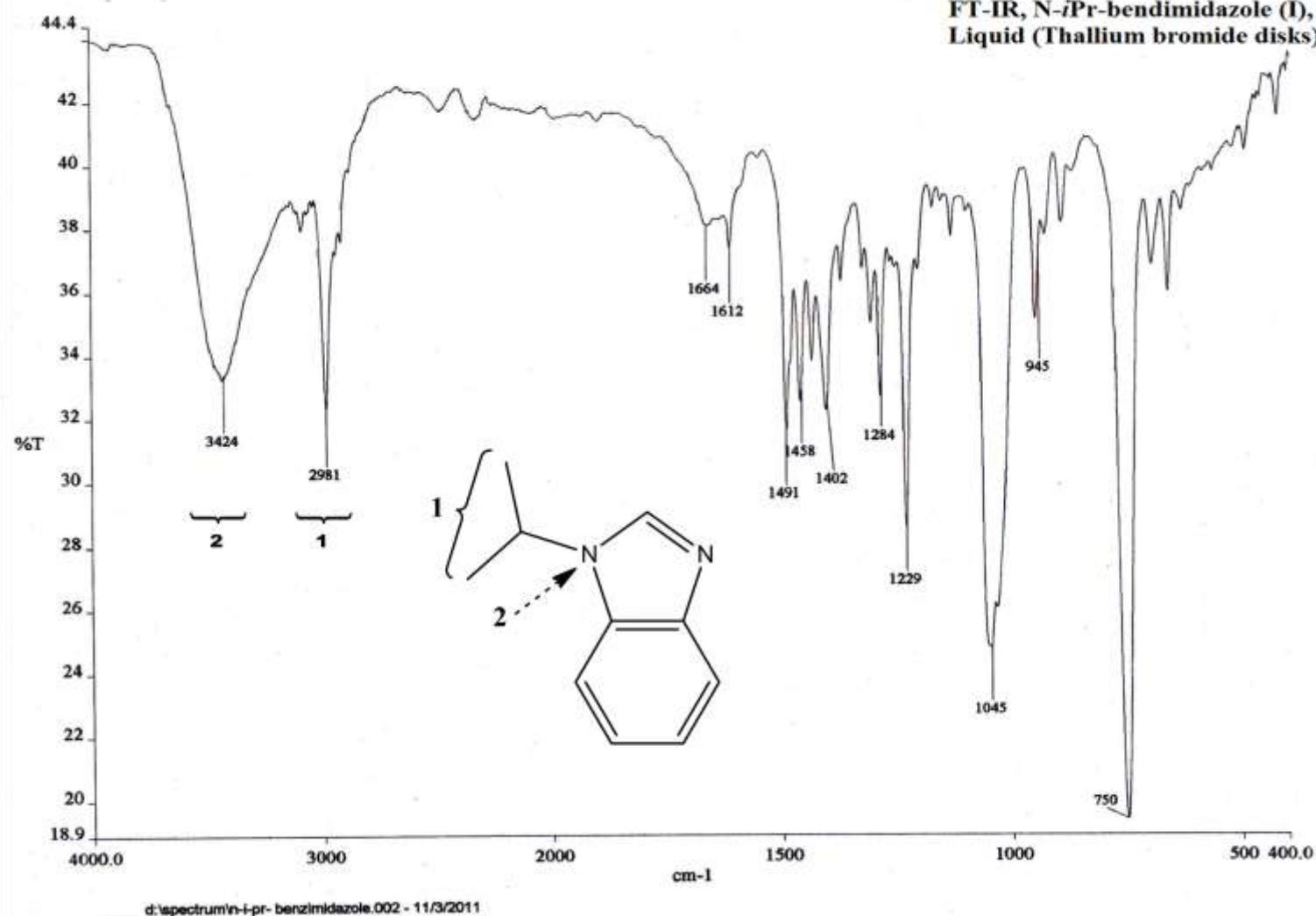


N-*i*-propyl benzimidazole (**I**)

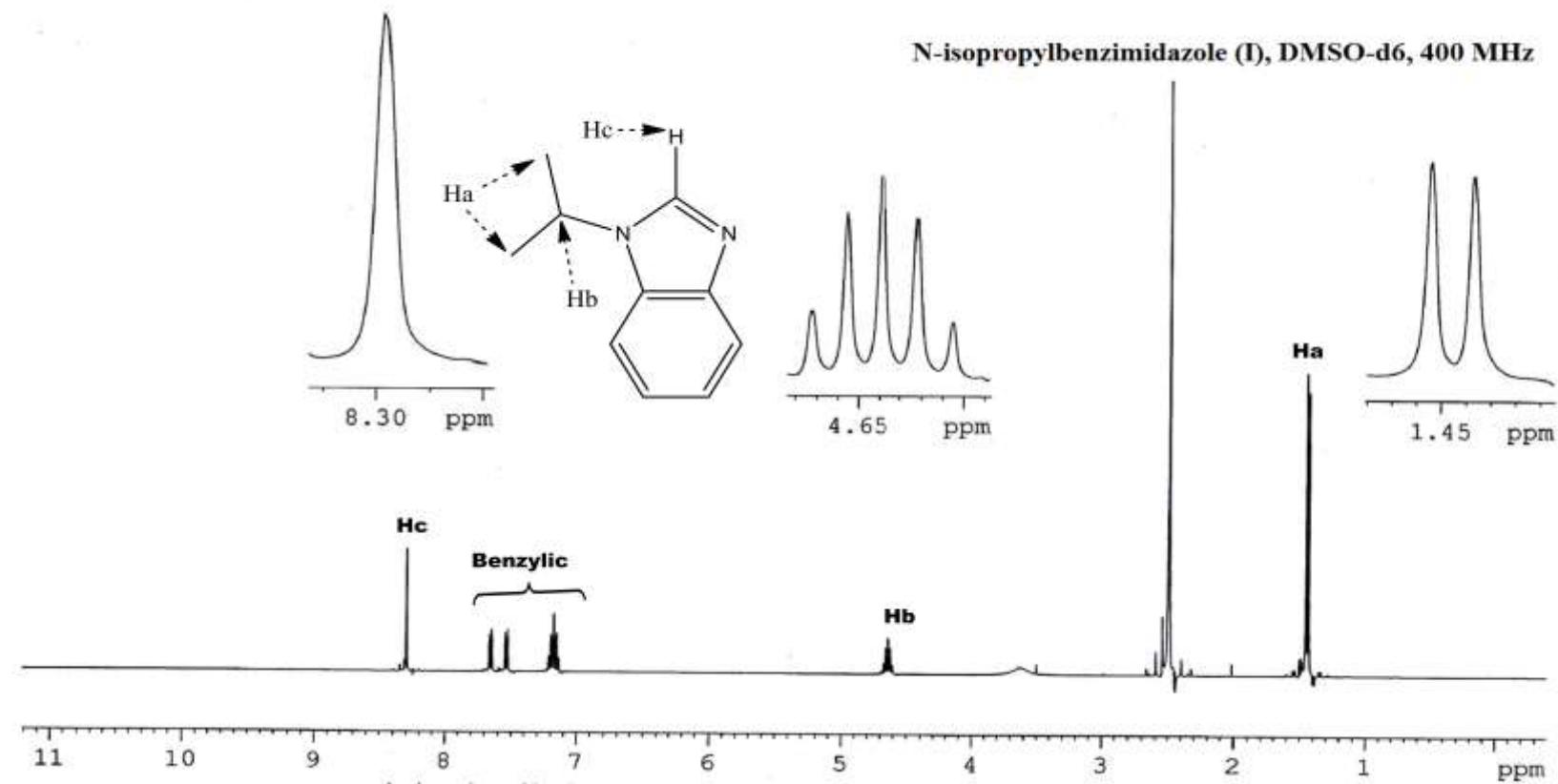
1. FT-IR
2. ^1H NMR
3. ^{13}C NMR

FT-IR, N-iPr-bendimidazole (**I**),
Liquid (Thallium bromide disks)

