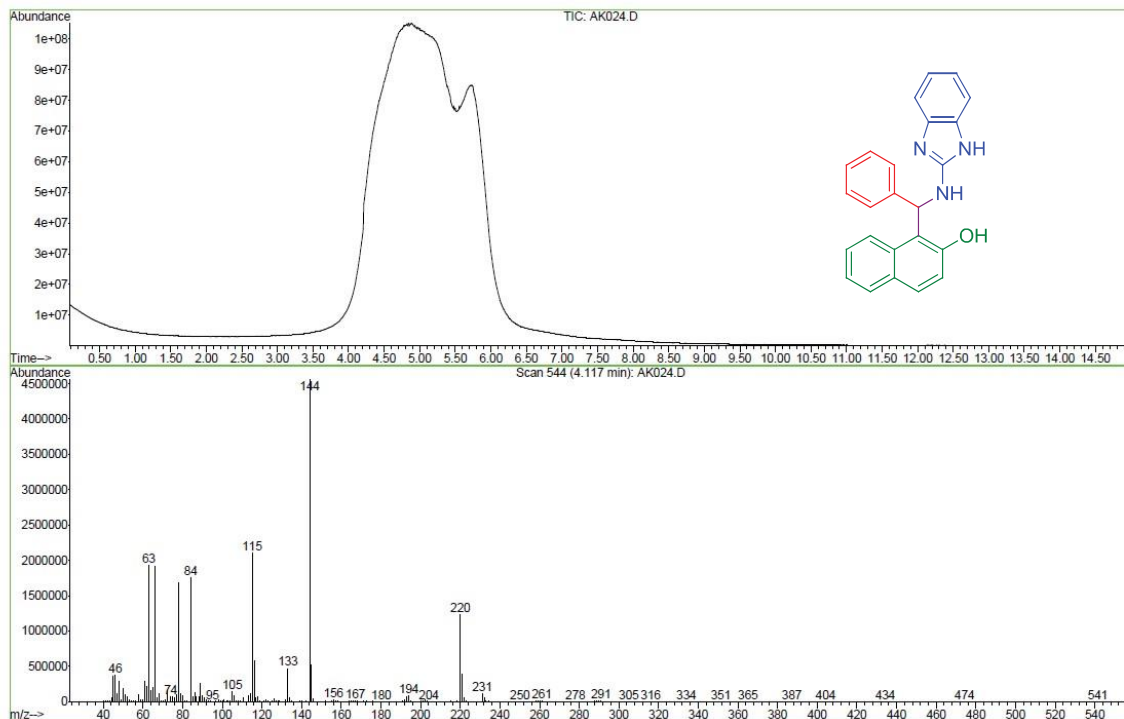
MS spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(4-methoxyphenyl)methyl)naphthalen-2-ol (6b):

Acquired : 17 Oct 2016 12:24 using AcqMethod MSALTA
 Instrument : Instrumen
 Sample Name: B2, MW=395.16
 Misc Info : msalta, dip350
 Vial Number: 1



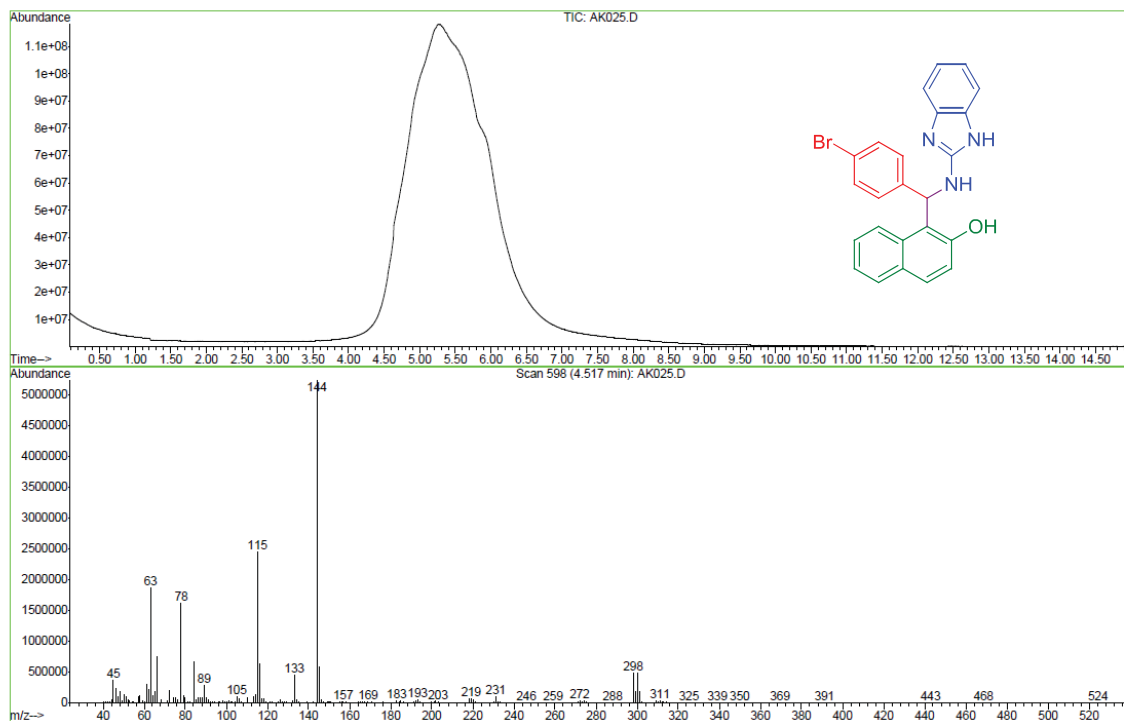
MS spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(phenyl)methyl)naphthalen-2-ol (6c):

Acquired : 17 Oct 2016 12:54 using AcqMethod MSALTA
 Instrument : Instrumen
 Sample Name: B3, MW=365.15
 Misc Info : msalta, dip350
 Vial Number: 1



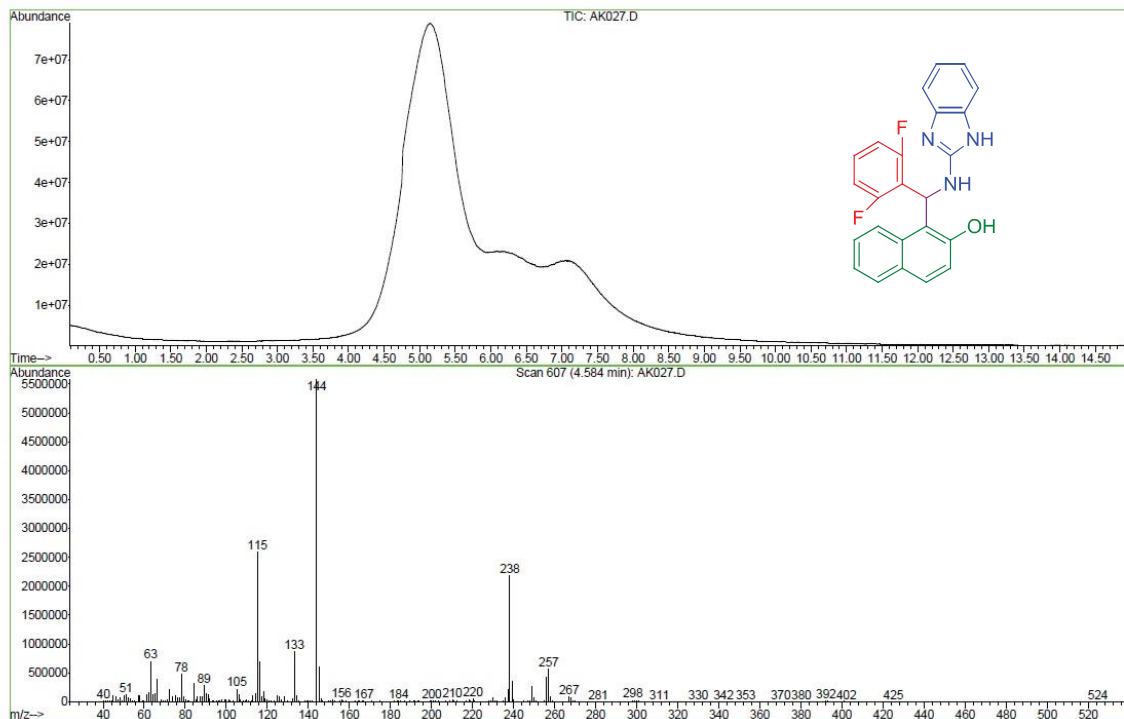
MS spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(4-bromophenyl)methyl)naphthalen-2-ol (6d):

