Supplementary Information

$SiO_2/ZnBr_2$ mediated expeditious approach to 3-methyl-1-phenyl-1*H*-pyrazol-5(4*H*)-one derivatives in water under microwave irradiation

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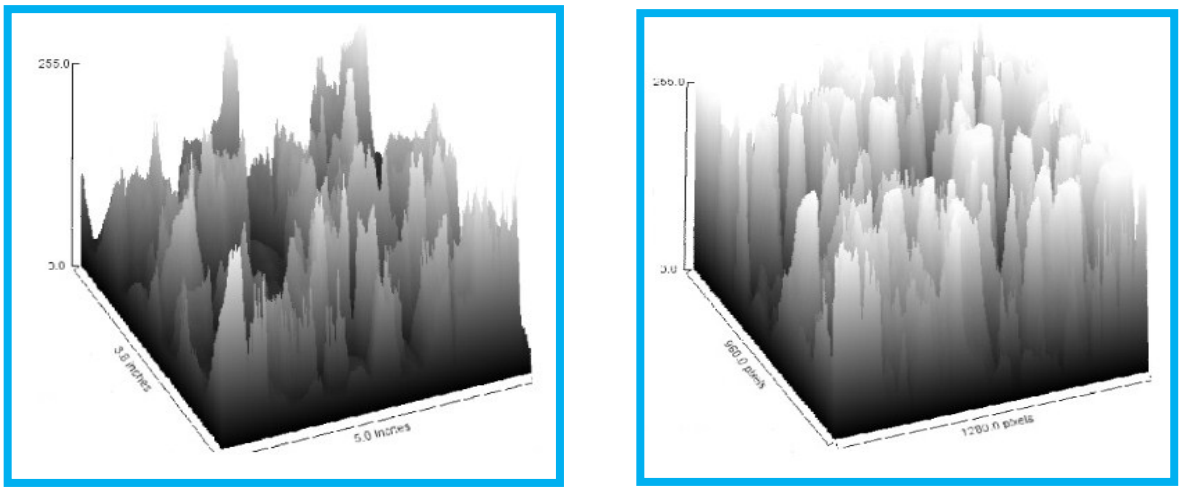
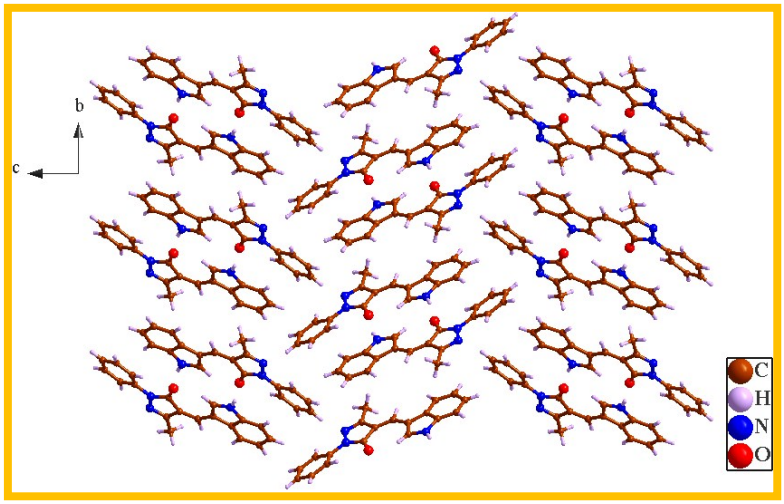
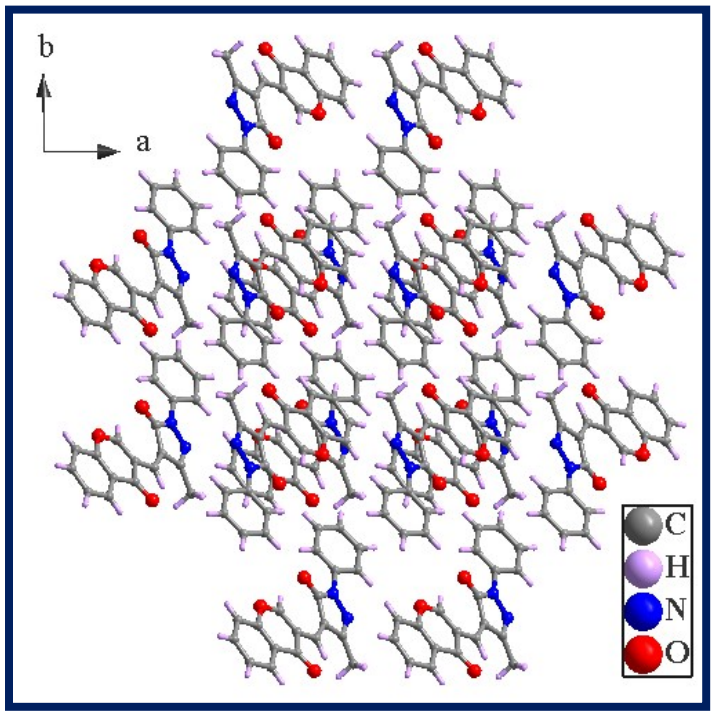