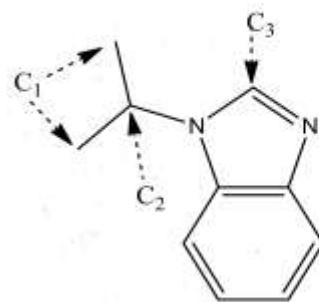


d:spectrum\N-i-pr- benzimidazole.002 - 11/3/2011

N-isopropylbenzimidazole (I), DMSO-d₆, 400 MHz



N-isopropylbenzimidazole, d6-DMSO, 400 MHz



Chloroform

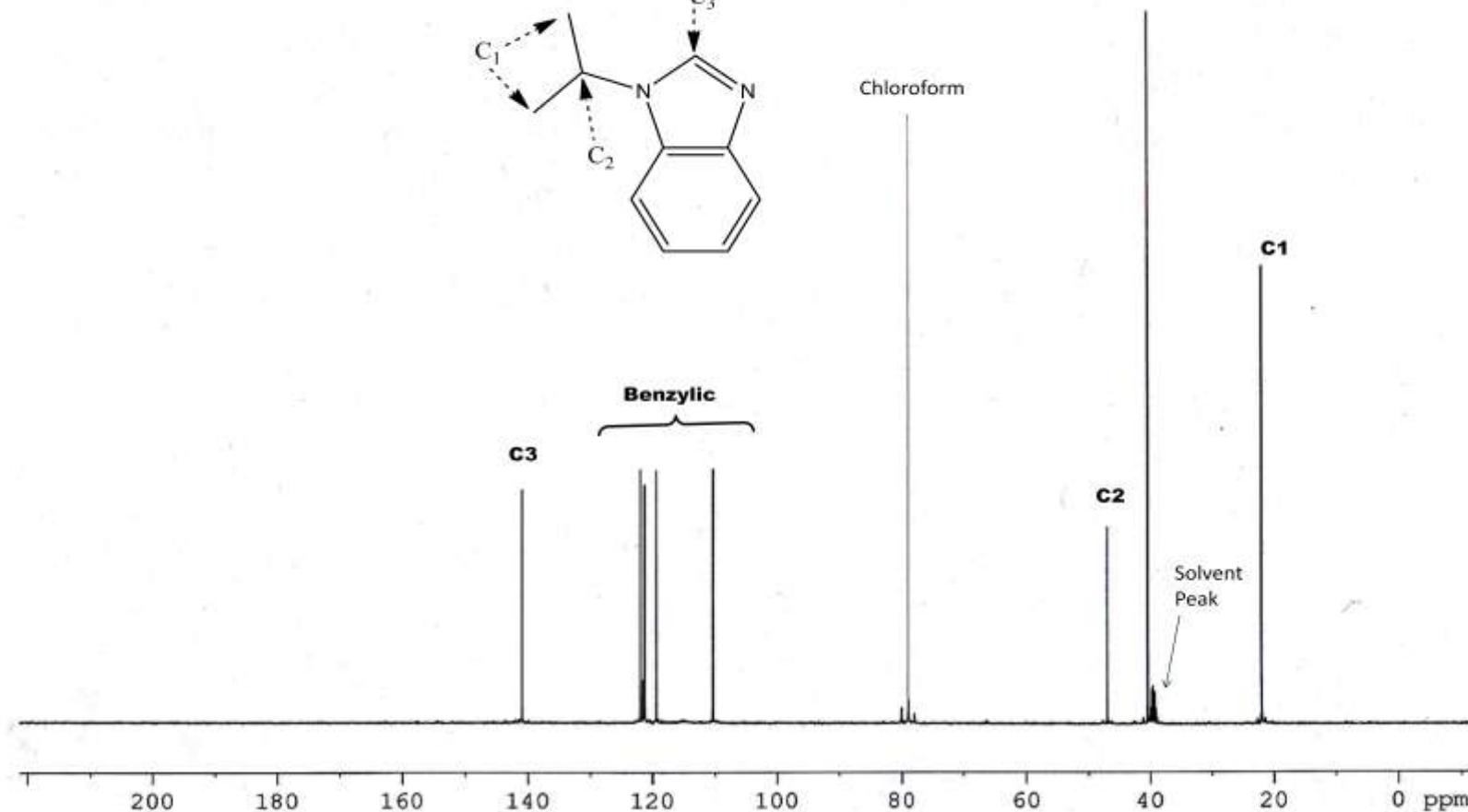
C1

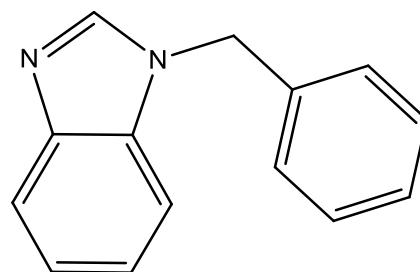
Benzylic

C3

C2

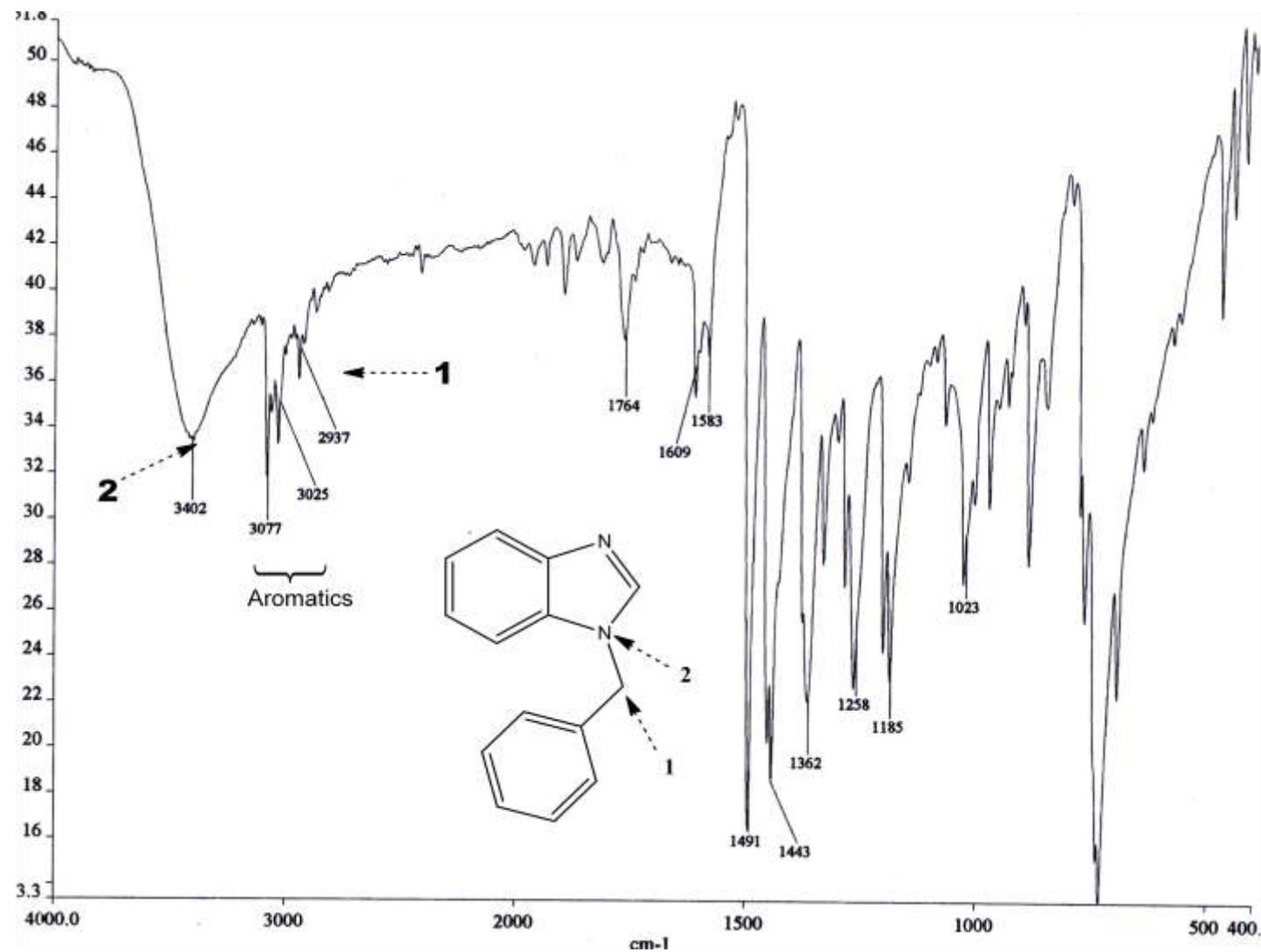
Solvent
Peak



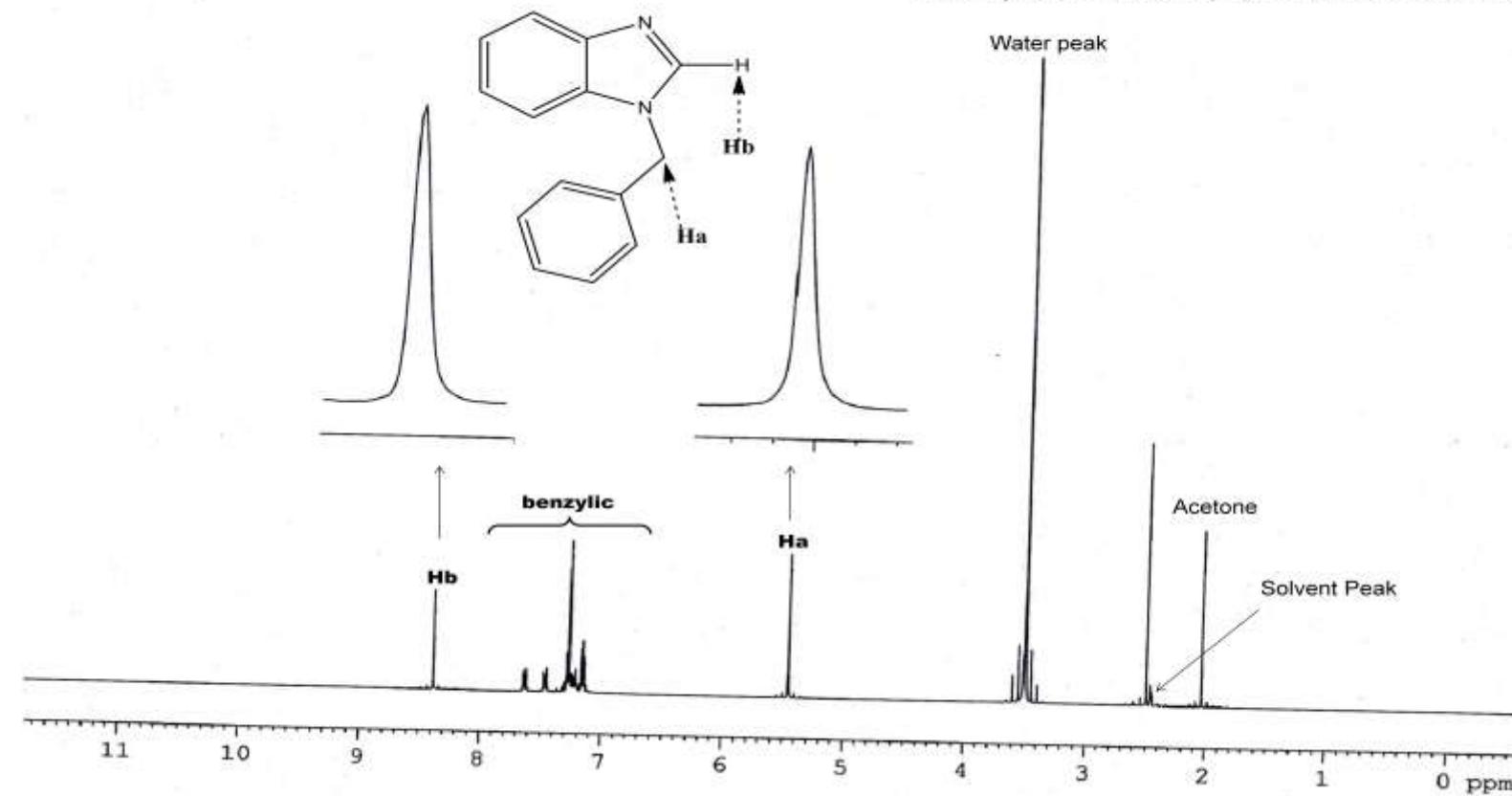


N-benzylbenzimidazole (**III**)

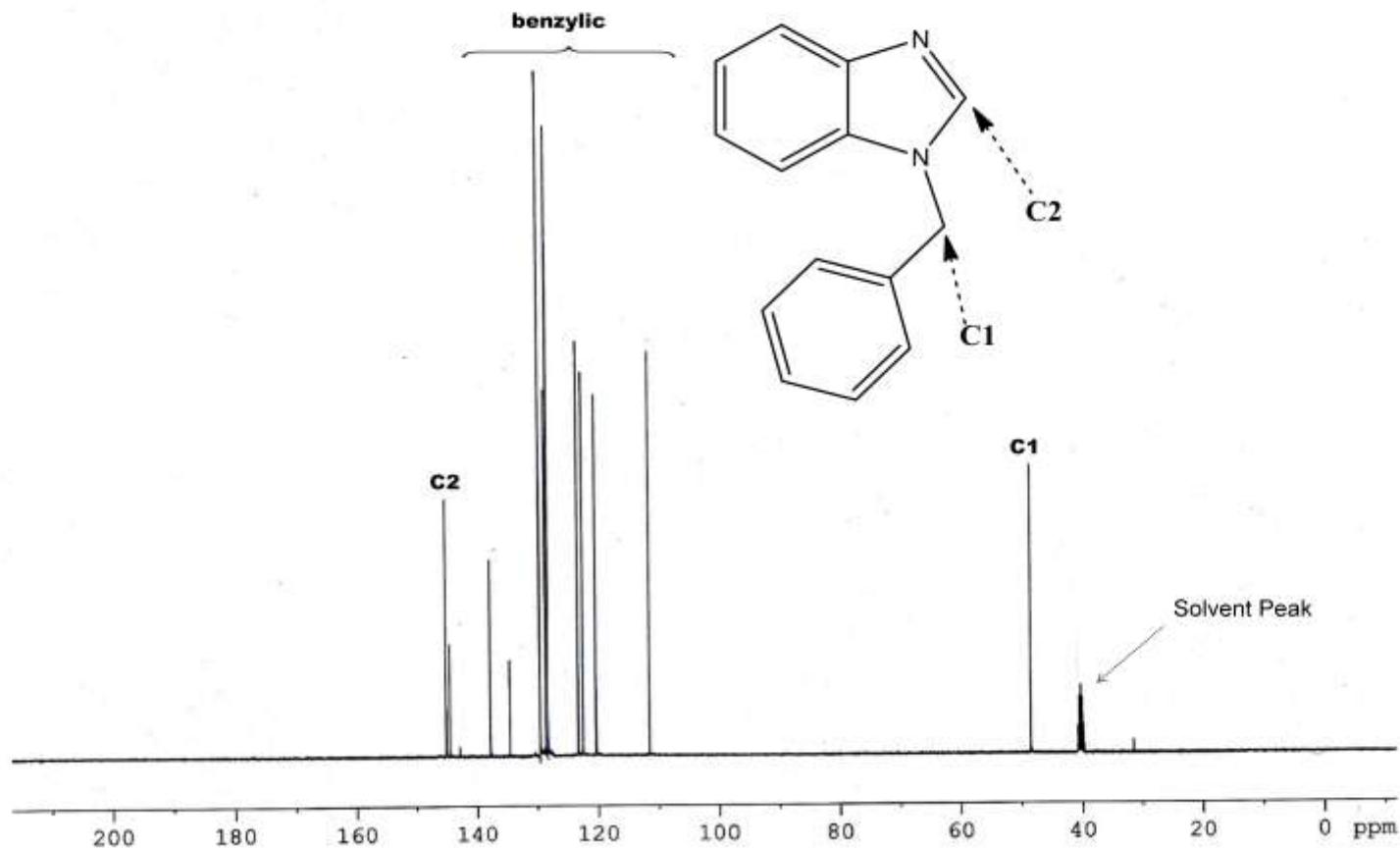
1. FT-IR
2. ^1H NMR
3. ^{13}C NMR

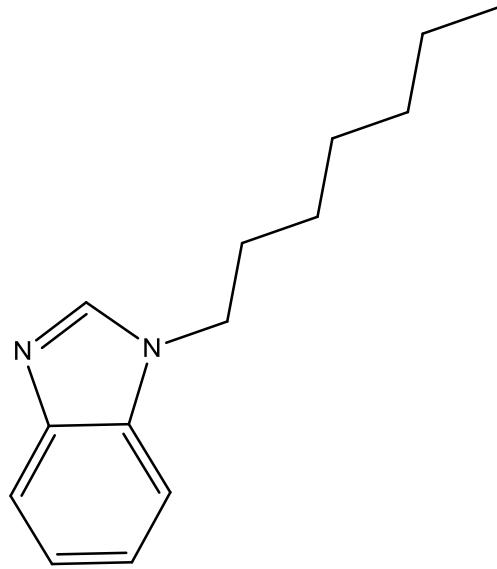


N-benzylbenzimidazole (III), d6-DMSO, 400 MHz



N-benzylbenzimidazole, d₆-DMSO, 400 MHz

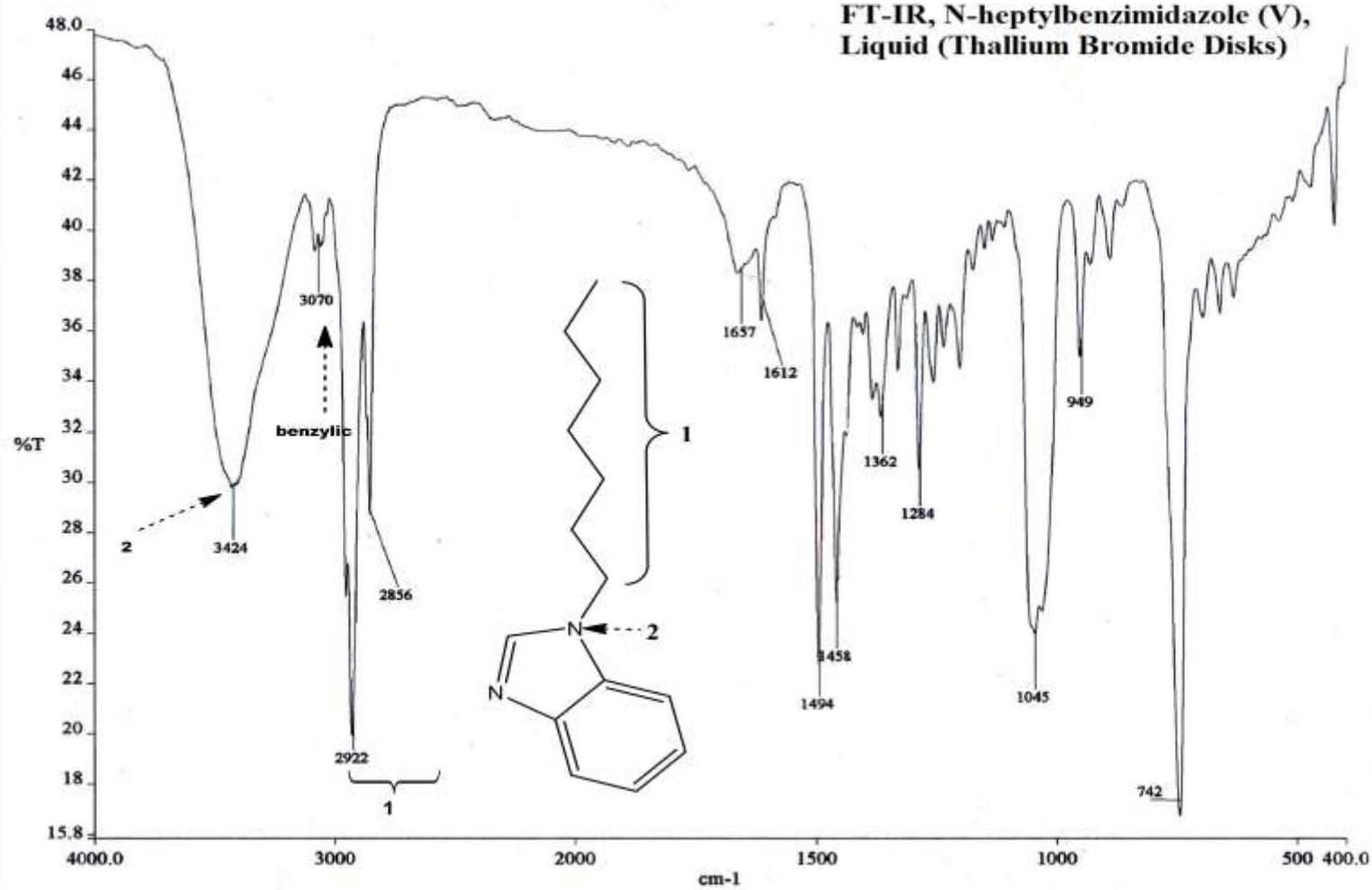




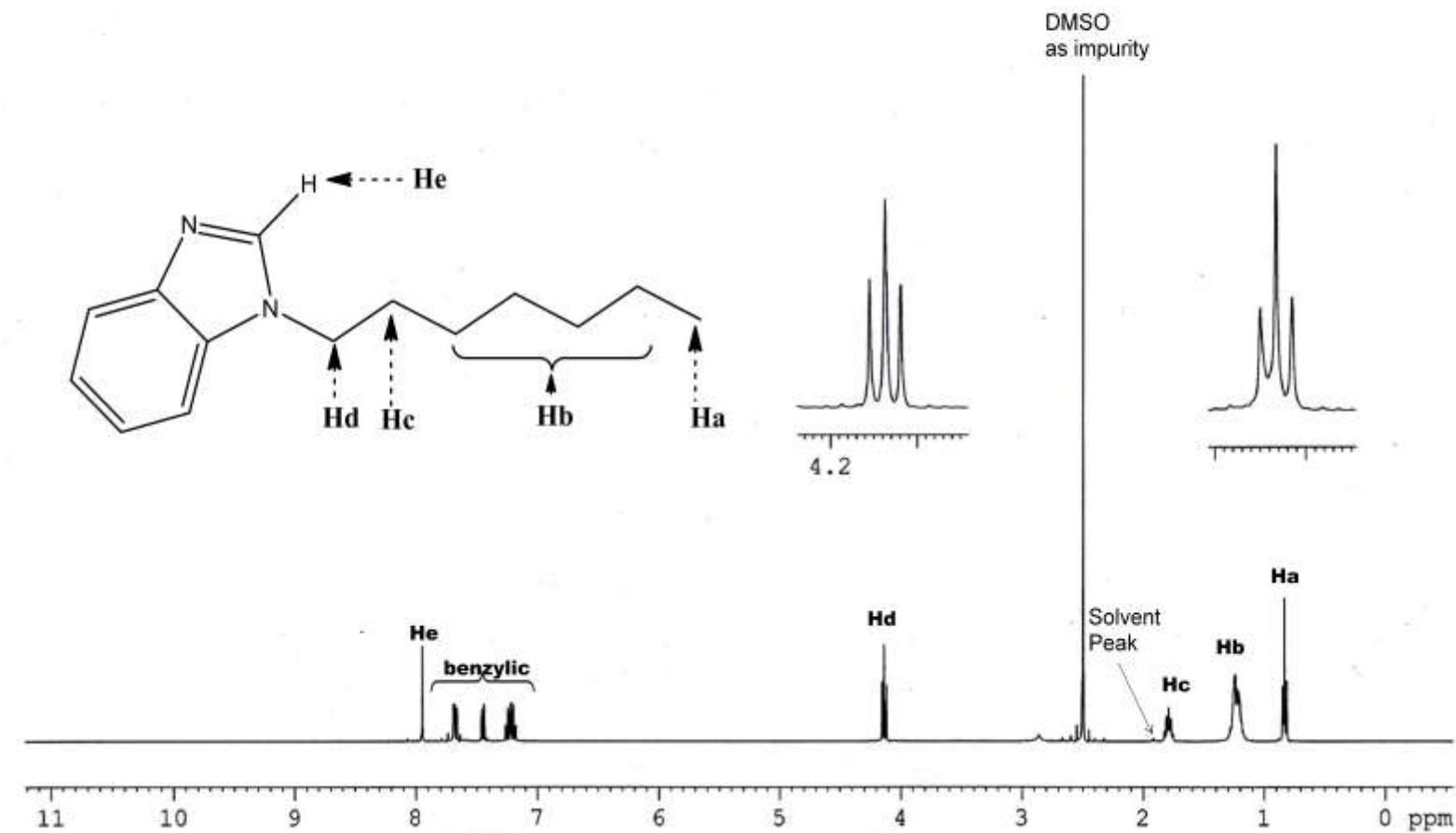
N-heptylbenzimidazole (**V**)