Acquired : 17 Oct 2016 13:15 using AcqMethod MSALTA
 Instrument : Instrumen
 Sample Name: B4, MW=443.06
 Misc Info : msalta, dip350
 Vial Number: 1



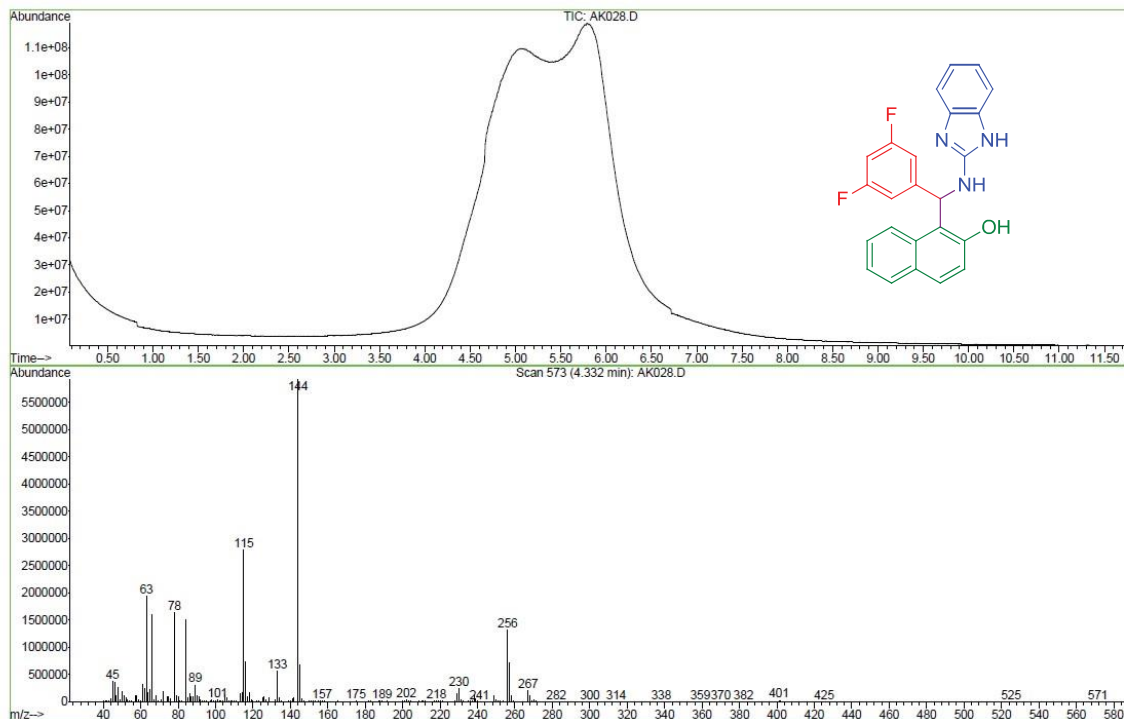
MS spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(2,6-difluorophenyl)methyl)naphthalen-2-ol (6e):

Acquired : 17 Oct 2016 13:51 using AcqMethod MSALTA
 Instrument : Instrumen
 Sample Name: B6, MW=401.13
 Misc Info : msalta, dip350
 Vial Number: 1



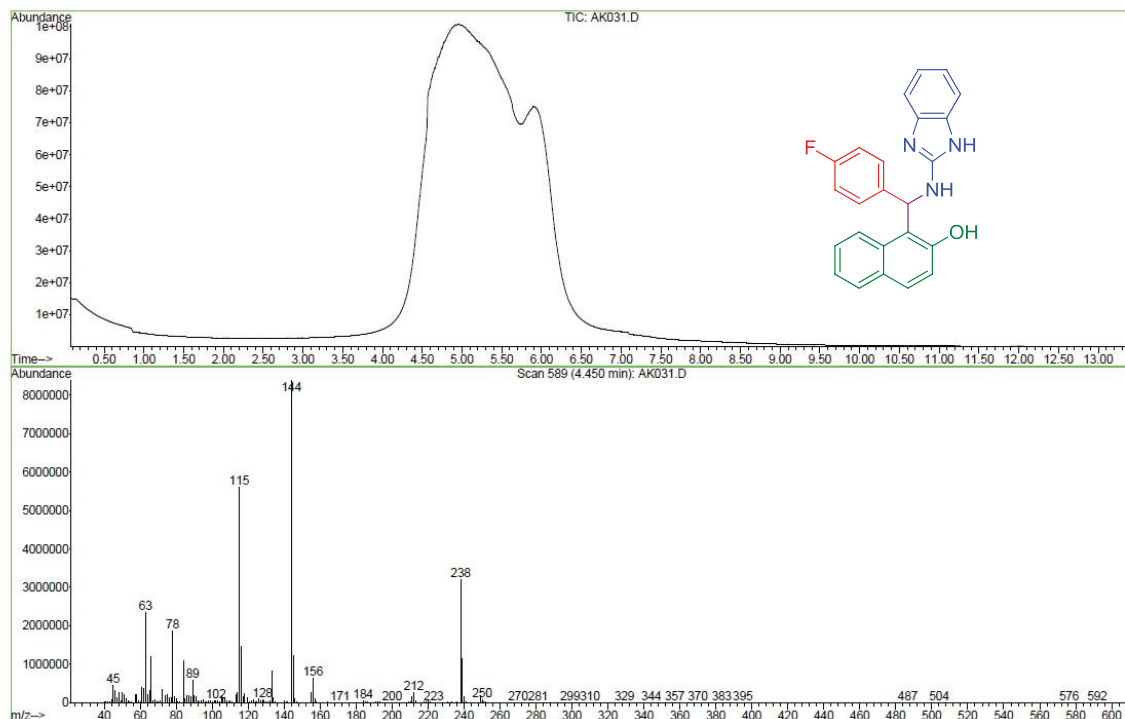
MS spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(3,5-difluorophenyl)methyl)naphthalen-2-ol (6f):

Acquired : 17 Oct 2016 14:11 using AcqMethod MSALTA
 Instrument : Instrumen
 Sample Name: B7, MW=401.13
 Misc Info : msalta, dip350
 Vial Number: 1



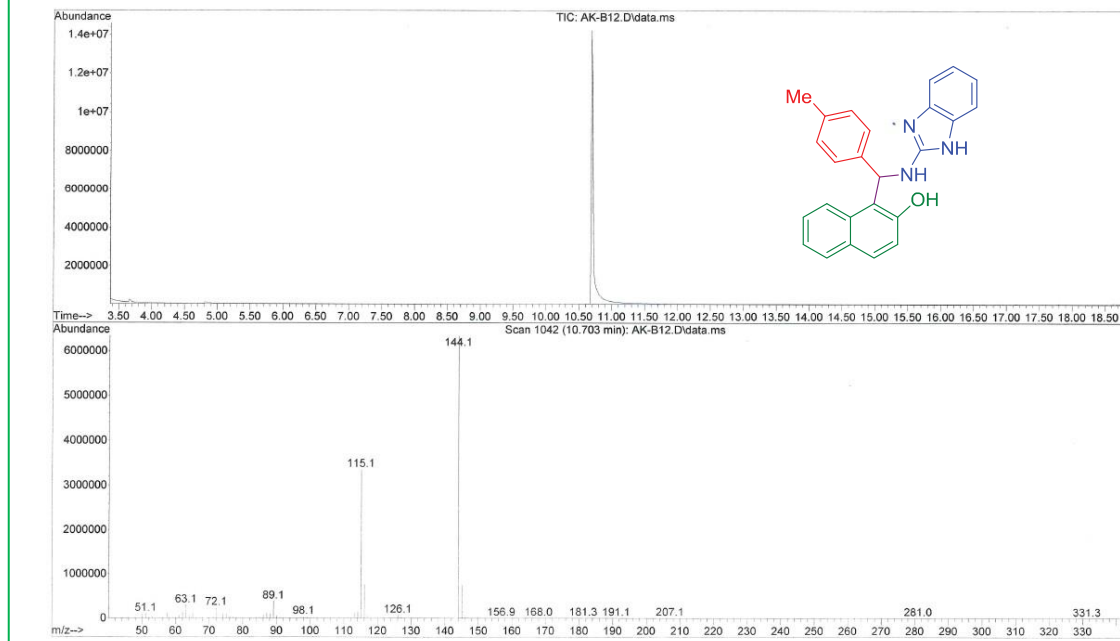
MS spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(4-fluorophenyl)methyl)naphthalen-2-ol (6g):