(a) **(b)**

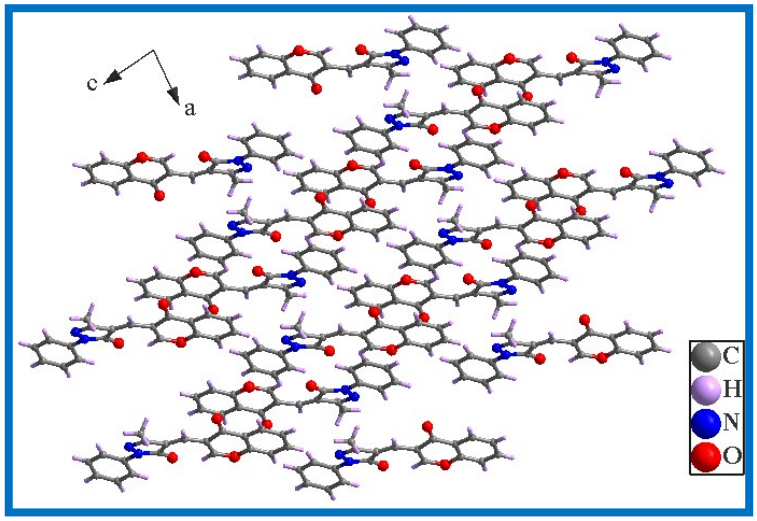
Fig. S1 3D Surface Plot of (a) pure SiO_2 (b) $SiO_2/ZnBr_2$ catalyst.



(a)

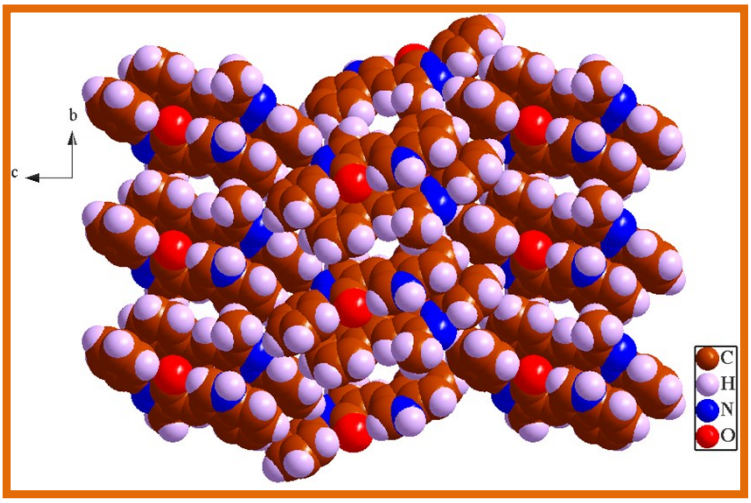


(b)

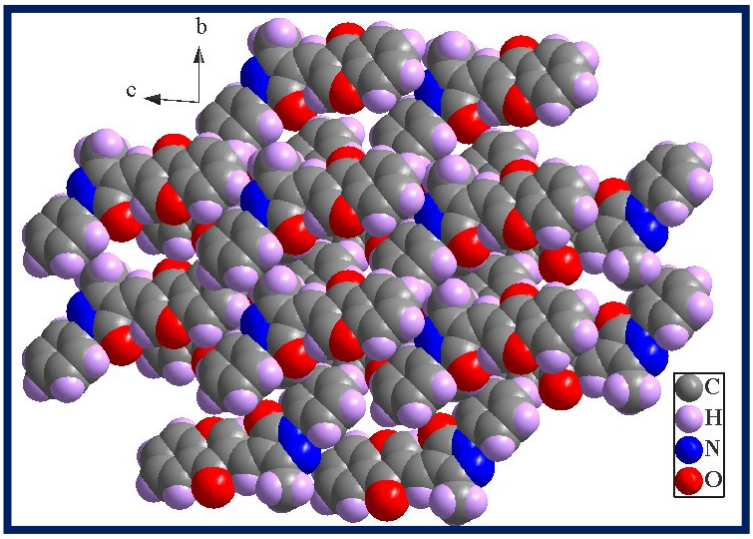


(c)

Fig. S2 Representation of 2D view along crystallographic **(a)** a-axis of compound **2a (b)** c-axis of compound **2d (c)** ac place of compound **2d**



(a)



(b)

Fig. S3 Representation of 2D view in CPK model along crystallographic a-axis of **(a)** compound **2a (b)** compound **2d**

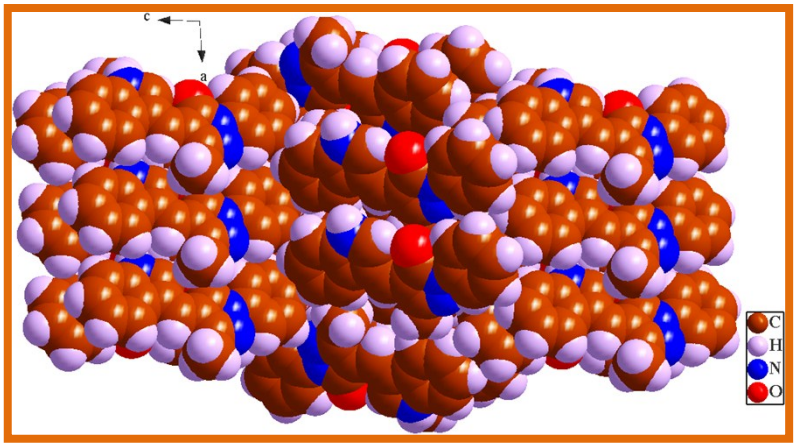


Fig. S4 Representation of 2D view in CPK model along crystallographic b-axis of compound **2a**