1. FT-IR
2. ^1H NMR
3. ^{13}C NMR

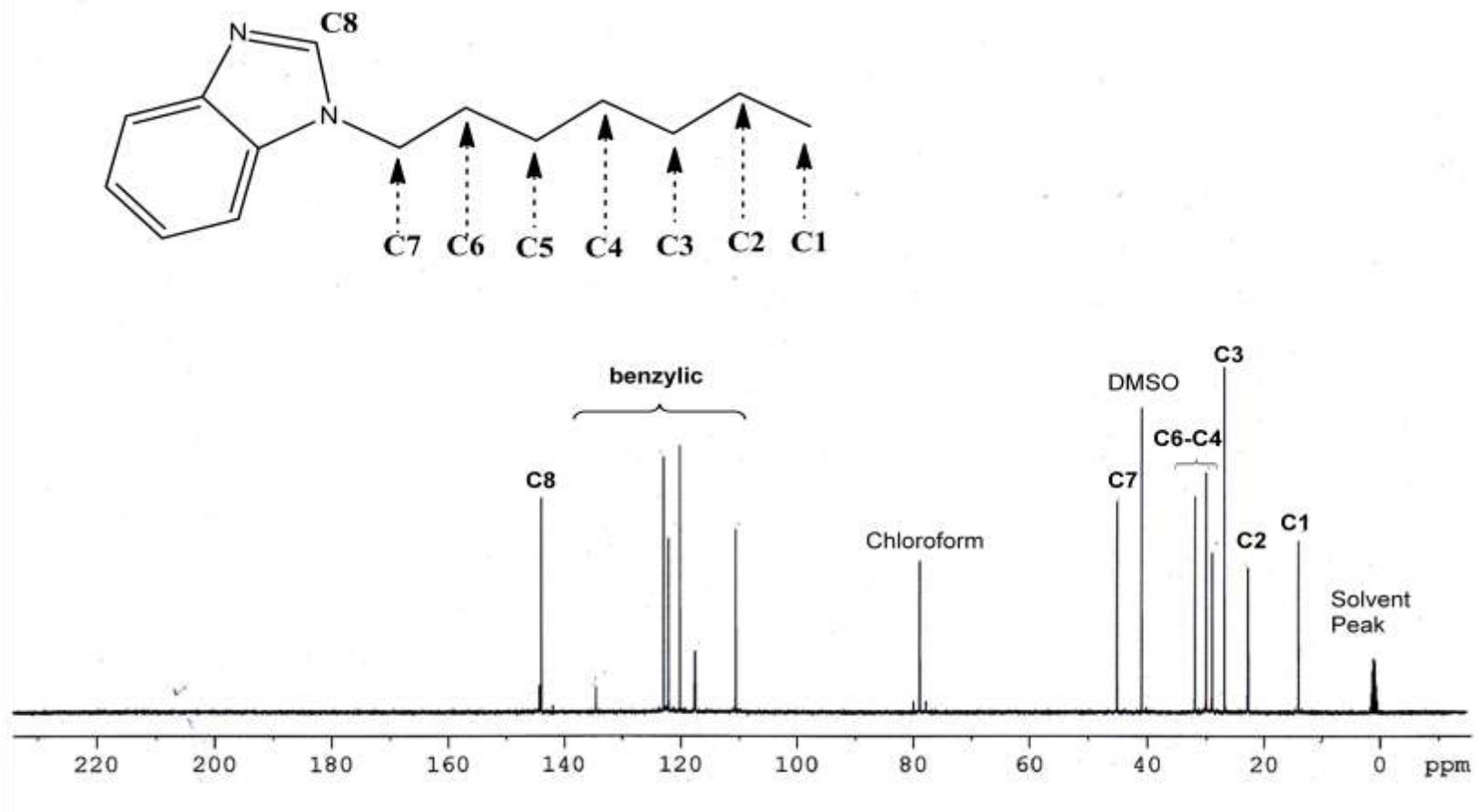
FT-IR, N-heptylbenzimidazole (V),
Liquid (Thallium Bromide Disks)

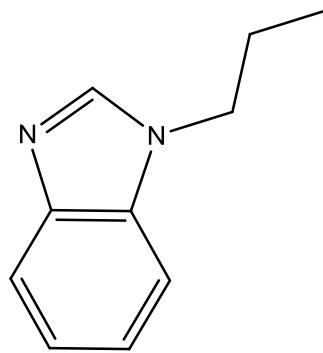


N-heptylbenzimidazole, d3-Acetonitril, 400 MHz



N-heptylbenzimidazole (V), d3-Acetonitril, 400 MHz

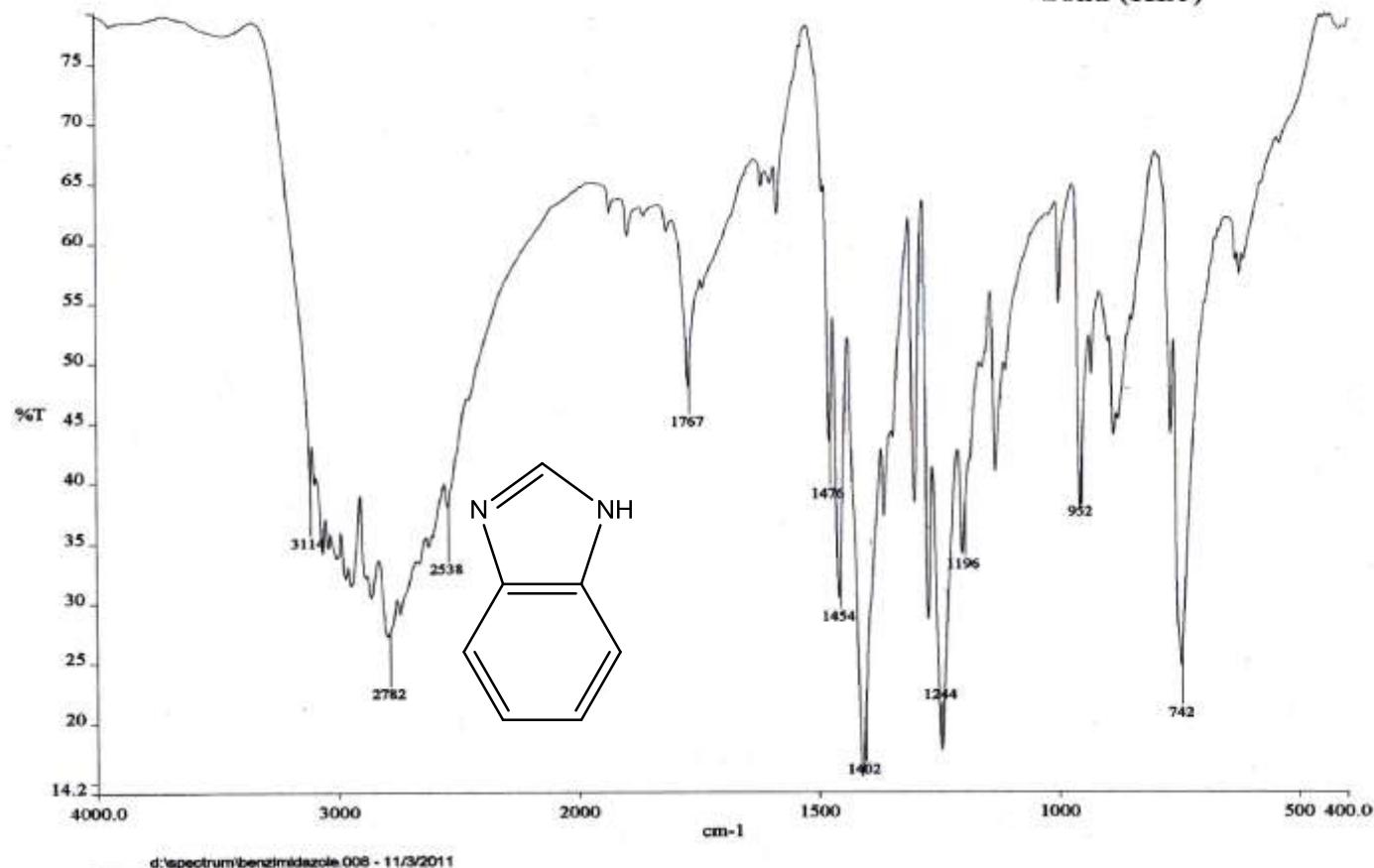




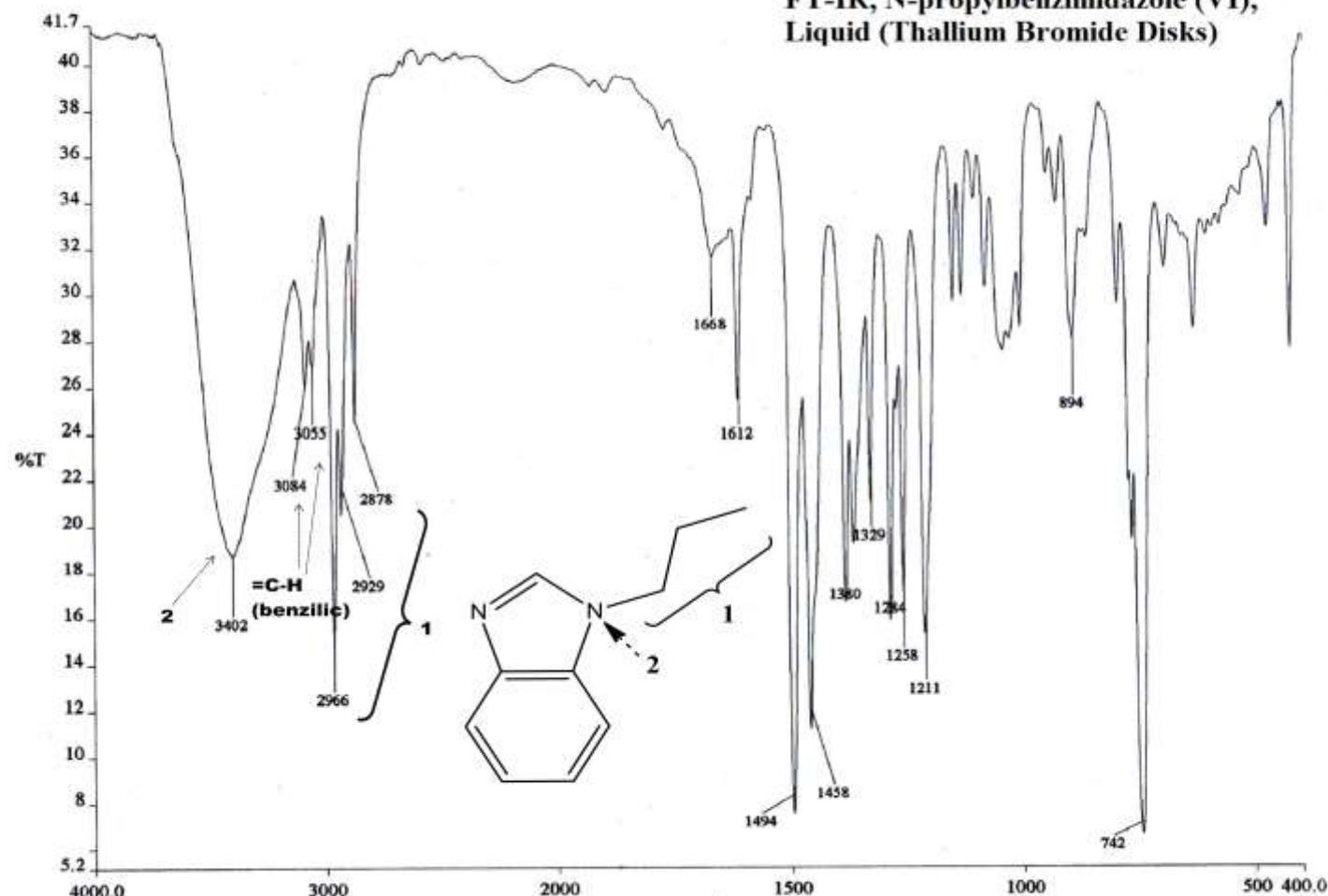
N-propylbenzimidazole (**VI**)

1. FT-IR benzimidazole
2. FT-IR
3. ^1H NMR of propyl bromide
4. ^1H NMR
5. ^{13}C NMR

FT-IR, Benzimidazole
Solid (KBr)

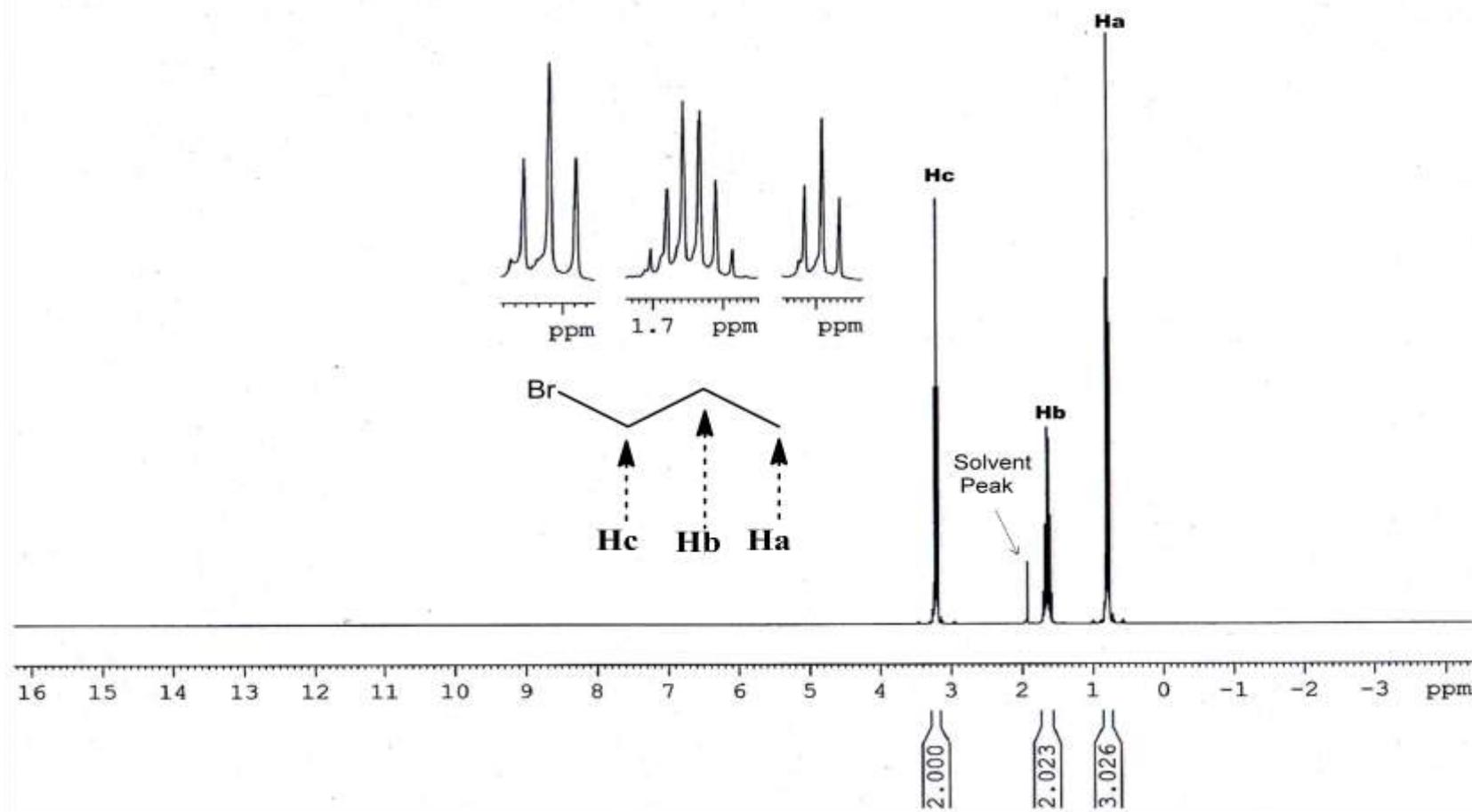


FT-IR, N-propylbenzimidazole (VI),
Liquid (Thallium Bromide Disks)