Acquired : 18 Oct 2016 9:13 using AcqMethod MSALTA
 Instrument : Instrumen
 Sample Name: B11, MW=383.14
 Misc Info : msalta, dip350
 Vial Number: 1

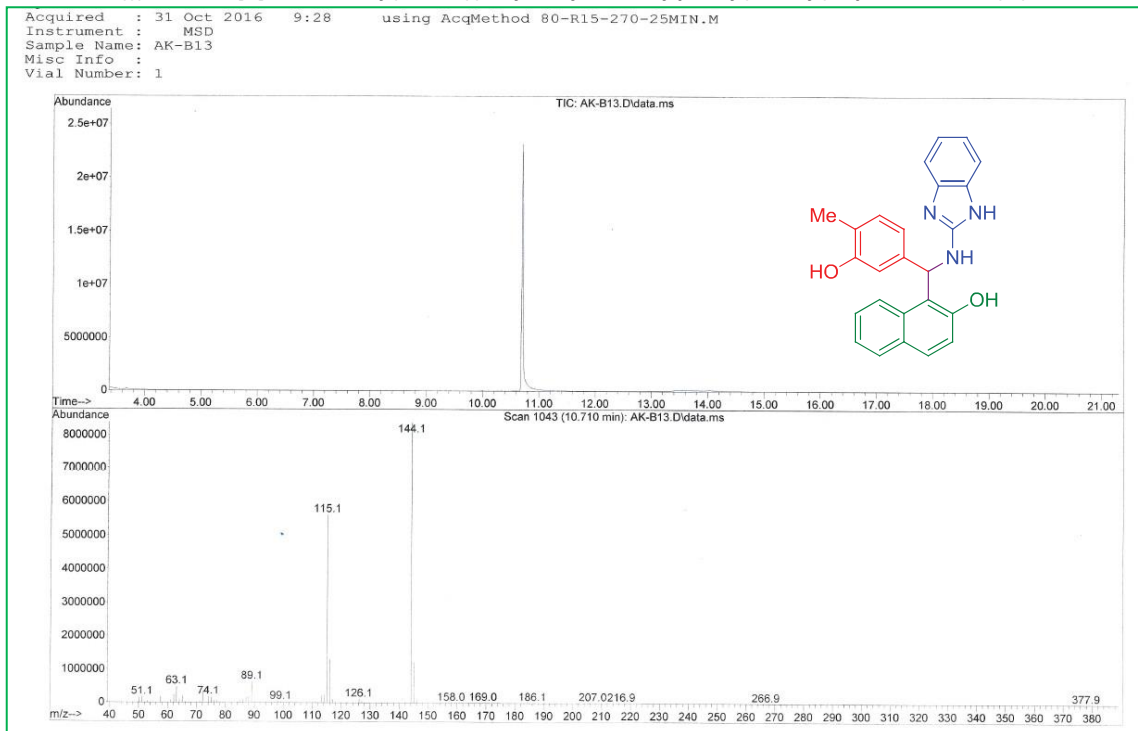


MS spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(p-tolyl)methyl)naphthalen-2-ol (6h):

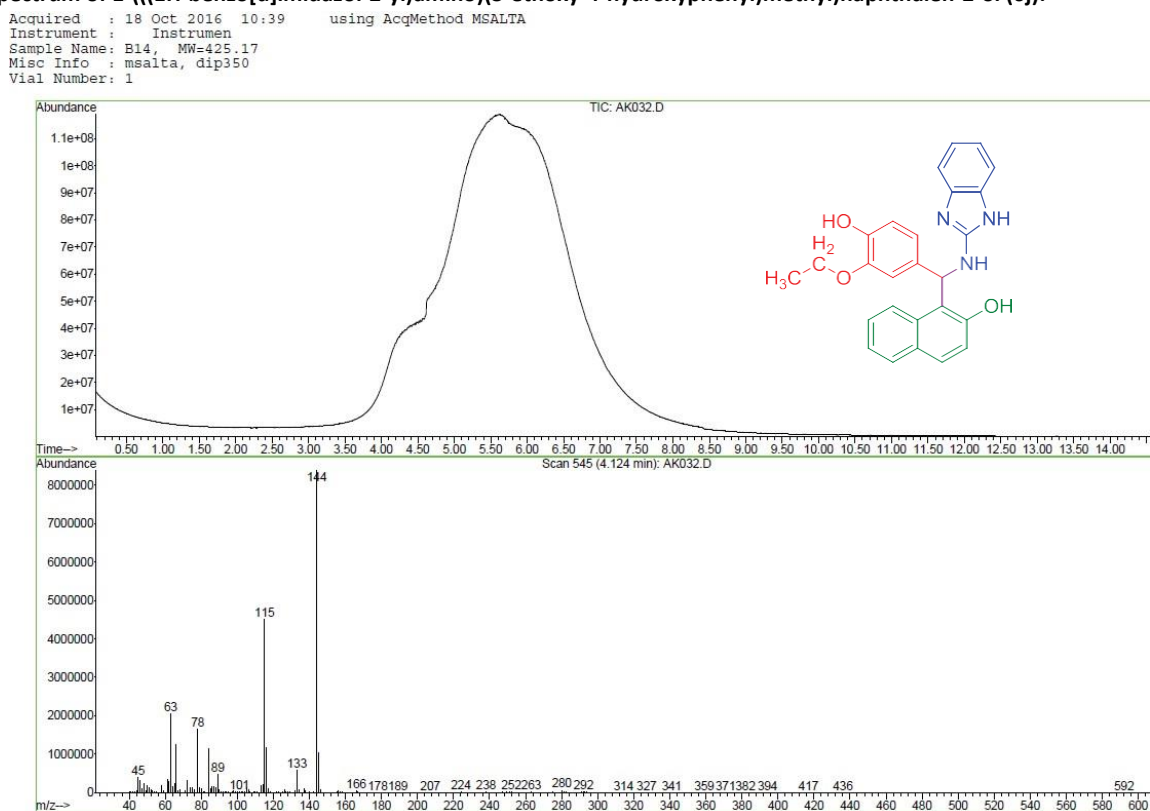
Acquired : 31 Oct 2016 12:31 using AcqMethod 80-R15-270-25MIN.M
 Instrument : MSD
 Sample Name: AK-B12
 Misc Info :
 Vial Number: 1



MS spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(3-hydroxy-4-methylphenyl)methyl)naphthalen-2-ol (6i):