Table S1 Selected bond distances (Å) and bond angles (°) in compound **2a**

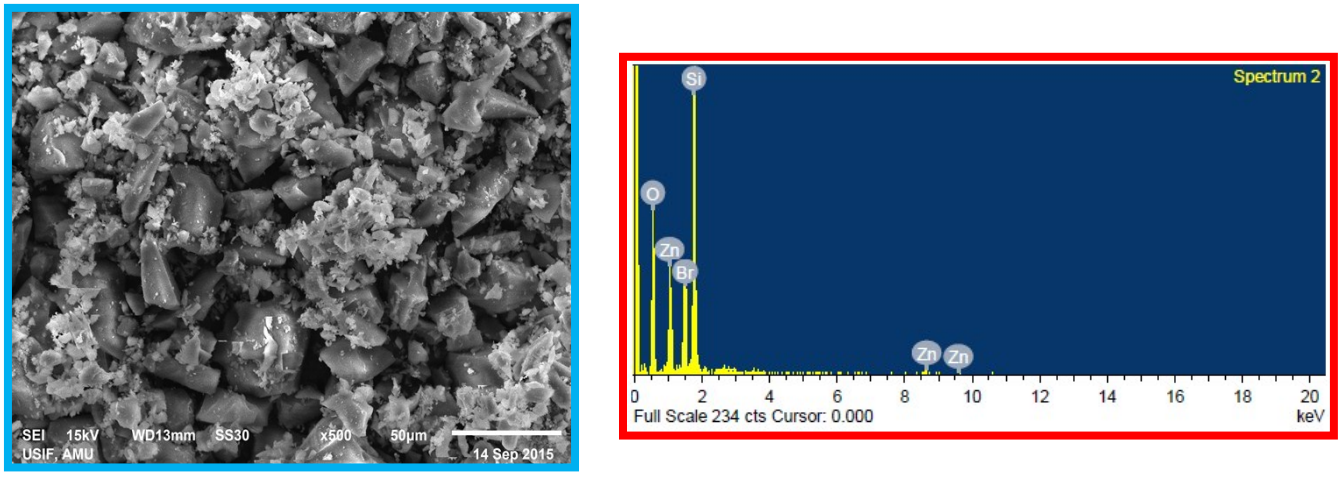
C1 N1 1.386(3)	C1 C2 1.394(2)	C1 C6 1.404(3)
C2 C3 1.375(3)	C3 C4 1.398(3)	C4 C5 1.382(3)
C5 C6 1.385(3)	C6 C7 1.456(2)	C7 C8 1.388(3)
C7 C9 1.420(3)	C8 N1 1.351(2)	C9 C10 1.368(3)
C10 C12 1.446(3)	C10 C11 1.465(3)	C11 O1 1.235(2)
C11 N2 1.383(2)	C12 N3 1.303(2)	C12 C13 1.483(3)
C14 C15 1.389(3)	C14 C19 1.393(3)	C14 N2 1.418(2)
C15 C16 1.388(3)	C16 C17 1.381(3)	C17 C18 1.379(3)
C18 C19 1.381(3)		
N1 C1 C2 130.18(18)	N1 C1 C6 107.75(16)	C2 C1 C6 122.06(18)
C3 C2 C1 117.55(18)	C2 C3 C4 121.09(18)	C5 C4 C3 121.04(19)
C4 C5 C6 119.02(18)	C5 C6 C1 119.21(17)	C5 C6 C7 134.22(18)
C1 C6 C7 106.55(17)	C8 C7 C9 130.71(18)	C8 C7 C6 106.01(16)
C9 C7 C6 123.28(18)	N1 C8 C7 109.92(17)	C10C9 C7 133.47(19)
C9 C10 C12 123.43(18)	C9 C10 C11 131.70(18)	O1C11 N2 126.06(17)
C15 C14 N2 121.29(16)	C19 C14 N2 119.04(17)	C8 N1 C1 109.77(17)
C11 N2 N3 112.50(14)	C11 N2 C14 130.25(16)	N3N2C14 117.08(14)
C12 N3 N2 106.44(15)		