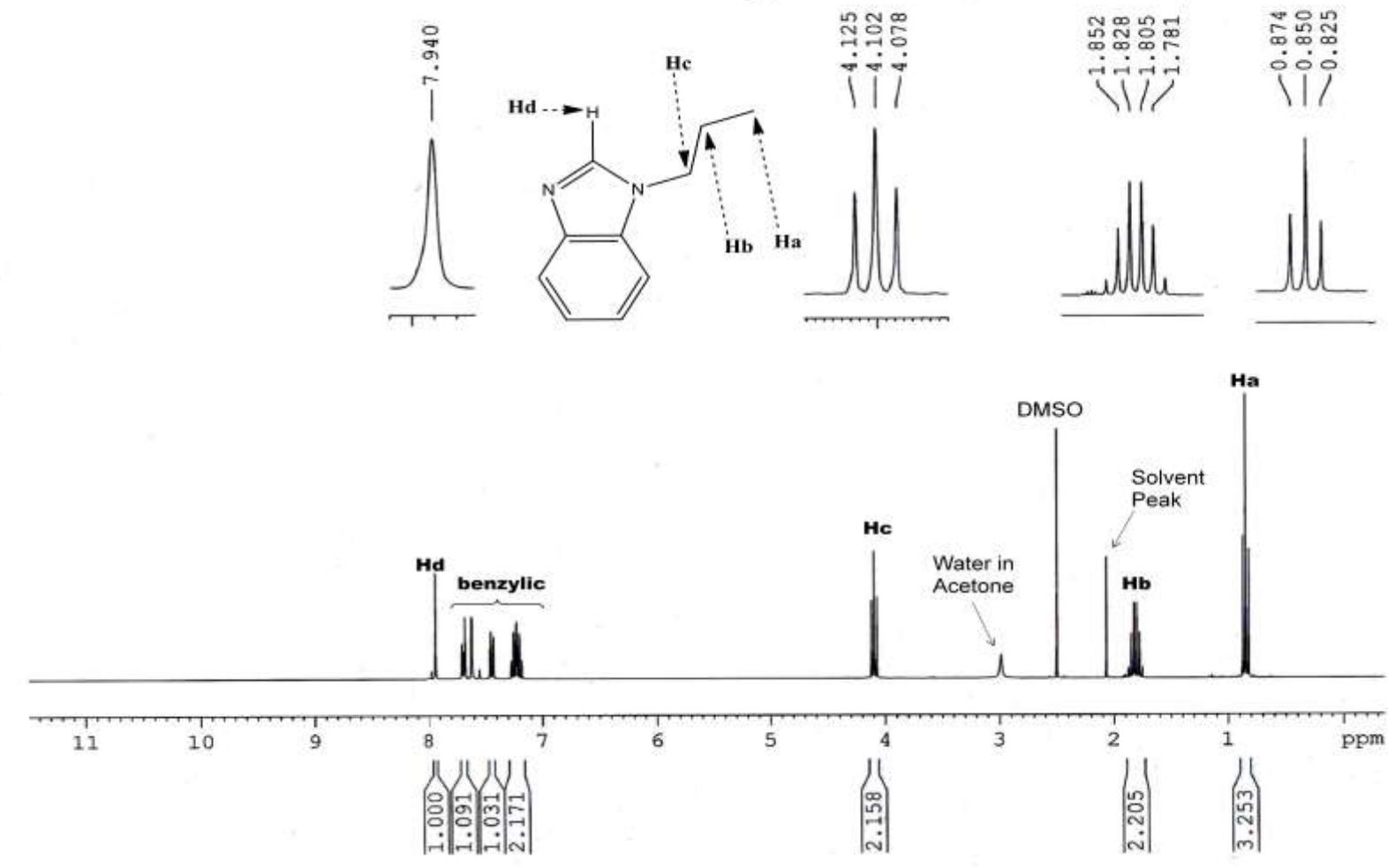


d:spectrum/n-propyl benzimidazole.002 - 11/3/2011

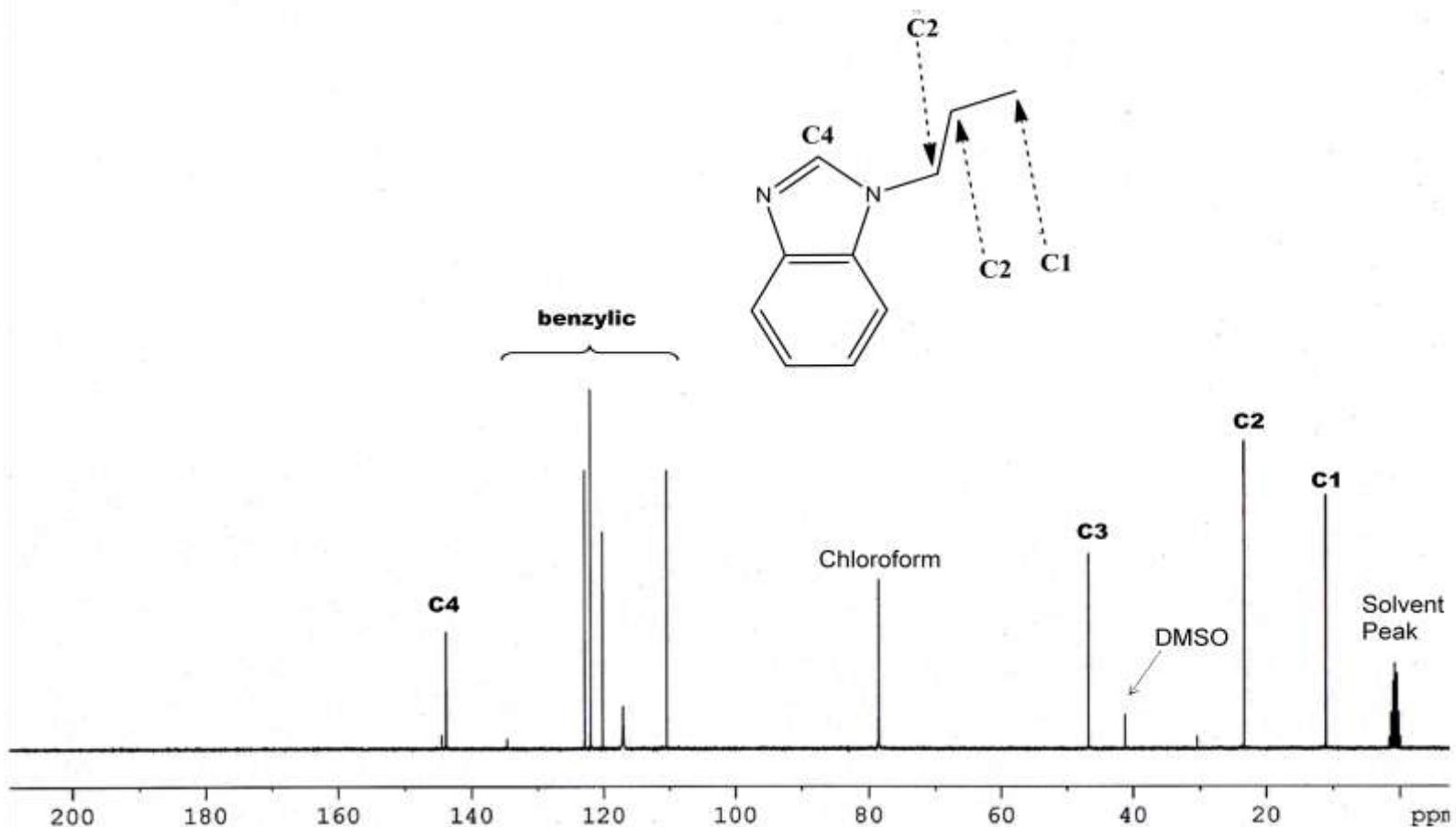
Propyl Bromide, d3-Acetonitrile, 300 MHz

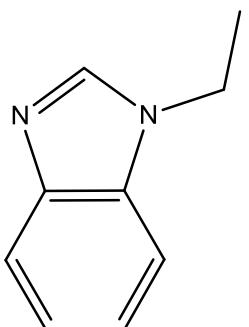


N-Propylbenzimidazole, d3-Acetonitrile, 300 MHz



N-Propylbenzimidazole, d₃-Acetonitrile, 300 MHz

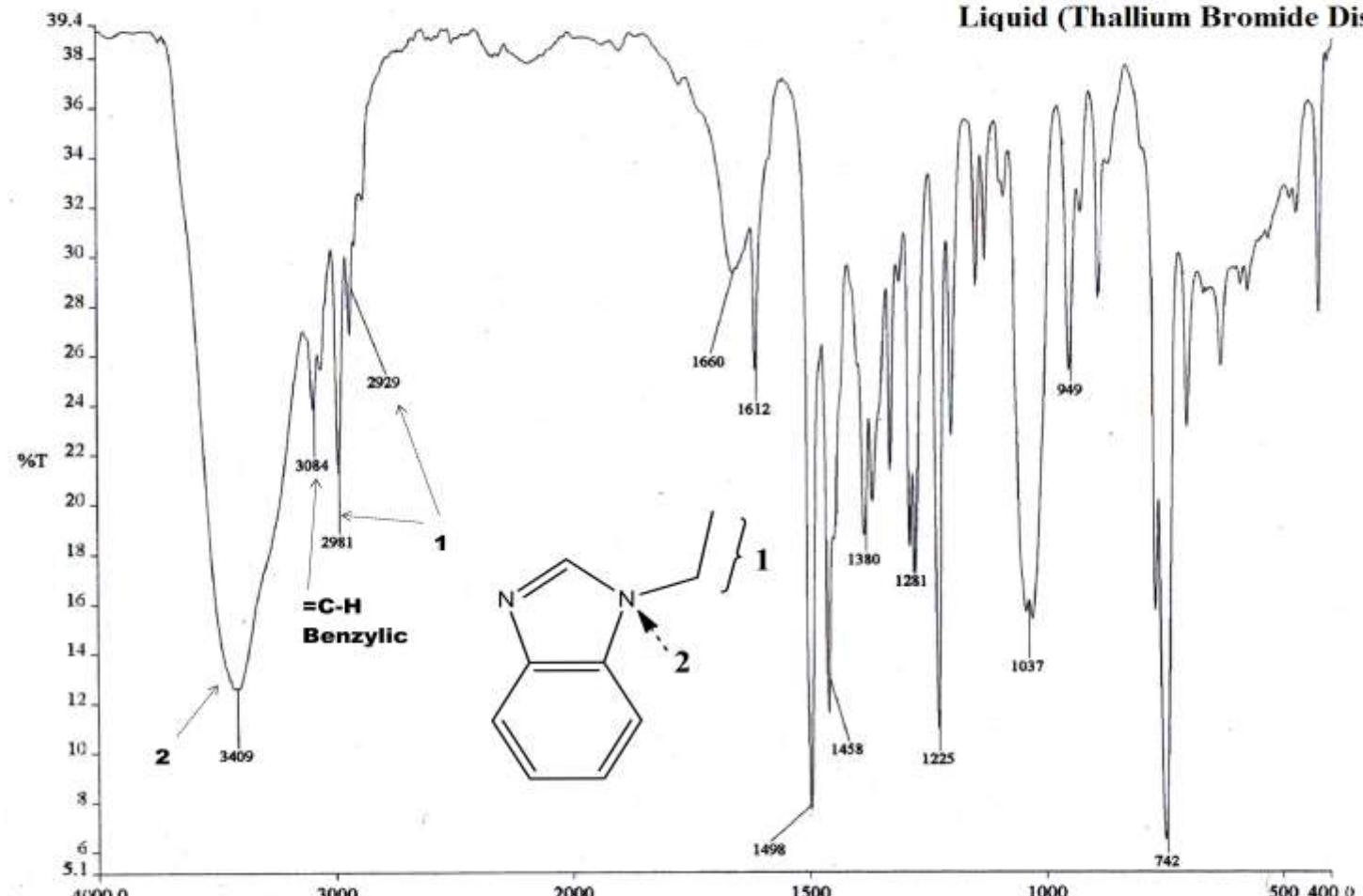




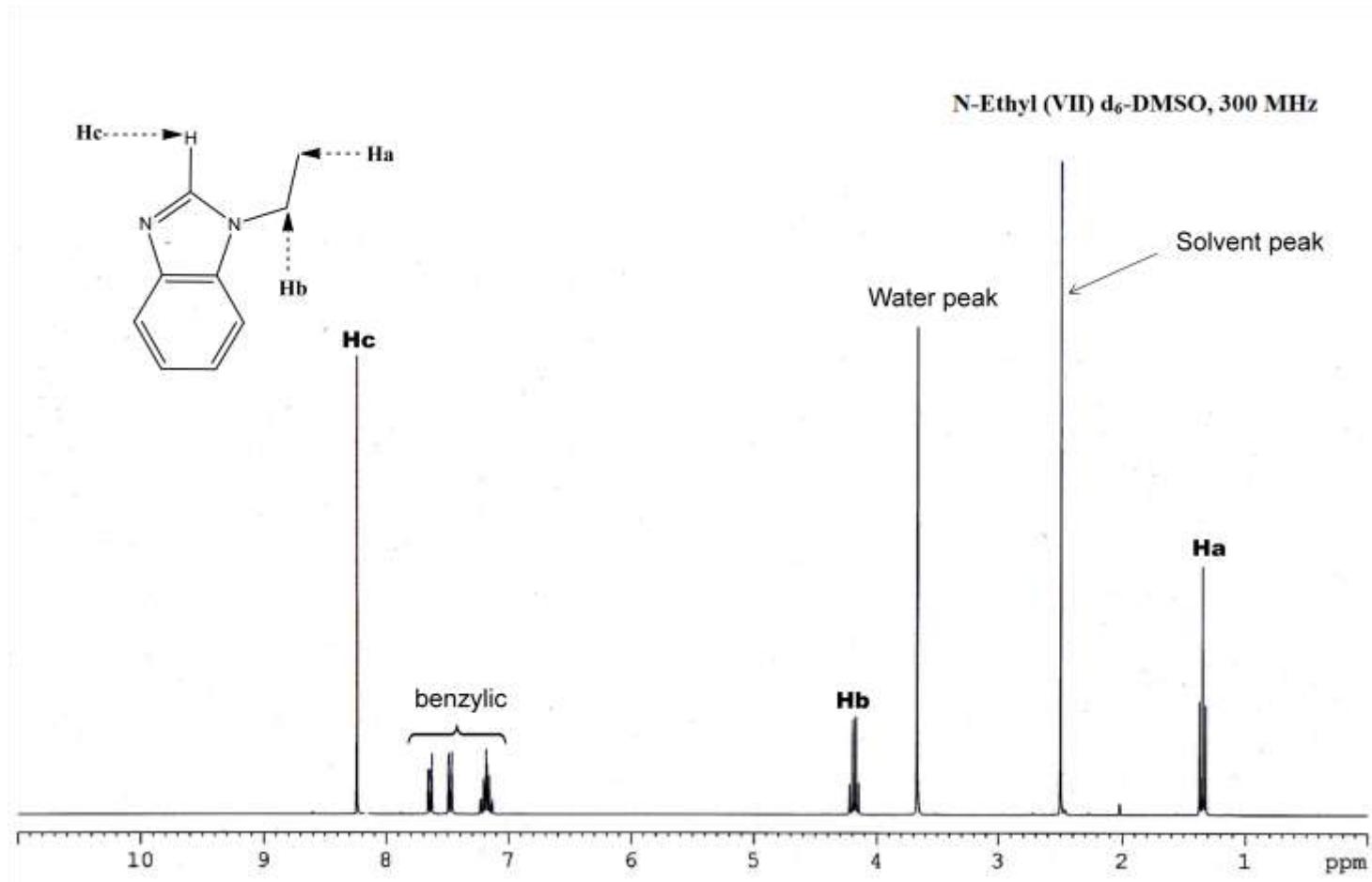
N-ethylbenzimidazole (**VII**)

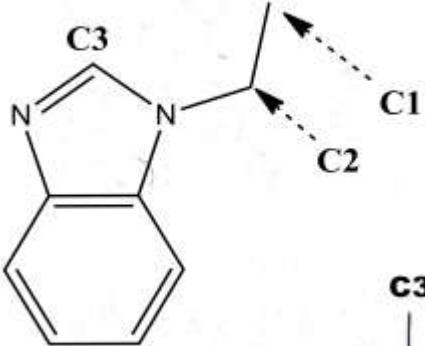
1. FT-IR
2. ^1H NMR
3. ^{13}C NMR

FT-IR, N-Ethylbenzimidazole (VII)
Liquid (Thallium Bromide Disks)