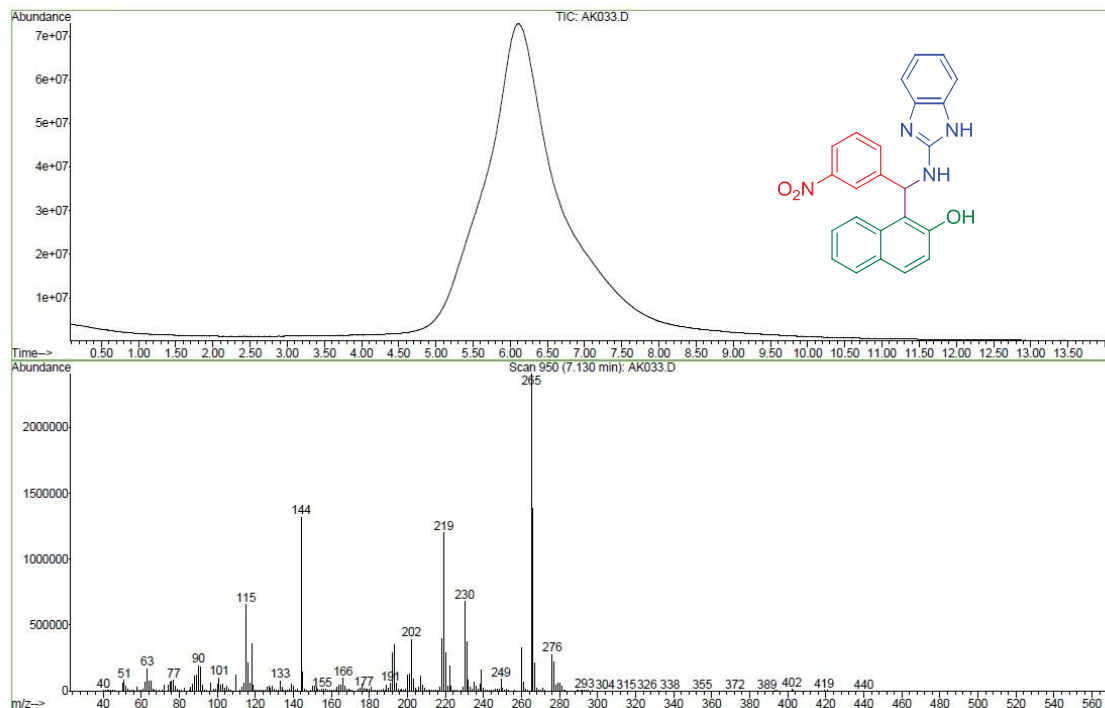


MS spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(3-ethoxy-4-hydroxyphenyl)methyl)naphthalen-2-ol (6j):



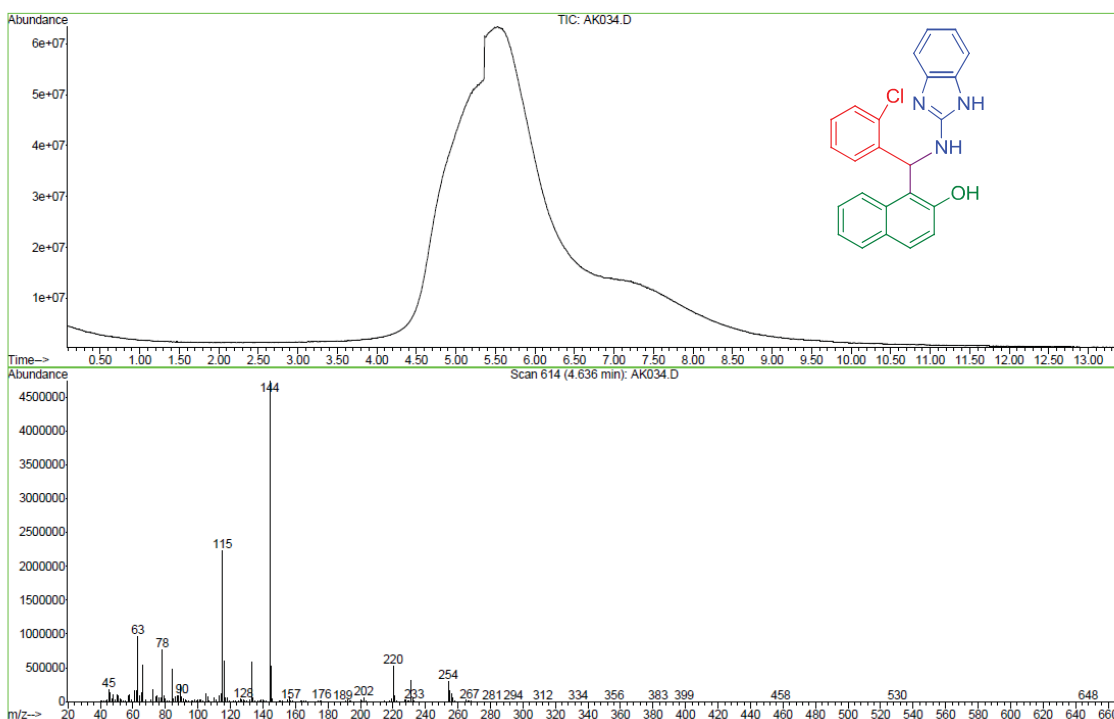
MS spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(3-nitrophenyl)methyl)naphthalen-2-ol (6k):

Acquired : 18 Oct 2016 10:58 using AcqMethod MSALTA
 Instrument : Instrumen
 Sample Name: B15, MW=410.14
 Misc Info : msalta, dip350
 Vial Number: 1



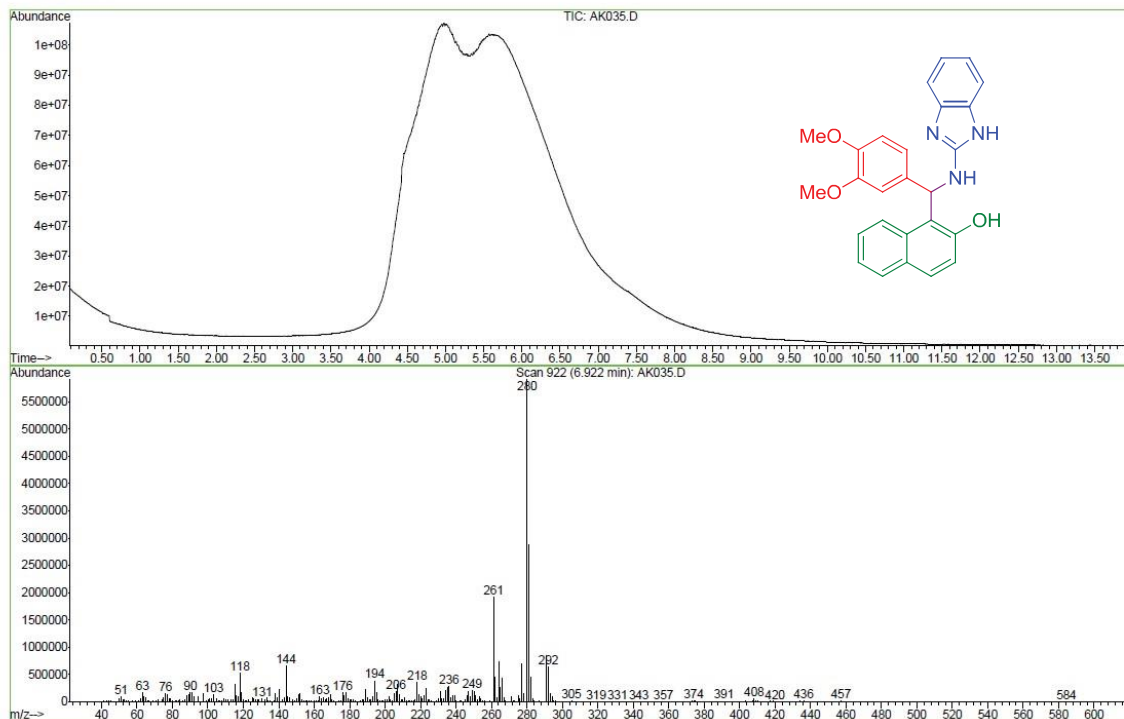
MS spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(2-chlorophenyl)methyl)naphthalen-2-ol (6l):

Acquired : 18 Oct 2016 11:15 using AcqMethod MSALTA
 Instrument : Instrumen
 Sample Name: B16, MW=399.11
 Misc Info : msalta, dip350
 Vial Number: 1