CCDC Number for this molecule: **CCDC 1409997**

Table S2 Selected bond distances (Å) and bond angles (°) in compound **2d**

C1 O1 1.3414(18)	C1 C9 1.355(2)	C2 O1 1.3823(18)
C2 C3 1.385(2)	C2 C7 1.391(2)	C3 C4 1.379(2)
C4 C5 1.394(2)	C5 C6 1.375(2)	C6 C7 1.394(2)
C7 C8 1.464(2)	C8 O2 1.2272(18)	C8 C9 1.474(2)
C9 C10 1.447(2)	C10 C11 1.349(2)	C11 C13 1.454(2)
C11 C12 1.484(2)	C12 O3 1.2256(19)	C12 N1 1.378(2)
C13 N2 1.294(2)	C13 C14 1.491(2)	C15 C20 1.390(2)
C15 C16 1.396(2)	C15 N1 1.421(2)	C16 C17 1.385(2)
C17 C18 1.382(2)	C18 C19 1.384(2)	C19 C20 1.385(2)
O1 C1 C9 124.91(14)	O1 C2 C3 116.27(13)	O1 C2 C7 121.65(13)
C3 C2 C7 122.08(14)	C4 C3 C2 118.80(15)	C3 C4 C5 120.15(15)
C6 C5 C4 120.39(15)	C5 C6 C7 120.54(15)	C2 C7 C6 118.00(14)
C2 C7 C8 119.96(14)	C6 C7 C8 122.04(14)	O2 C8 C7 122.82(14)
O2 C8 C9 122.17(14)	C7 C8 C9 114.99(13)	C1 C9 C10 125.01(14)
C1 C9 C8 119.28(14)	C10 C9 C8 115.64(13)	C11 C10 C9 134.04(15)
O3 C12 N1 126.01(14)	O3 C12 C11 130.24(14)	N1 C12 C11 103.74(13)
N2 C13 C11 112.42(14)	N2 C13 C14 120.99(14)	C11 C13 C14 126.52(14)
C20 C15 C16 120.09(15)	C20 C15 N1 120.98(14)	C16 C15 N1 118.92(14)
C18 C19 C20 121.15(15)	C19 C20 C15 119.19(15)	C12 N1 N2 112.96(12)
C12 N1 C15 128.90(13)	N2 N1 C15 118.13(12)	C13 N2 N1 106.65(12)
C1 O1 C2 118.92(12)		

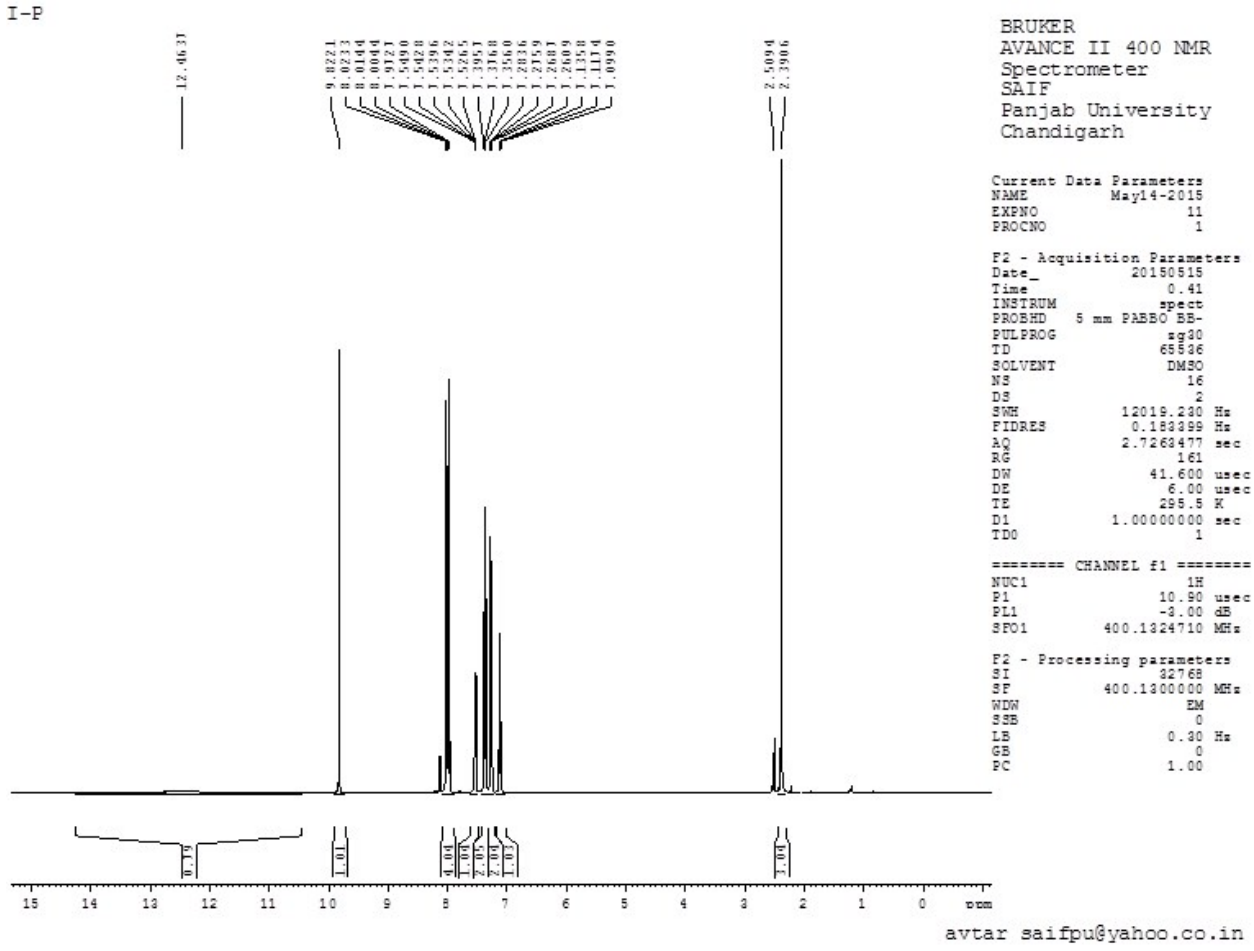
CCDC Number for this molecule: **CCDC 1432605**