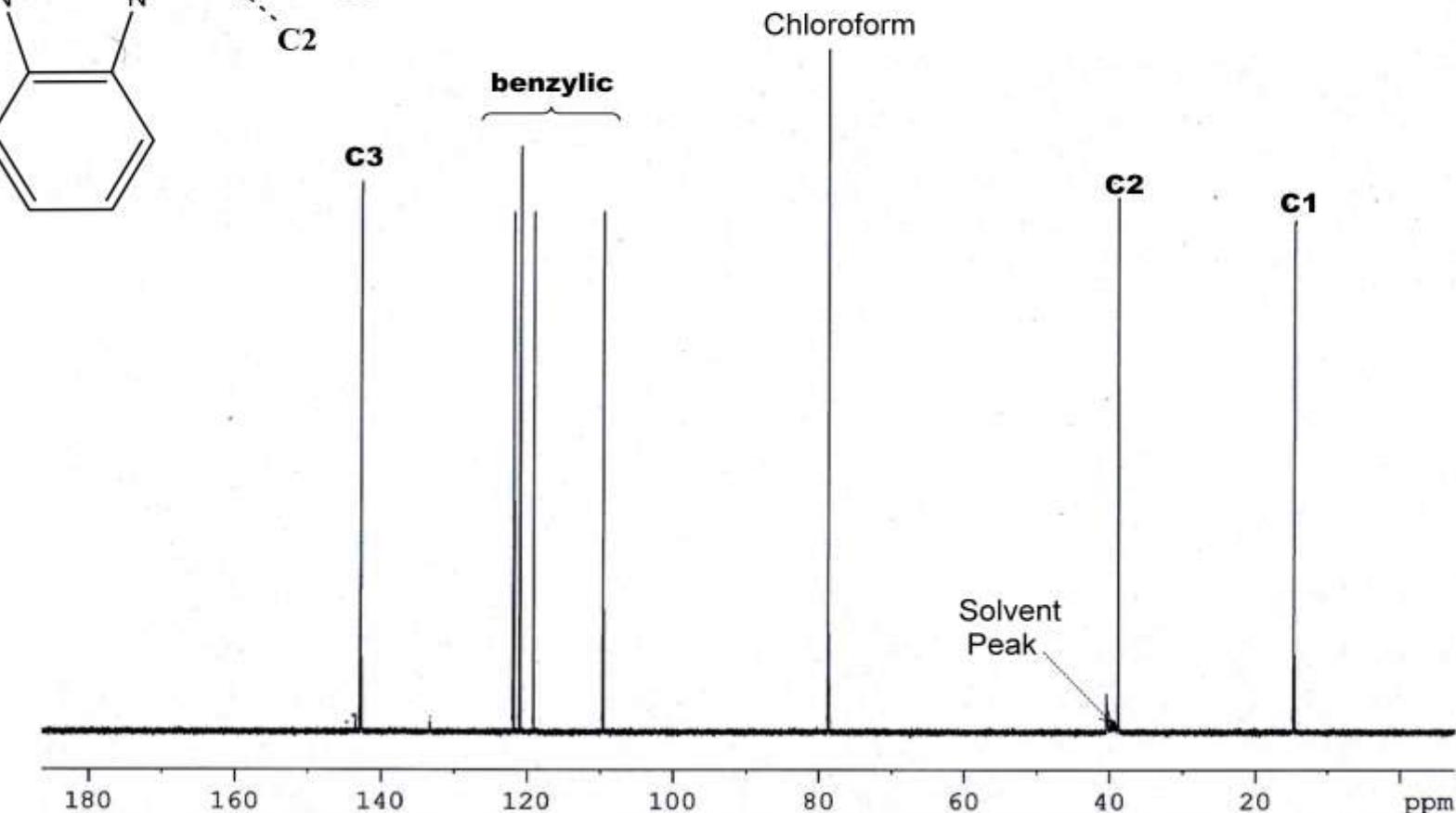


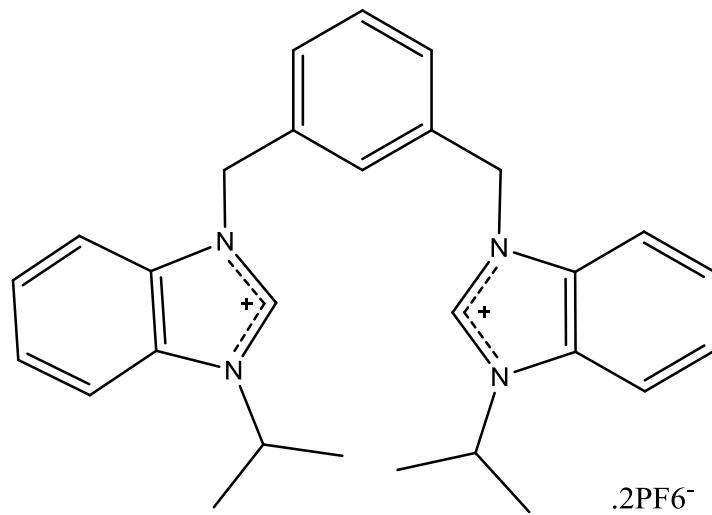
d:spectrum/n-ethylbenzimidazole.002 - 15-3-2011





N-Ethylbenzimidazole, d₆-DMSO, 300 MHz





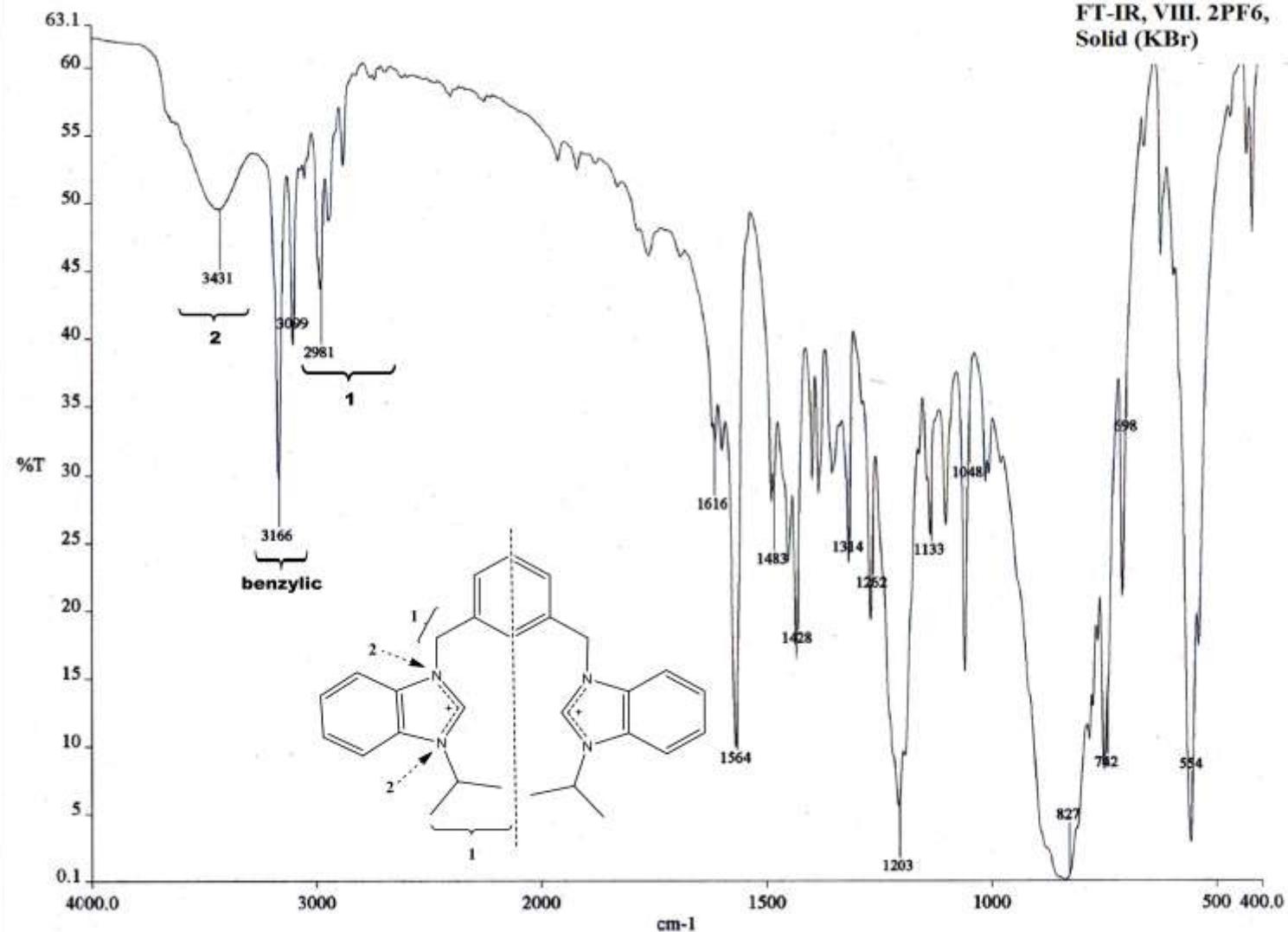
3,3'-(1,3-phenylenebis(methylene))bis(1-isopropyl-1H-benzimidazolium) salt (**VIII.2PF₆**)

1. FT-IR

2. ¹HNMR

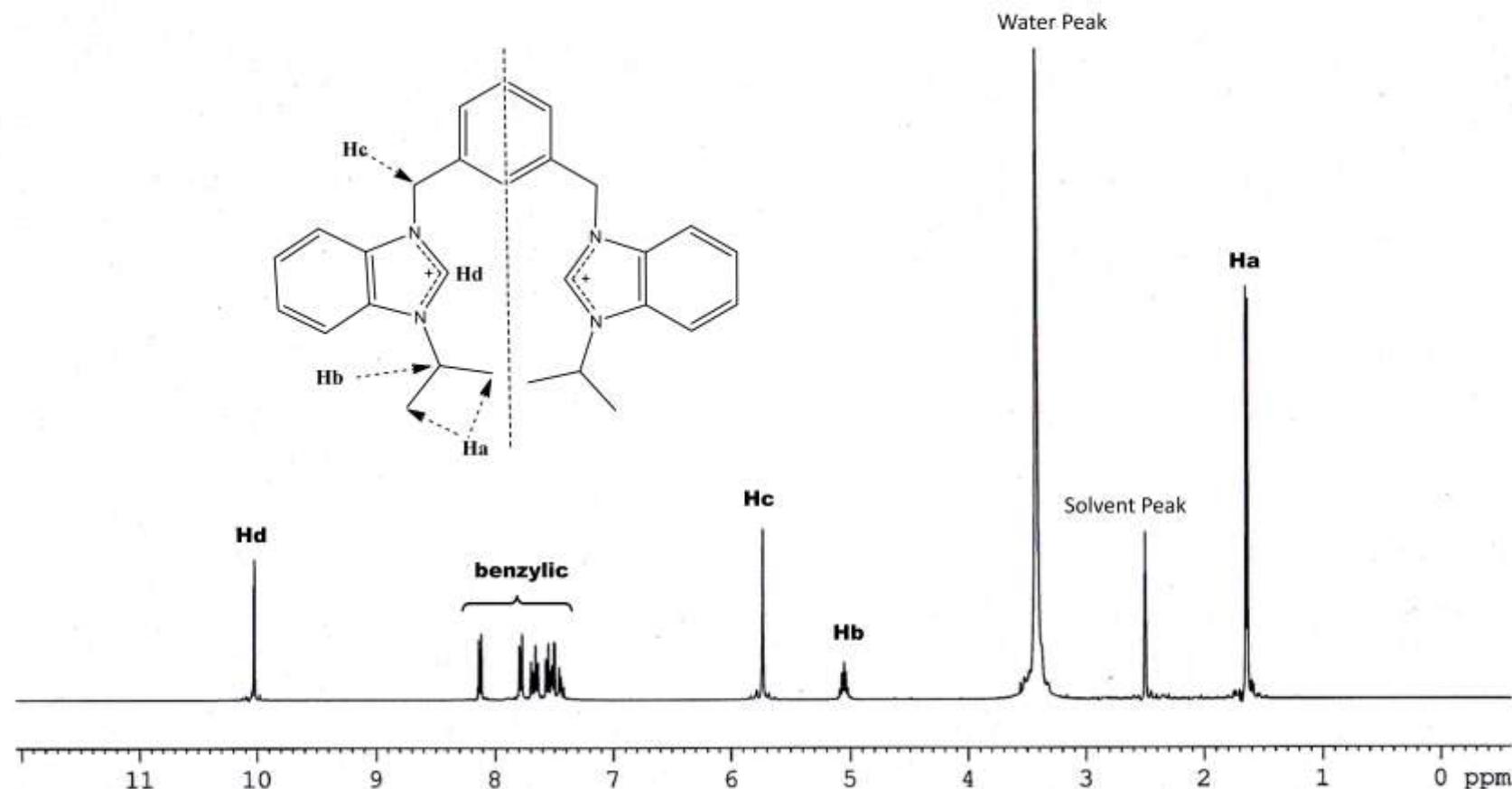
3. ¹³CNMR

FT-IR, VIII. 2PF6,
Solid (KBr)