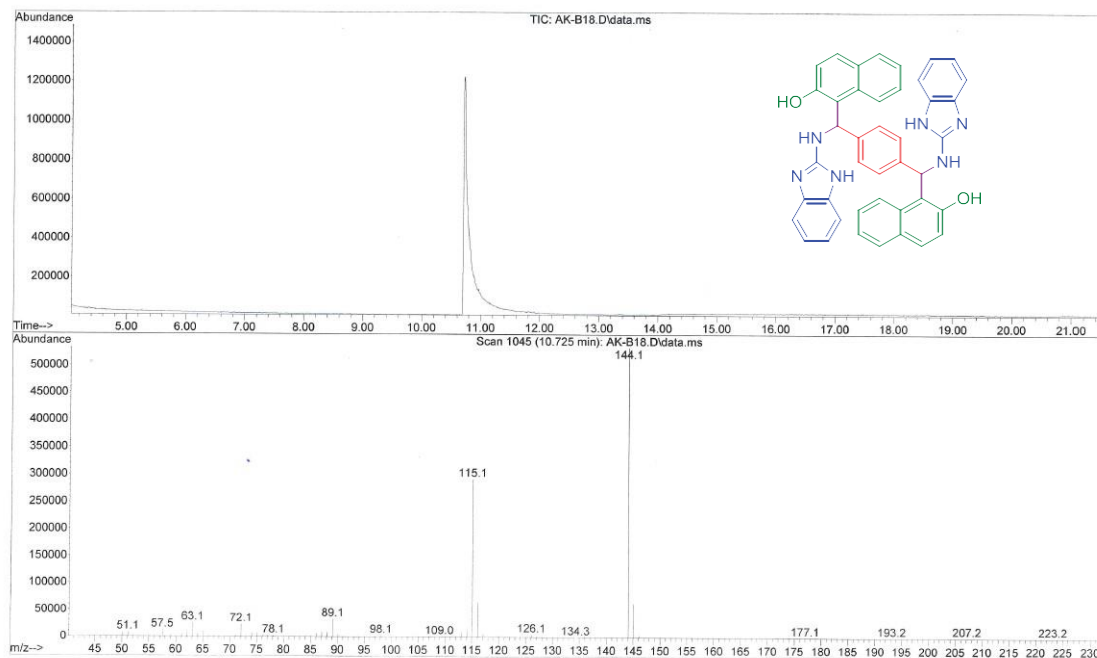
MS spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(3,4-dimethoxyphenyl)methyl)naphthalen-2-ol (6m):

Acquired : 18 Oct 2016 11:32 using AcqMethod MSALTA
 Instrument : Instrumen
 Sample Name: B17, MW=425.17
 Misc Info : msalta, dip350
 Vial Number: 1



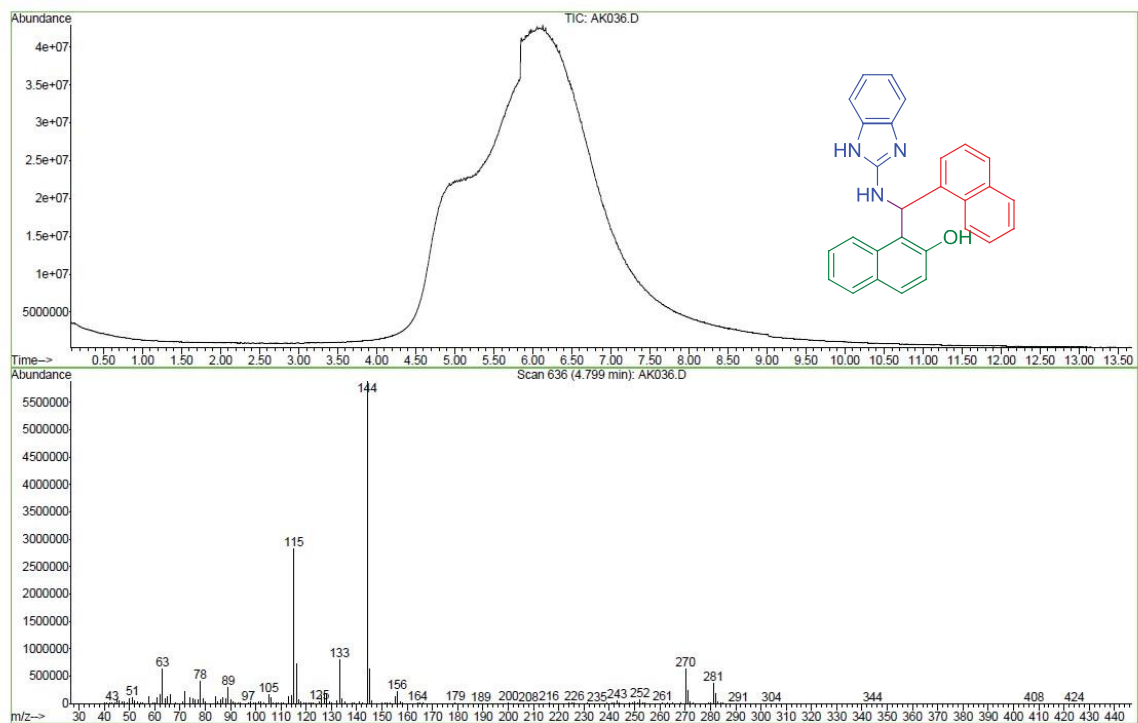
MS spectrum of 1,1'-(1,4-phenylenebis(((1H-benzo[d]imidazol-2-yl)amino)methylene))bis(naphthalen-2-ol) (6n):

Acquired : 31 Oct 2016 10:40 using AcqMethod 80-R15-270-25MIN.M
 Instrument : MSD
 Sample Name: AK-B18
 Misc Info :
 Vial Number: 1



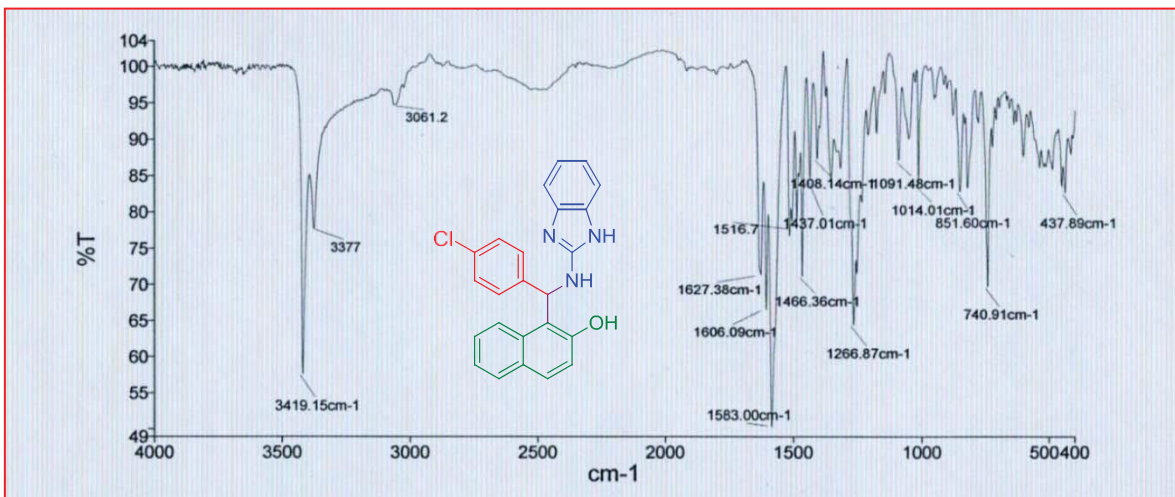
MS spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(naphthalen-1-yl)methyl)naphthalen-2-ol (6o):

Acquired : 18 Oct 2016 11:51 using AcqMethod MSALTA
 Instrument : Instrumen
 Sample Name: B19, MW=415.17
 Misc Info : msalta, dip350
 Vial Number: 1