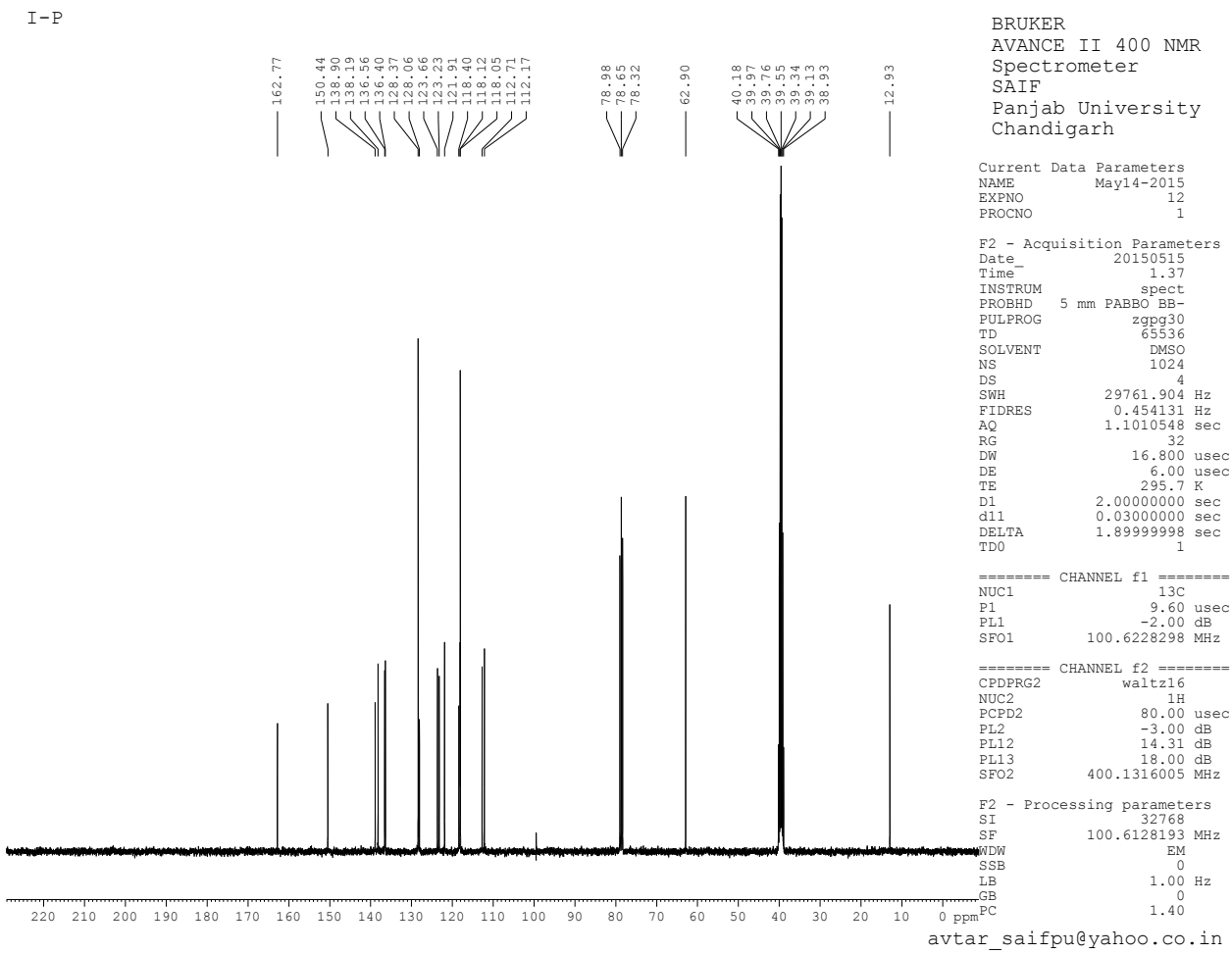
(a) **(b)**

Fig. S5 (a) SEM micrograph (b) EDX spectrum of the recovered catalyst ($SiO_2/ZnBr_2$)