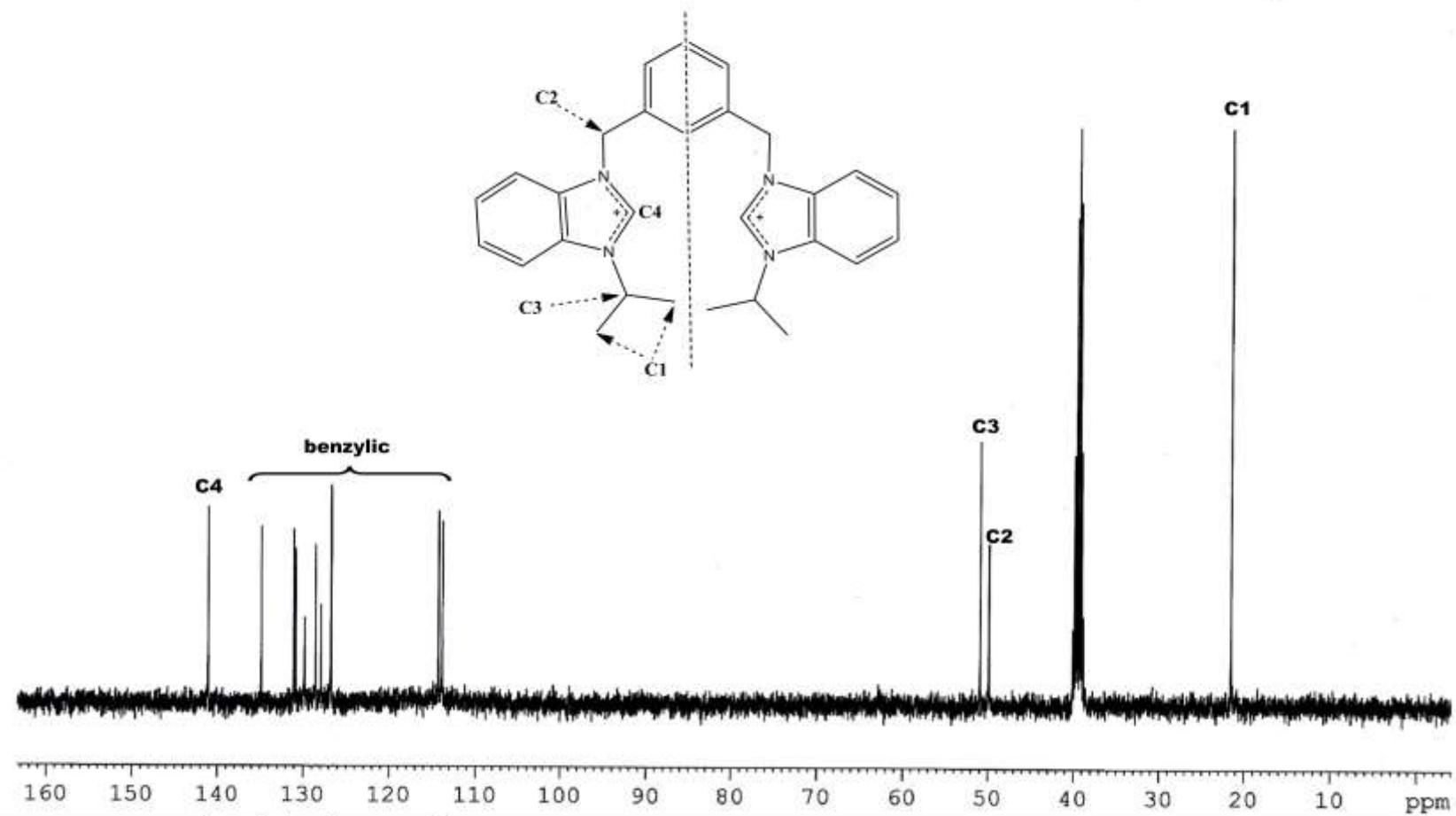


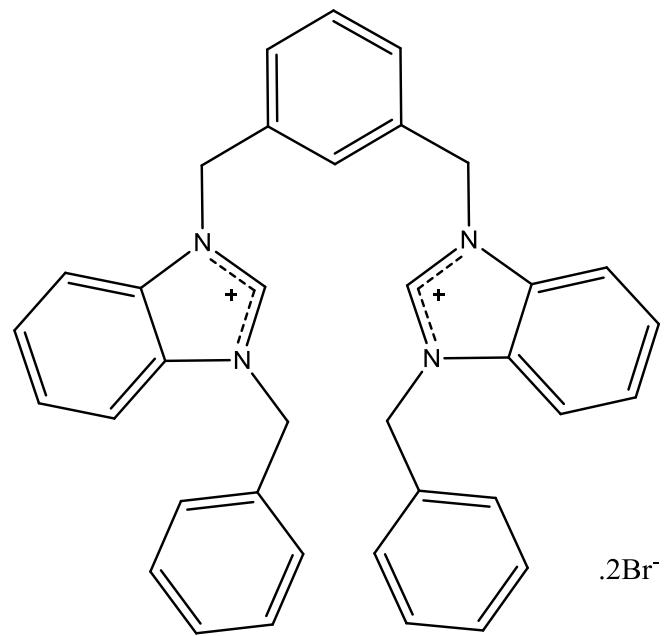
d:spectrumN-ad-1.003 - 1/2/2011

VIII. 2PF₆, d6-DMSO, 400 MHz



VIII. 2PF6, d6-DMSO, 400 MHz

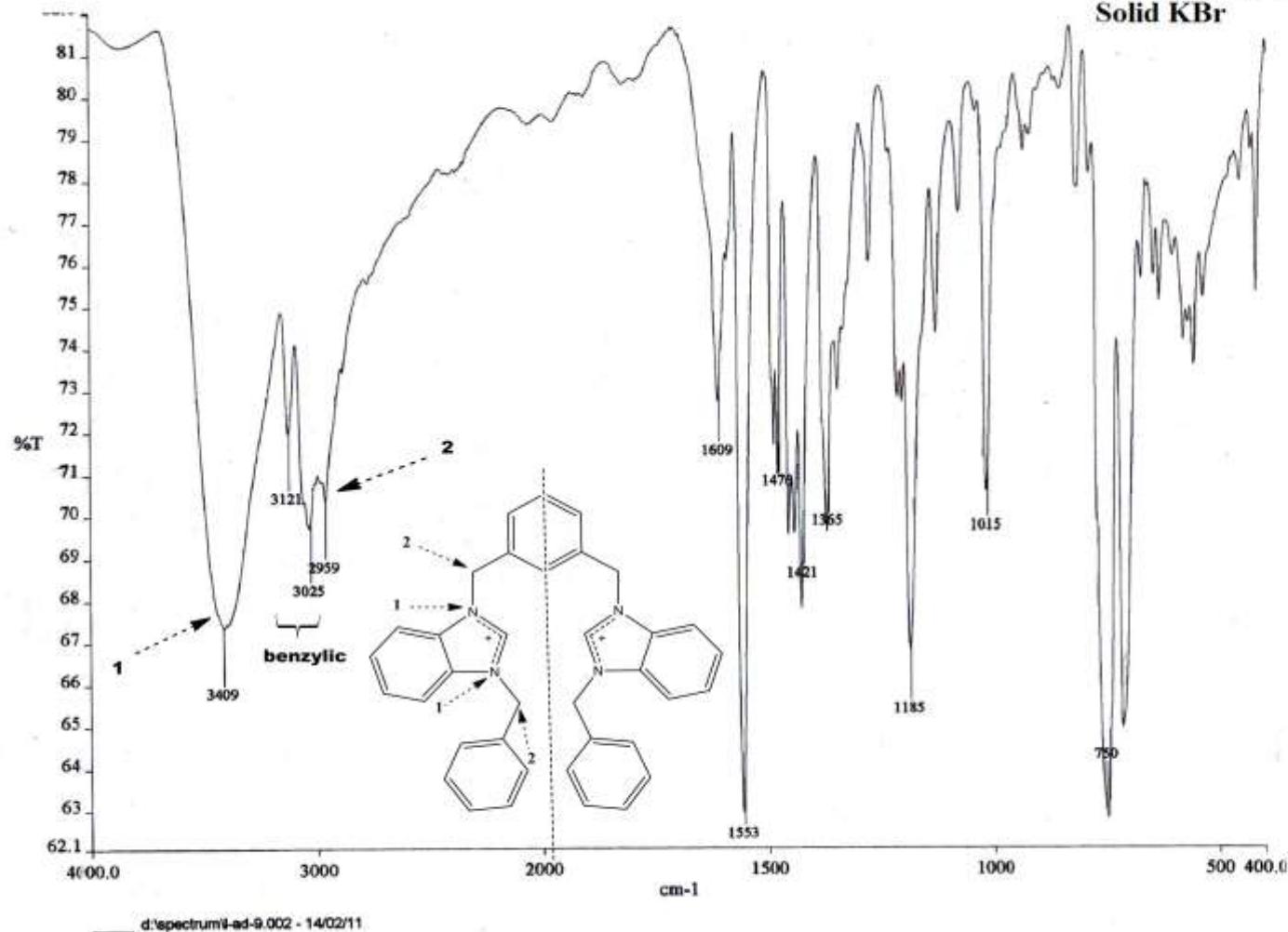


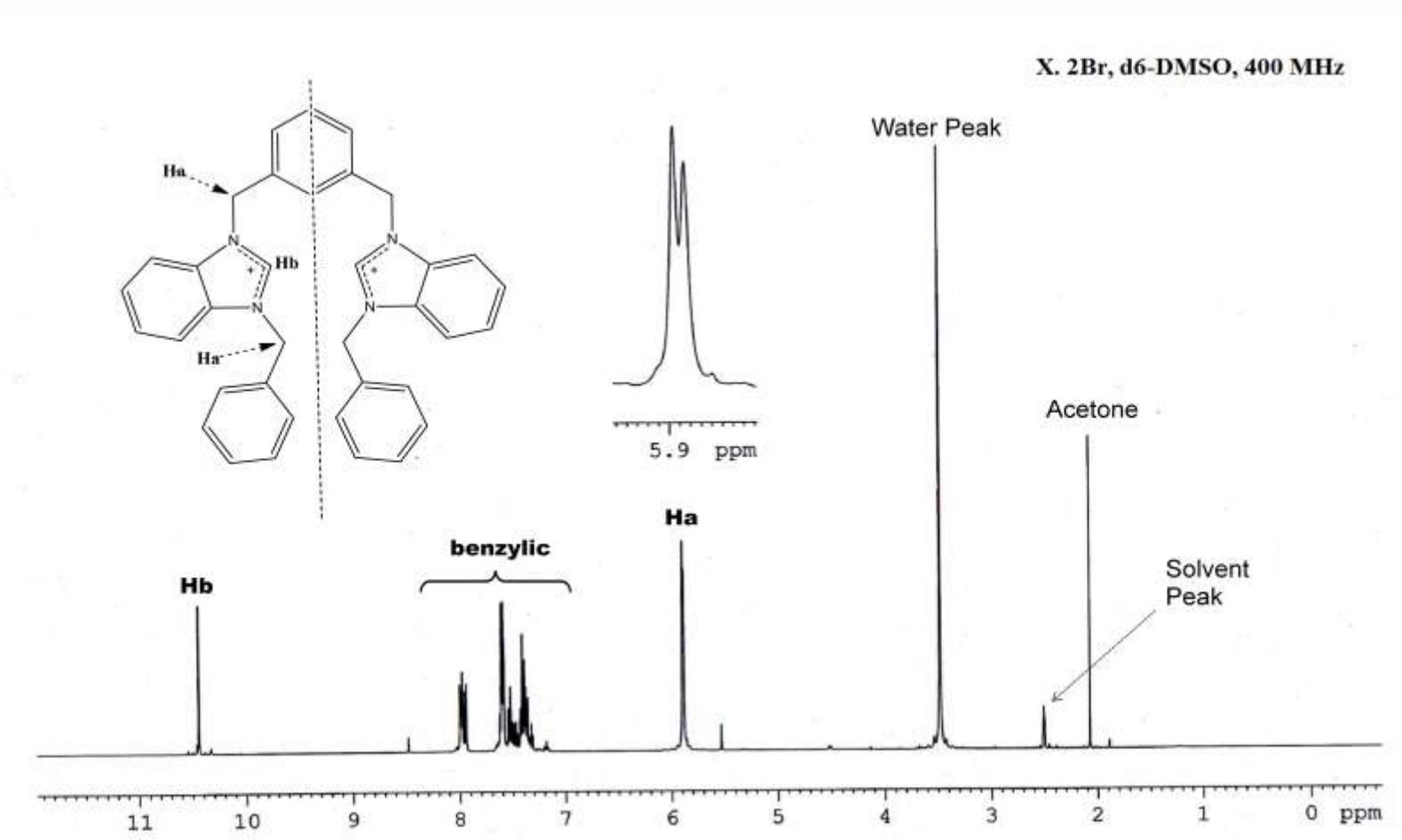


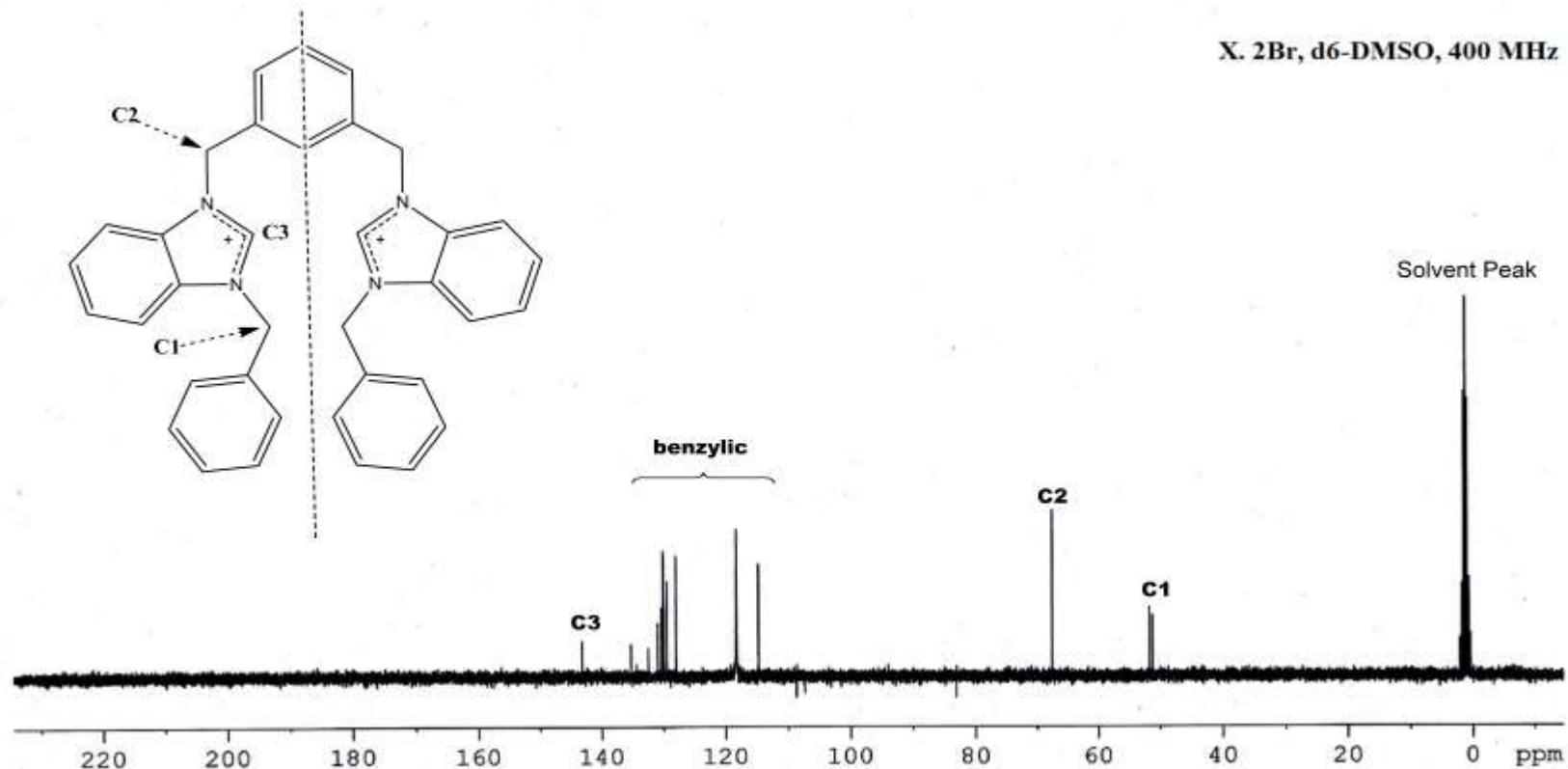
3,3'-(1,3-phenylenebis(methylene))bis(1-benzyl-1H-benzimidazolium) salt (**X.2Br**)