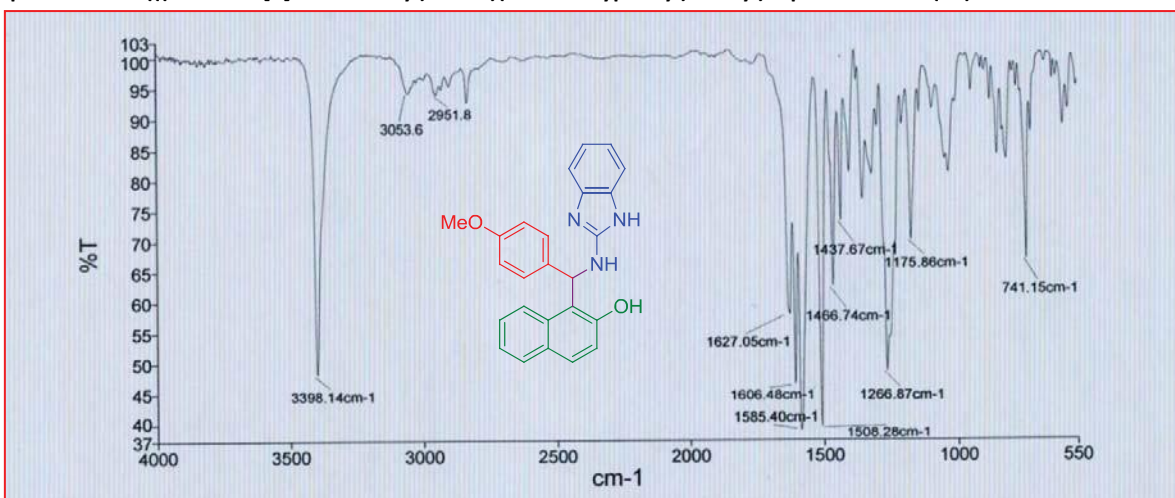


FT-IR

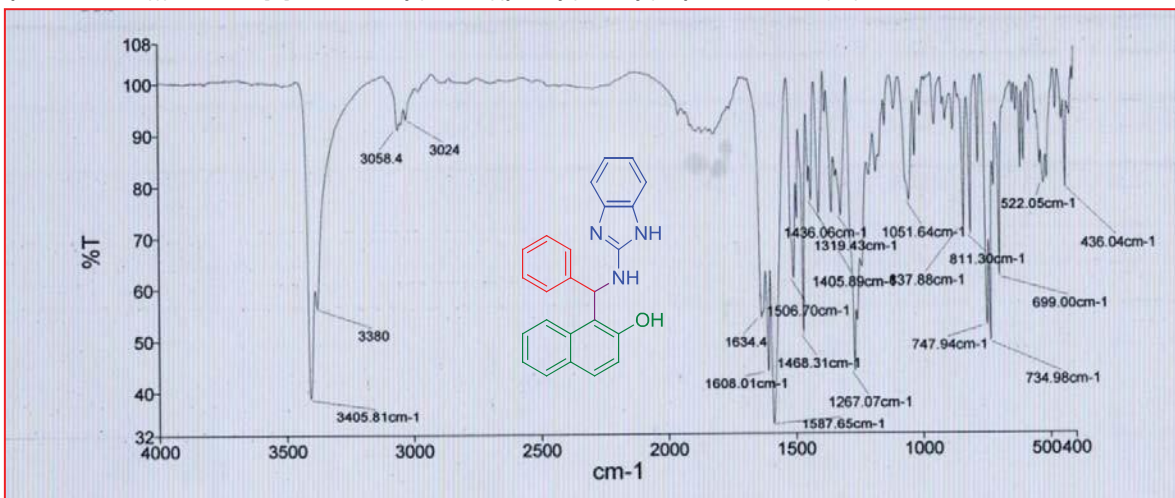
FT-IR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(4-chlorophenyl)methyl)naphthalen-2-ol (6a):



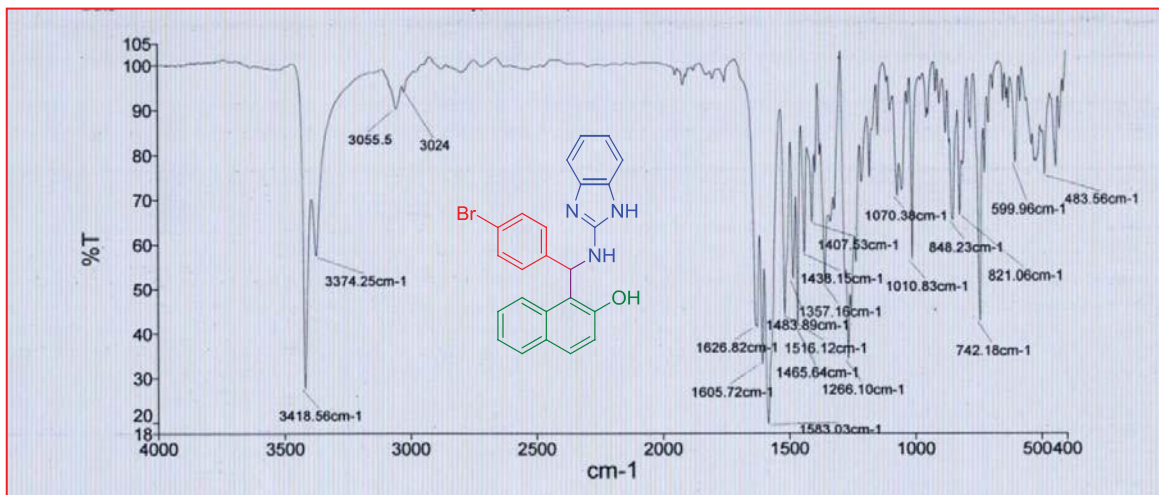
FT-IR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(4-methoxyphenyl)methyl)naphthalen-2-ol (6b):



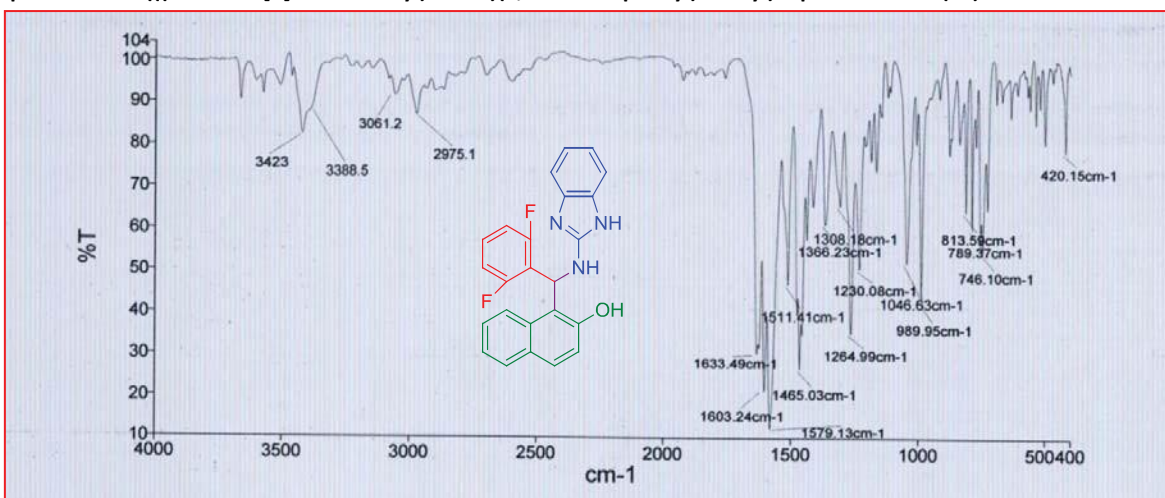
FT-IR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(phenyl)methyl)naphthalen-2-ol (6c):



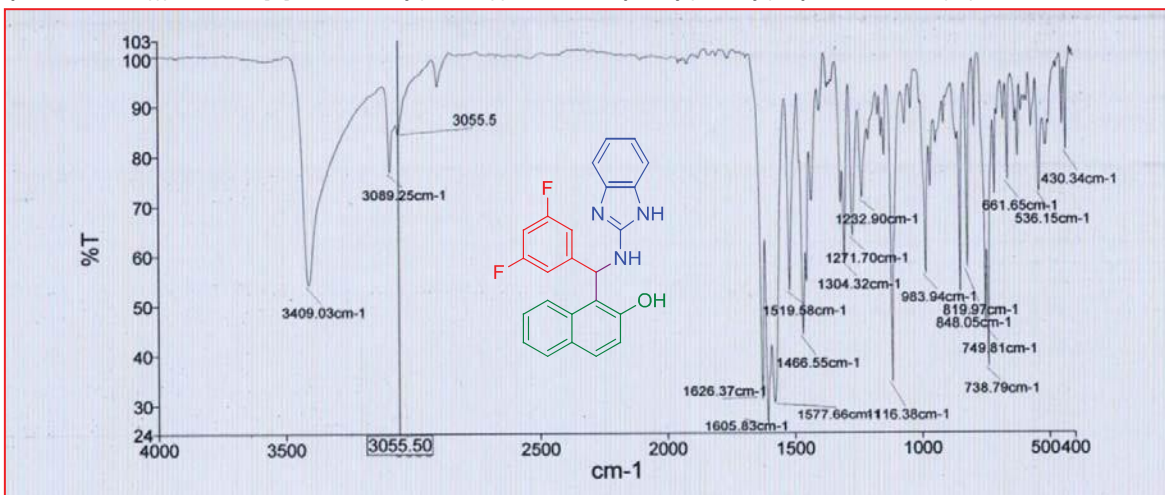
FT-IR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(4-bromophenyl)methyl)naphthalen-2-ol (6d):