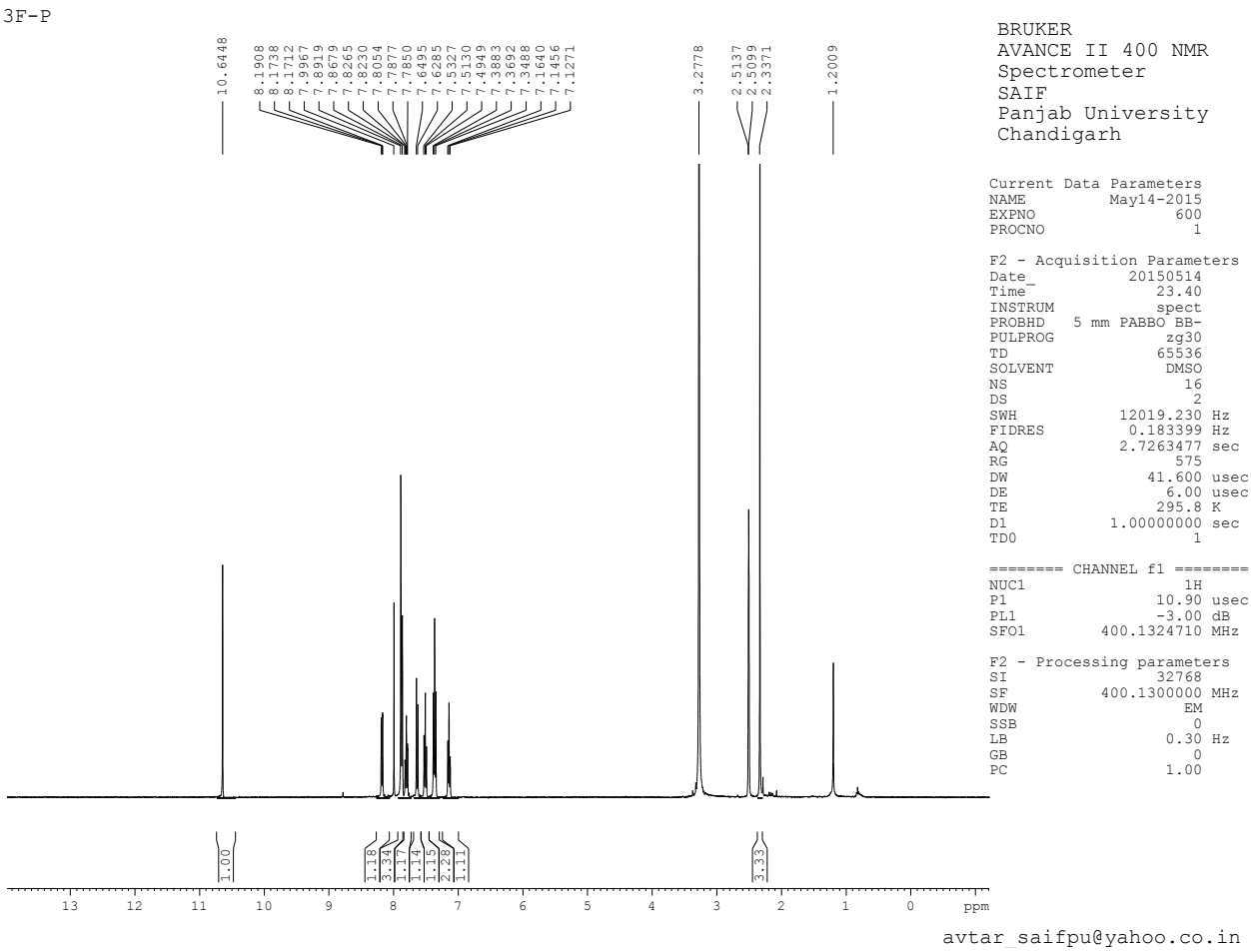
^{1}H and ^{13}C NMR of Compounds (2a, 2d and 2m)