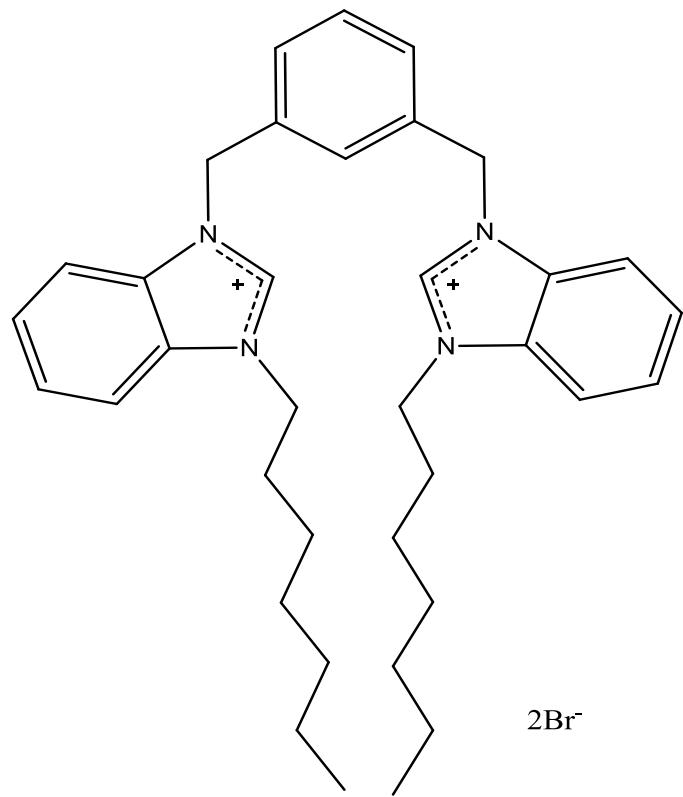
1. FT-IR
2. ¹H NMR
3. ¹³C NMR

FT-IR, X. 2Br,
Solid KBr





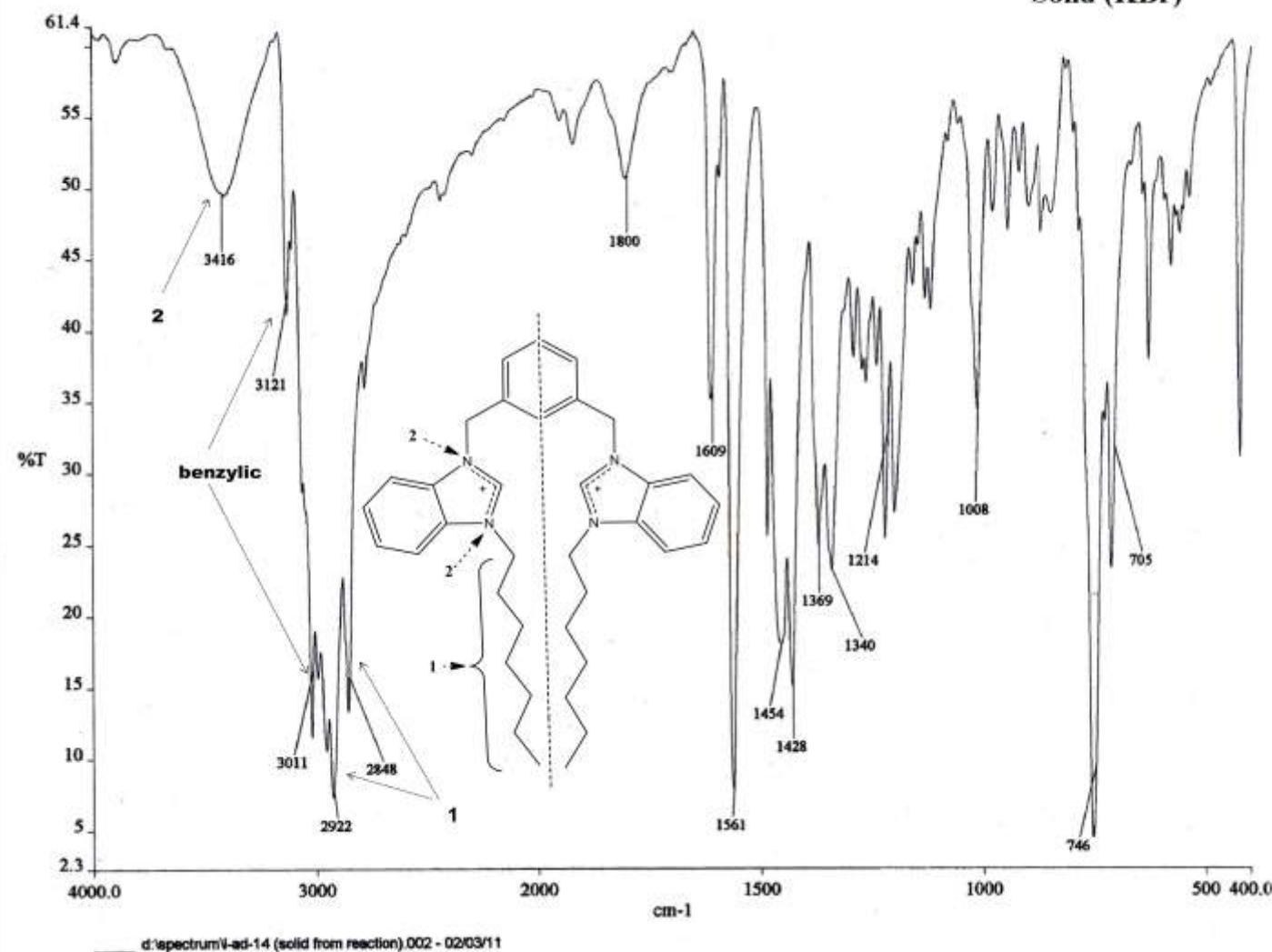




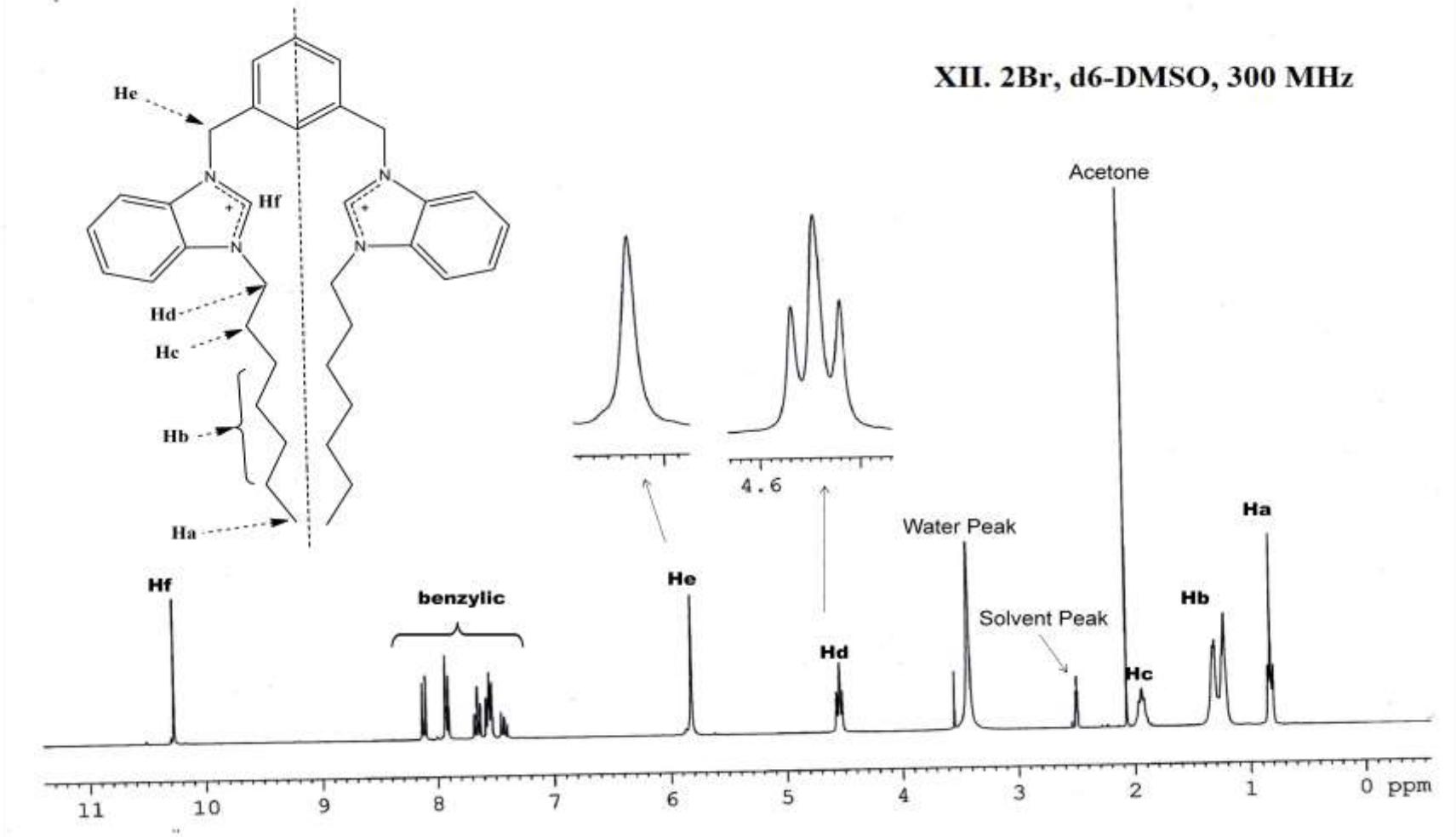
3,3'-(1,3-phenylenebis(methylene))bis(1-heptyl-1H-benzimidazolium) salt (**XII.2Br**)

1. FT-IR
2. ^1H NMR
3. ^{13}C NMR

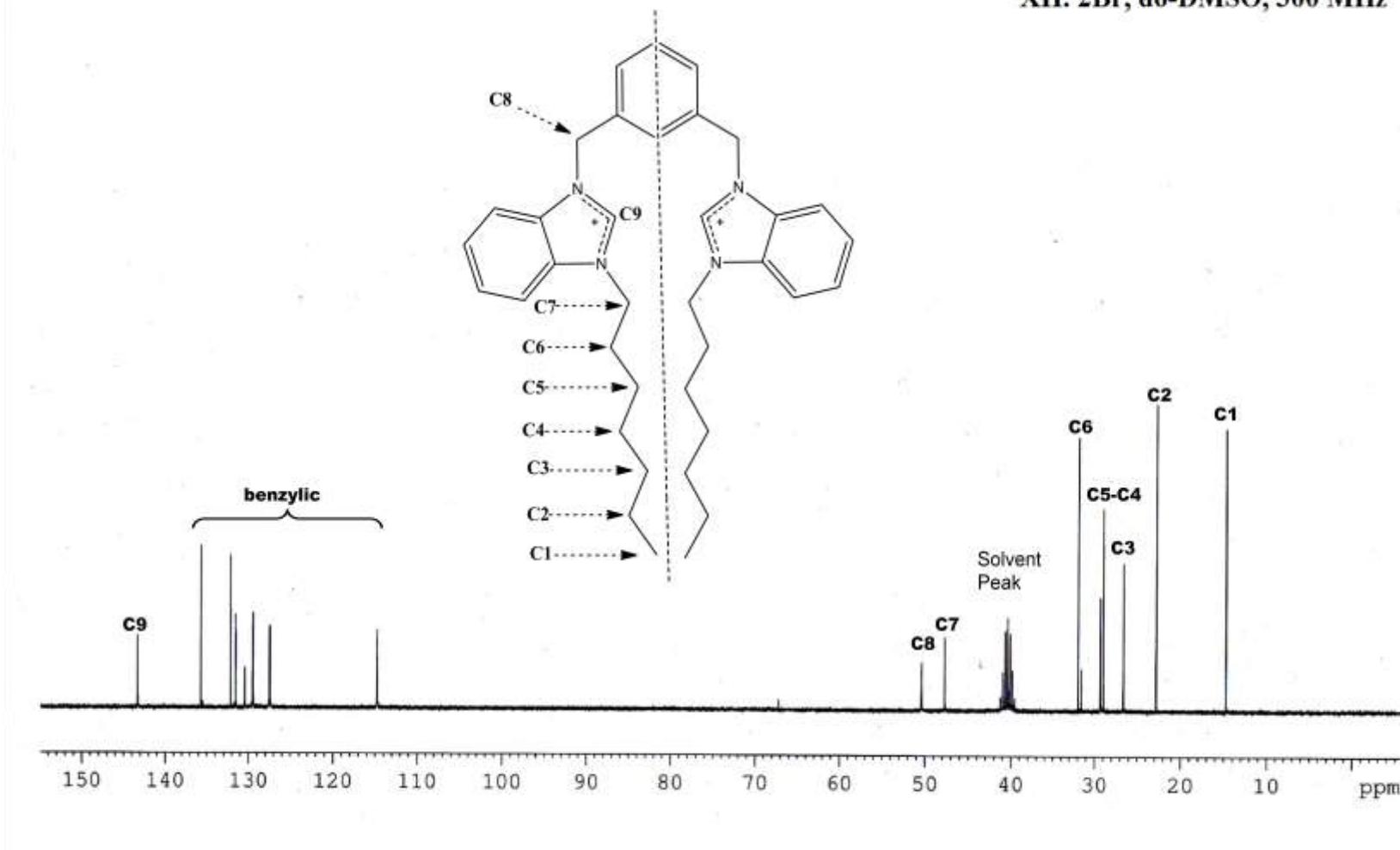
FT-IR, XII. 2Br
Solid (KBr)

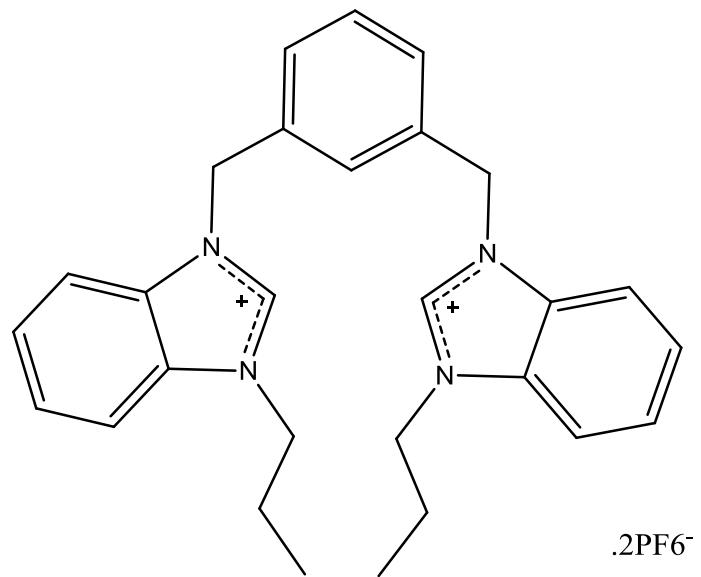


d:\spectrum\i-ad-14 (solid from reaction).002 - 02/03/11



XII. 2Br, d6-DMSO, 300 MHz

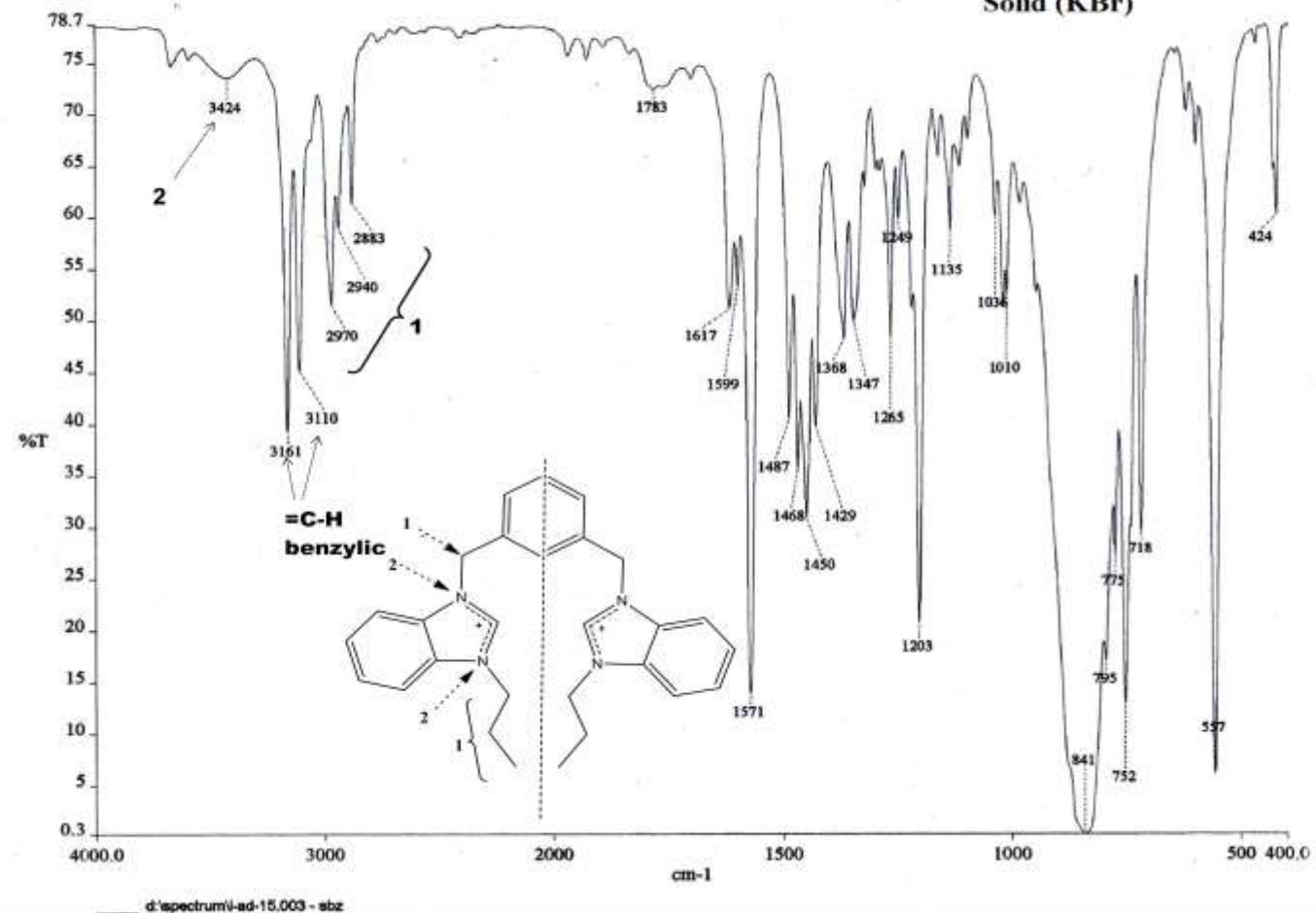




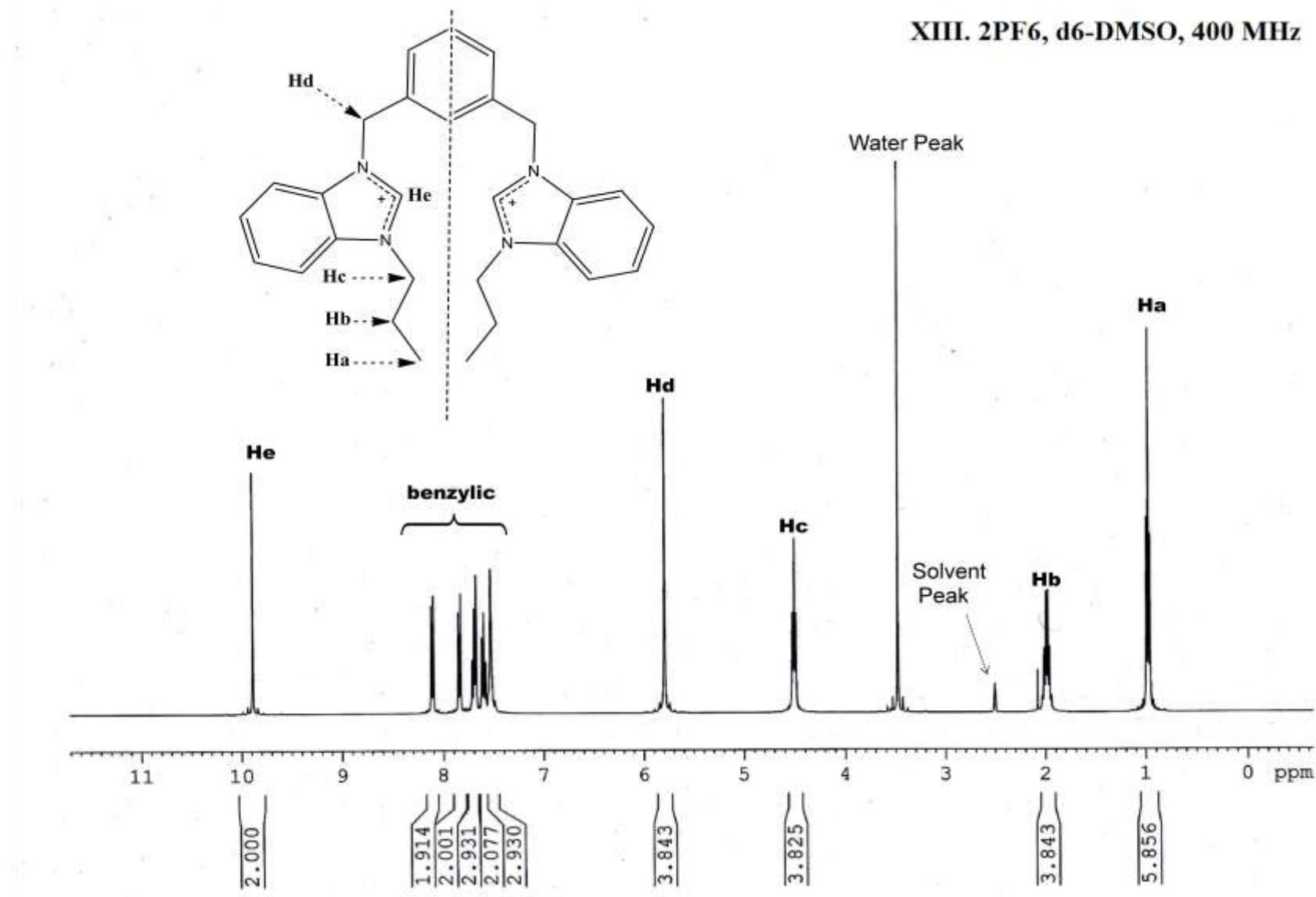
3,3'-(1,3-phenylenebis(methylene))bis(1-propyl-1H-benzimidazolium) salt (**XIII.2PF₆**)