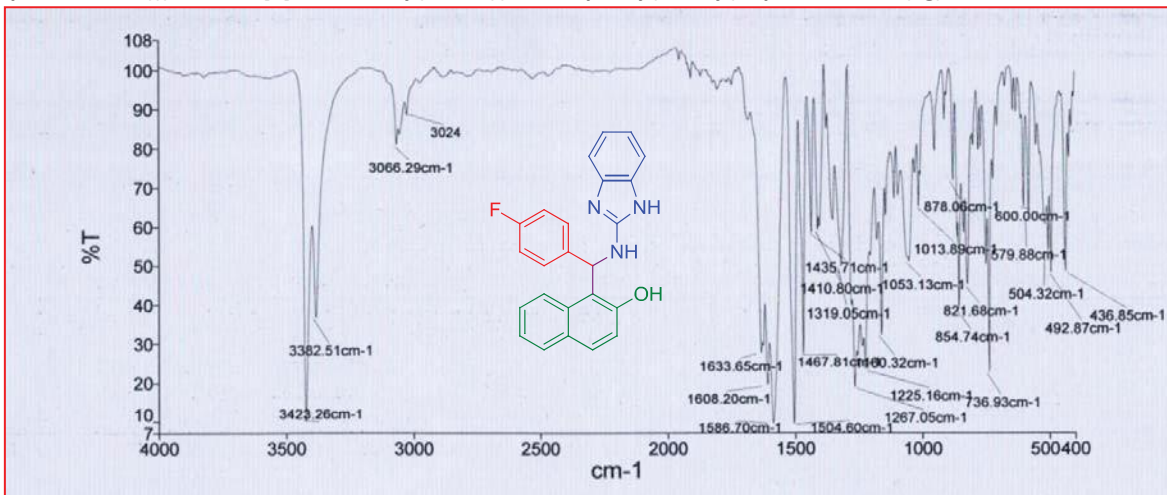
FT-IR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(2,6-difluorophenyl)methyl)naphthalen-2-ol (6e):



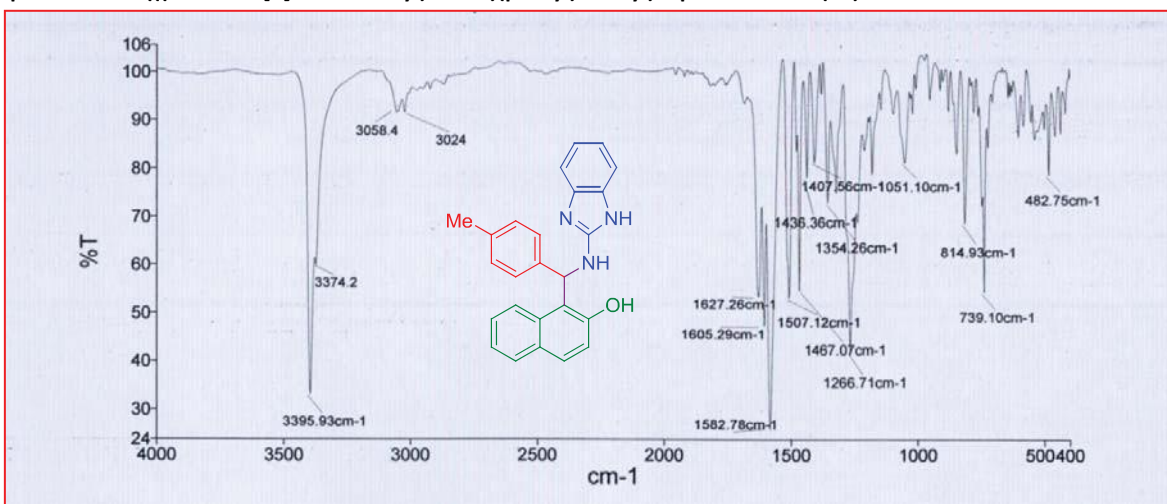
FT-IR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(3,5-difluorophenyl)methyl)naphthalen-2-ol (6f):



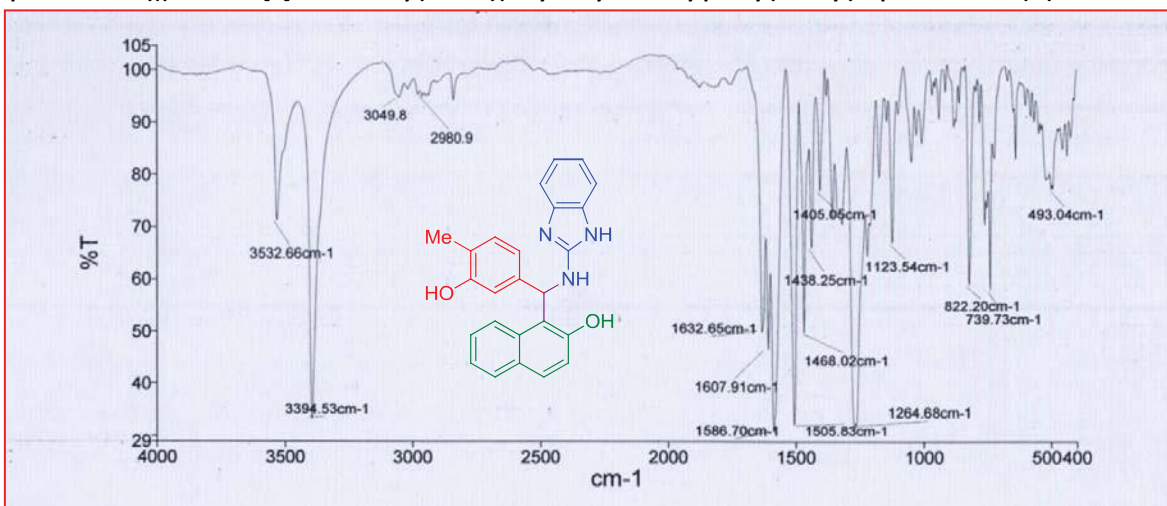
FT-IR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(4-fluorophenyl)methyl)naphthalen-2-ol (6g):



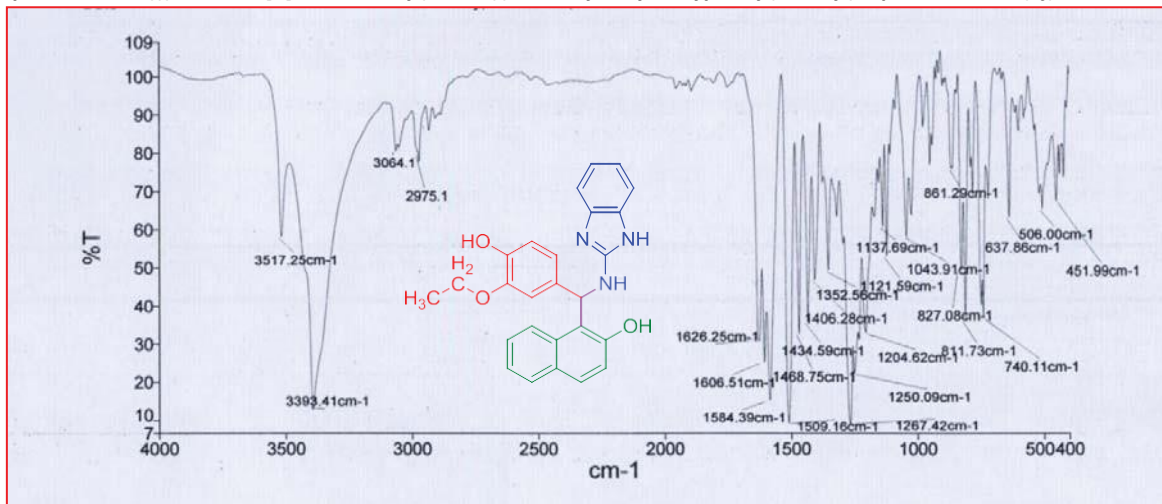
FT-IR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(p-tolyl)methyl)naphthalen-2-ol (6h):