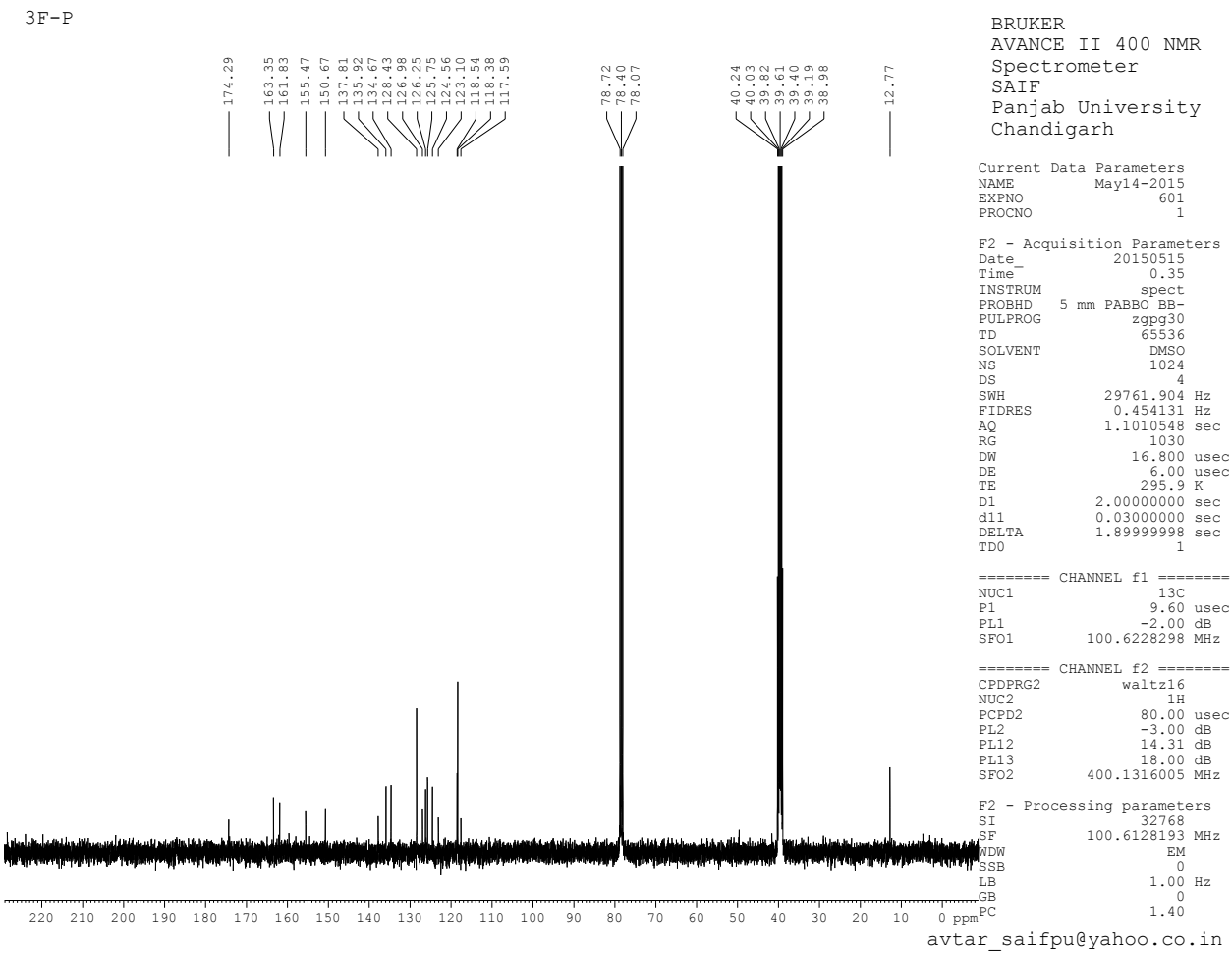
^{1}H NMR of compound **2a**



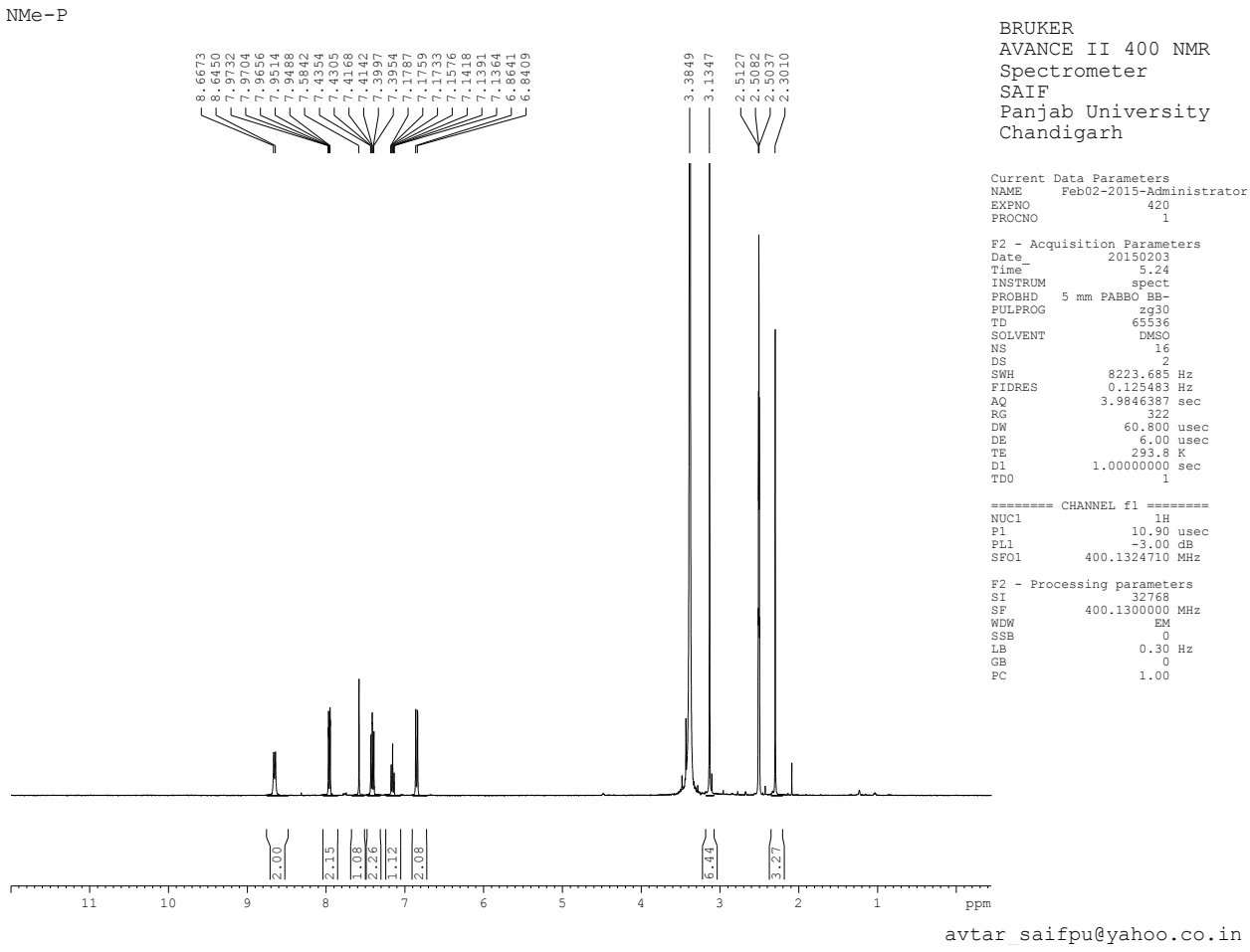
^{13}C NMR of compound **2a**