1. FT-IR
2. ¹H NMR
3. ¹³C NMR

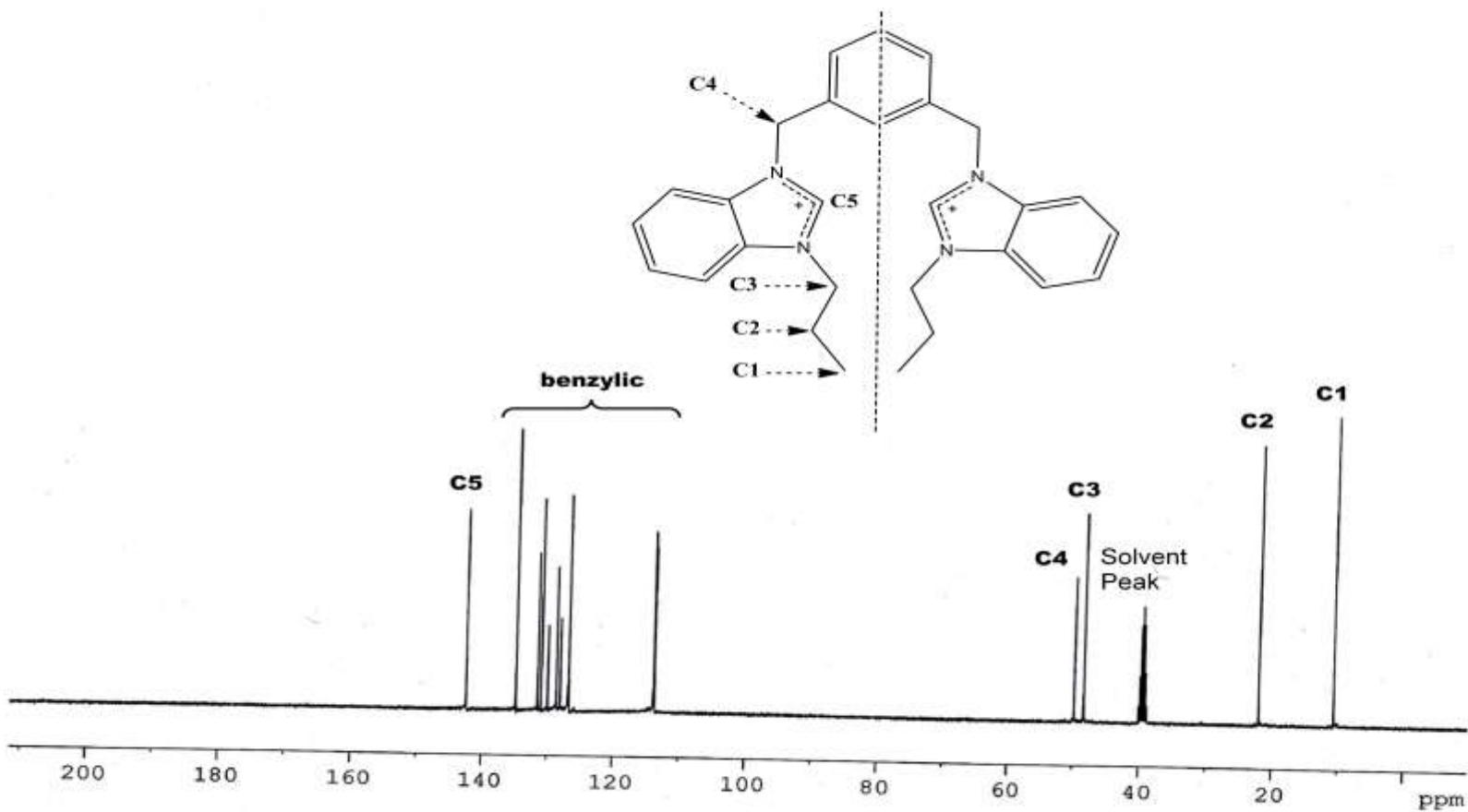
**FT-IR, XIII. 2PF6,
Solid (KBr)**

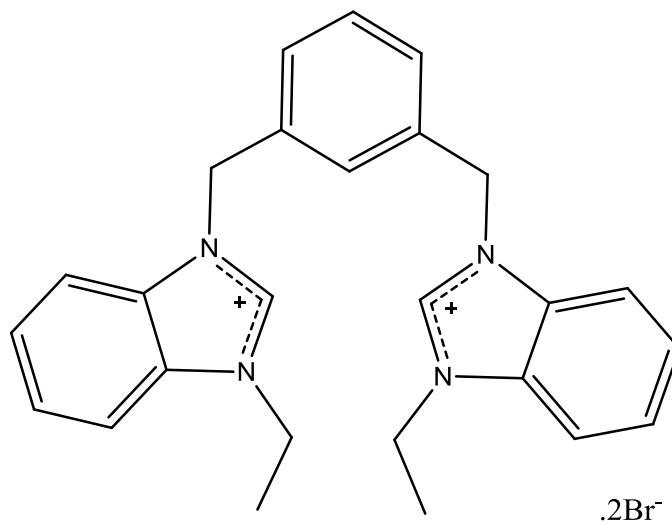


XIII. 2PF6, d6-DMSO, 400 MHz



XIII. 2PF6, d6-DMSO, 400 MHz

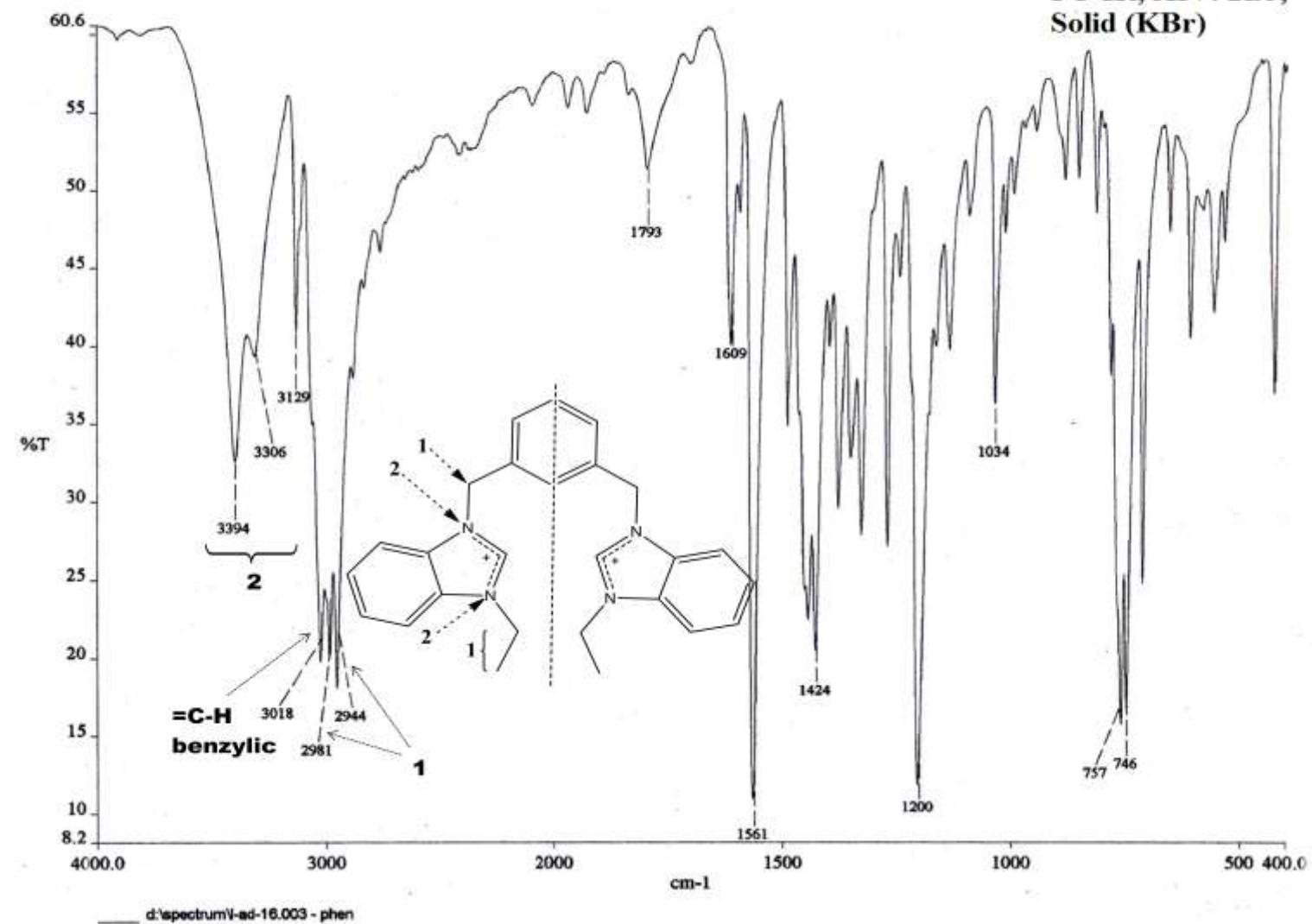


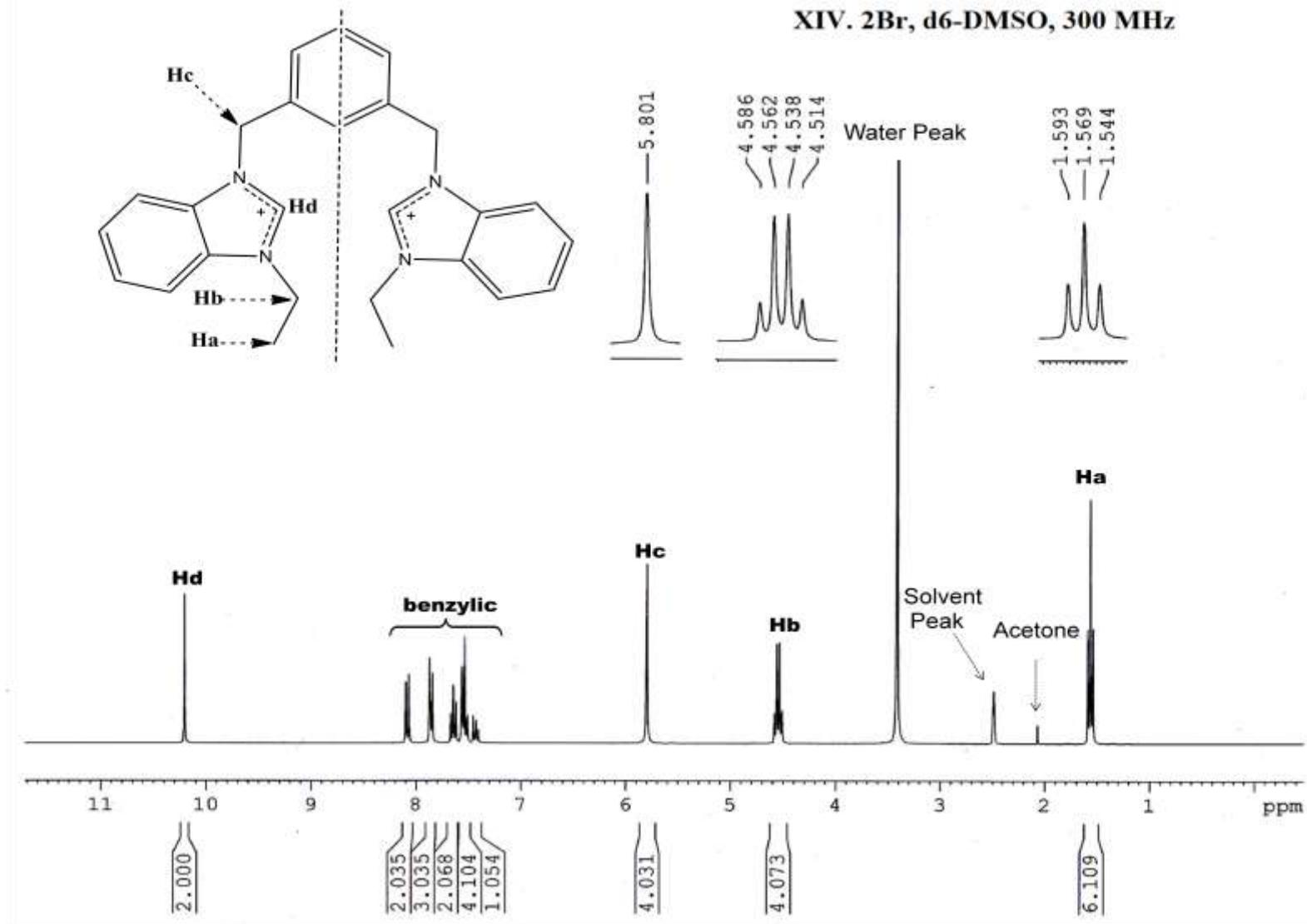


3,3'-(1,3-phenylenebis(methylene))bis(1-ethyl-1H-benzimidazolium) salt (**XIV.2Br**)

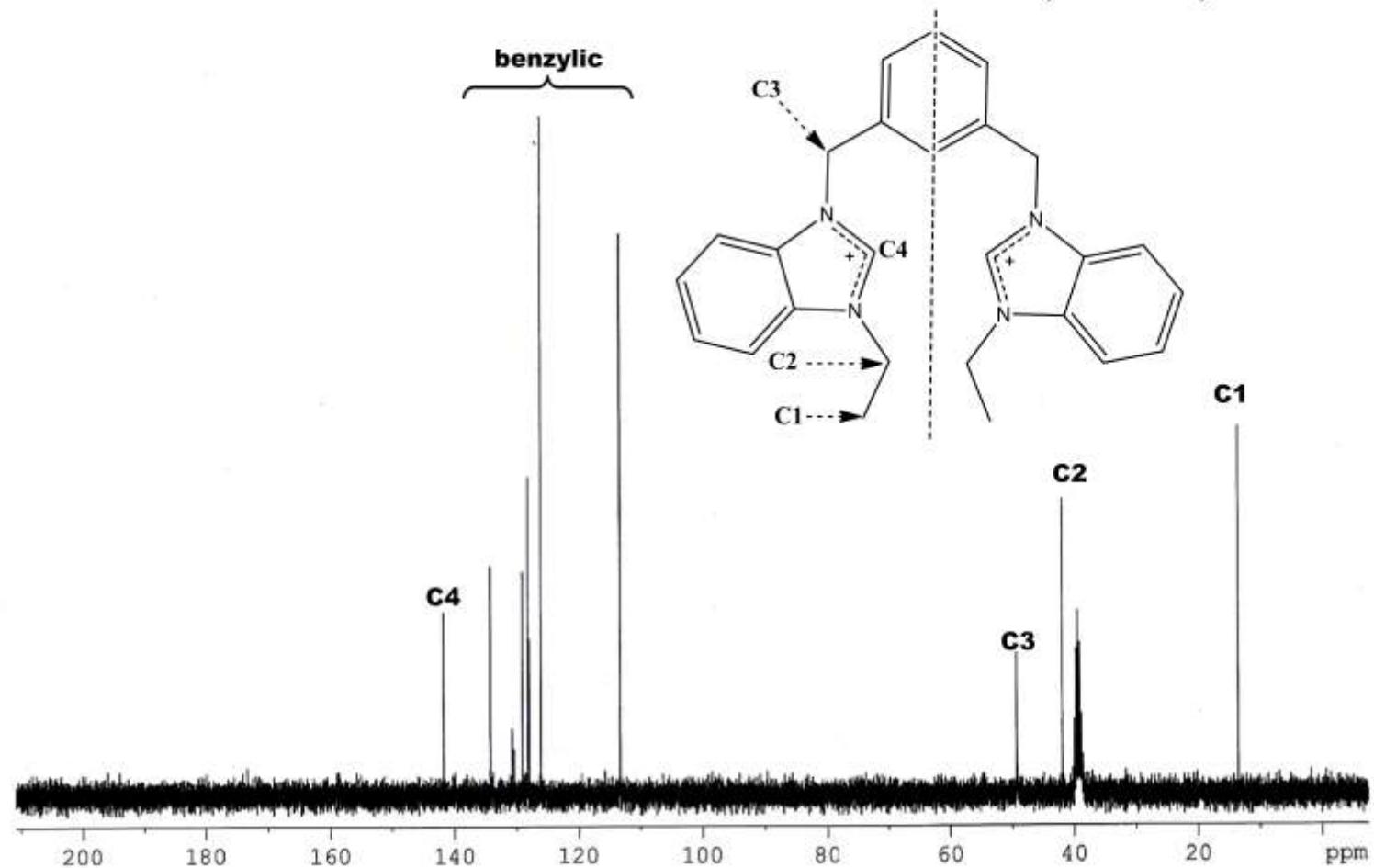
1. FT-IR
2. ¹HNMR
3. ¹³CNMR

FT-IR, XIV. 2Br,
Solid (KBr)





XIV. 2Br, d6-DMSO, 300 MHz



Note:

All the spectra were either scanned or directly saved as electronic copies on MS word from NMR PC and labelled by using MS Power Point, MS Word and ChemBioDraw 12.0.