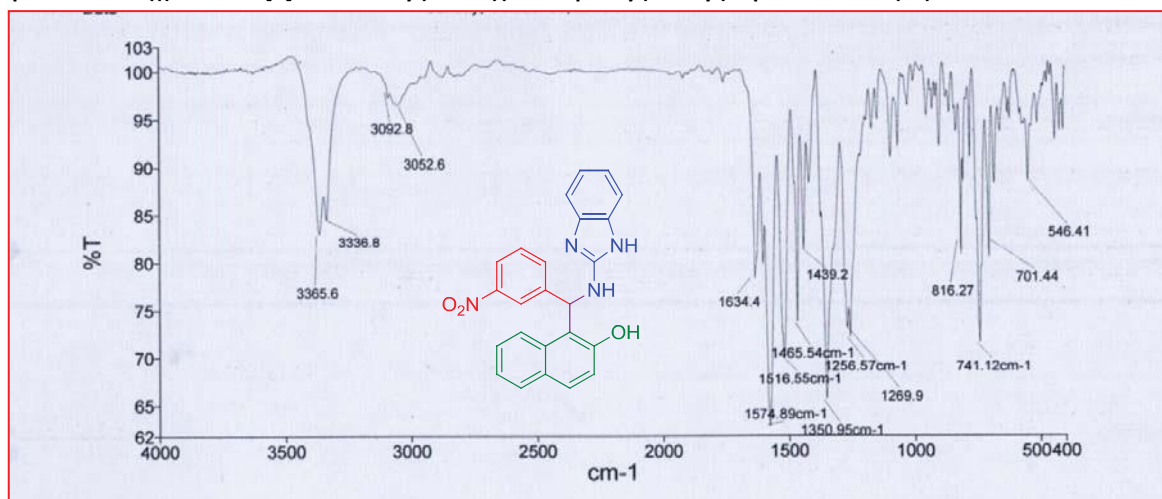
FT-IR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(3-hydroxy-4-methylphenyl)methyl)naphthalen-2-ol (6i):



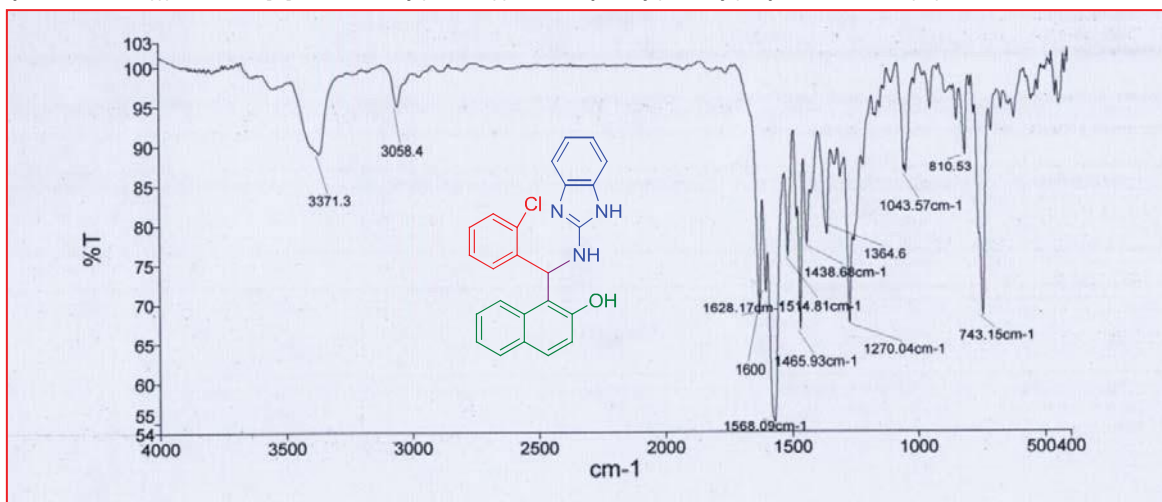
FT-IR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(3-ethoxy-4-hydroxyphenyl)methyl)naphthalen-2-ol (6j):



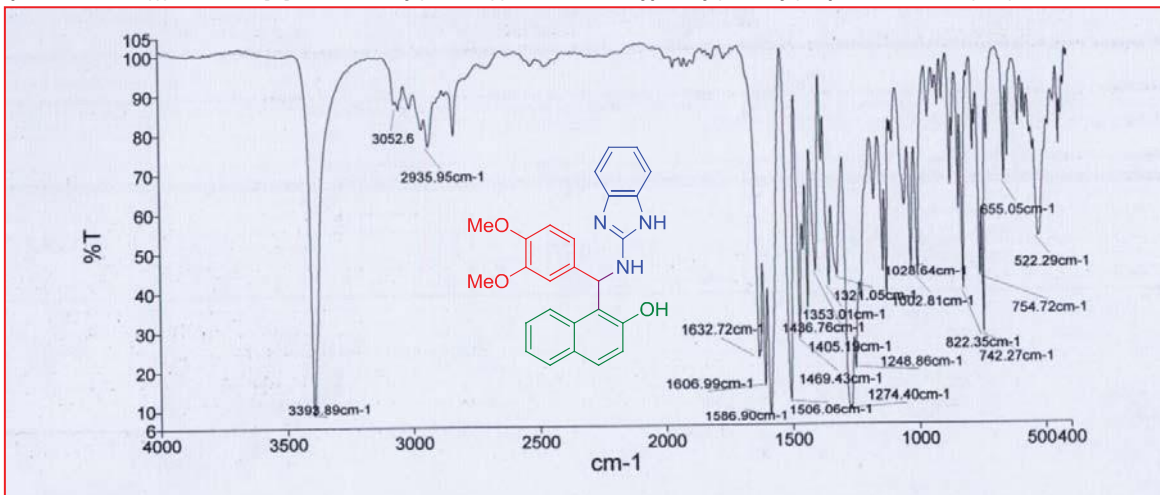
FT-IR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(3-nitrophenyl)methyl)naphthalen-2-ol (6k):



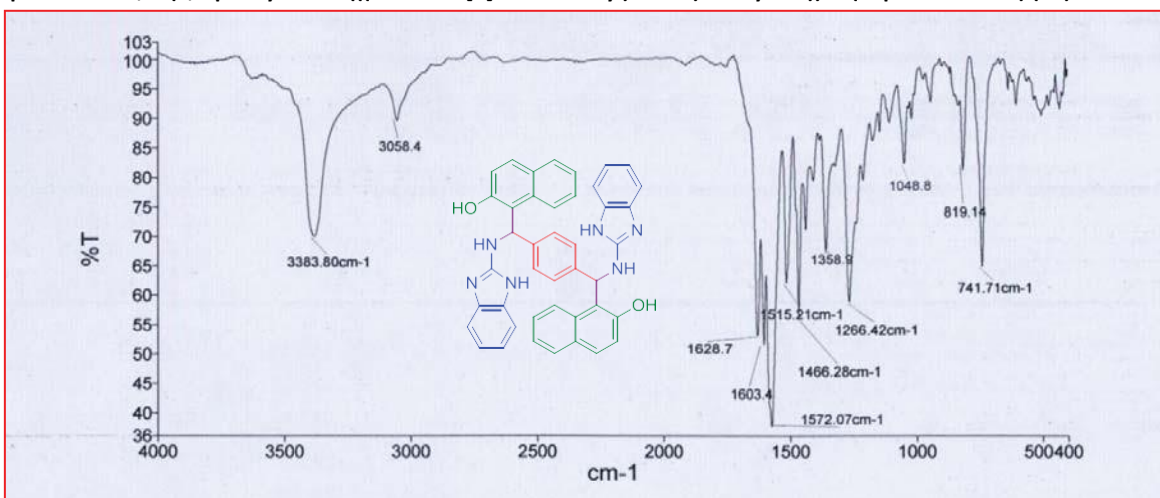
FT-IR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(2-chlorophenyl)methyl)naphthalen-2-ol (6l):



FT-IR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(3,4-dimethoxyphenyl)methyl)naphthalen-2-ol (6m):



FT-IR spectrum of 1,1'-(1,4-phenylenebis(((1H-benzo[d]imidazol-2-yl)amino)methylene))bis(naphthalen-2-ol) (6n):



FT-IR spectrum of 1-(((1H-benzo[d]imidazol-2-yl)amino)(naphthalen-1-yl)methyl)naphthalen-2-ol (6o):