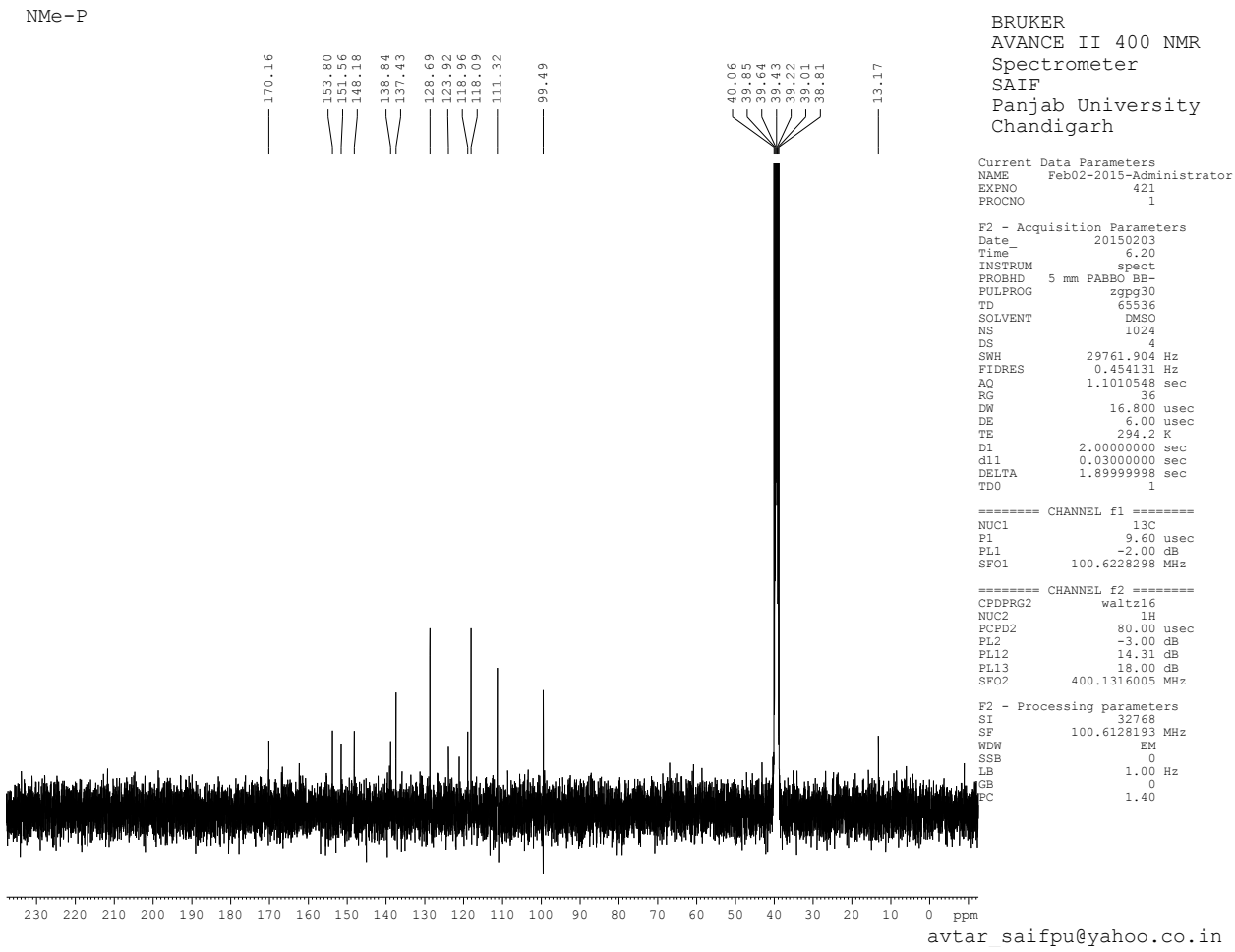
^{1}H NMR of compound **2d**



^{13}C NMR of compound **2d**



^{1}H NMR of compound **2m**



^{13}C NMR of compound **2m**