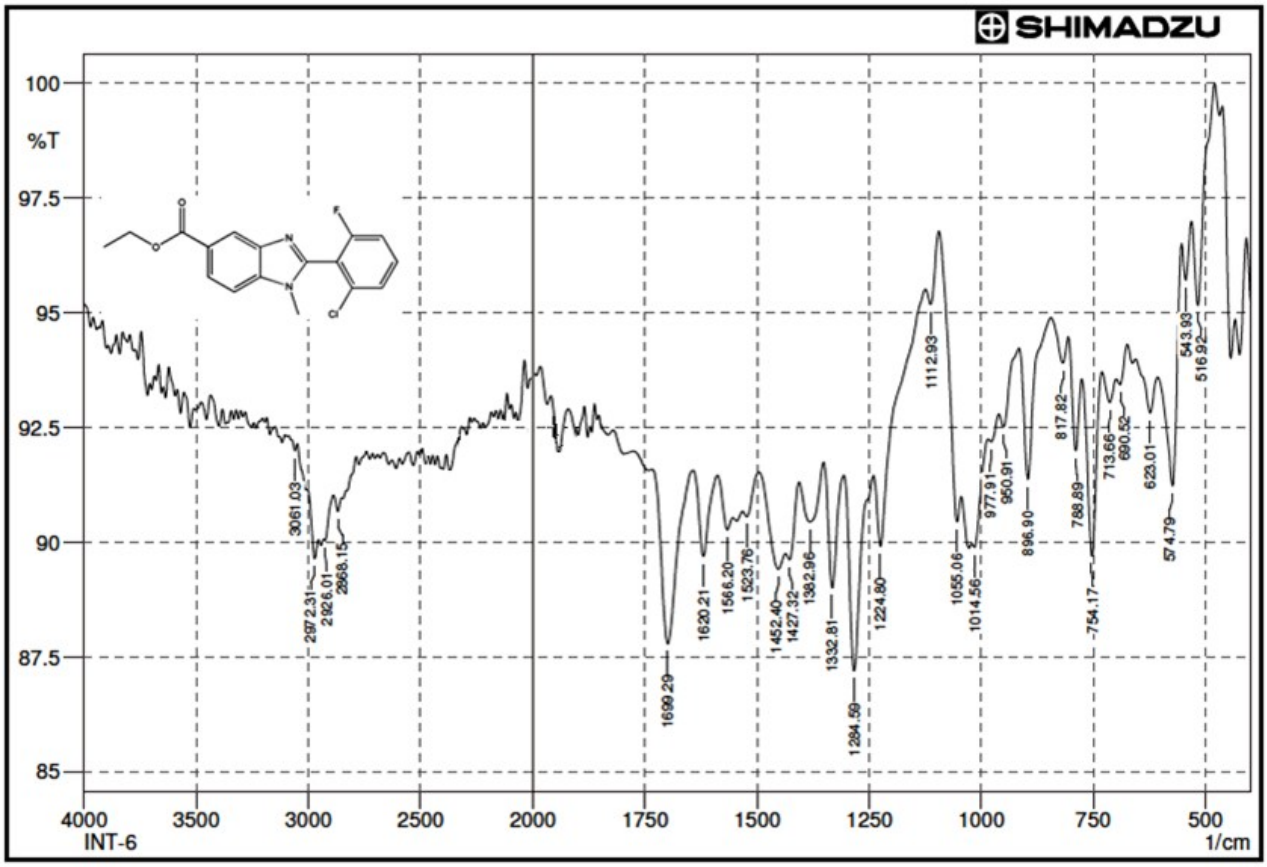
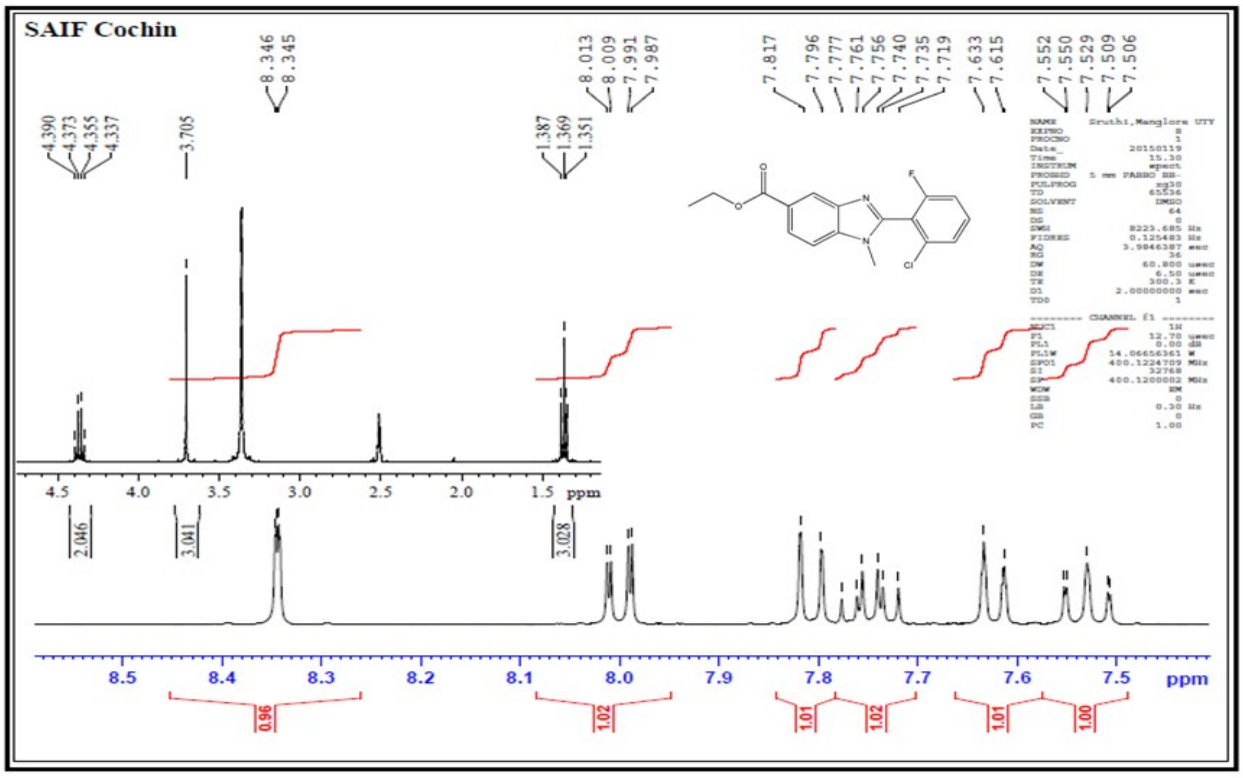
Novel benzimidazole-oxadiazole hybrid molecules as promising antimicrobial agents

Shruthi N[a], Boja Poojary[a*], Vasantha Kumar [a], Mohammed Mumtaz Hussain[b], Vaishali Rai M[c], Vinitha R Pai[c], Mahima Bhat[a], B. C. Revanasiddappa[d]

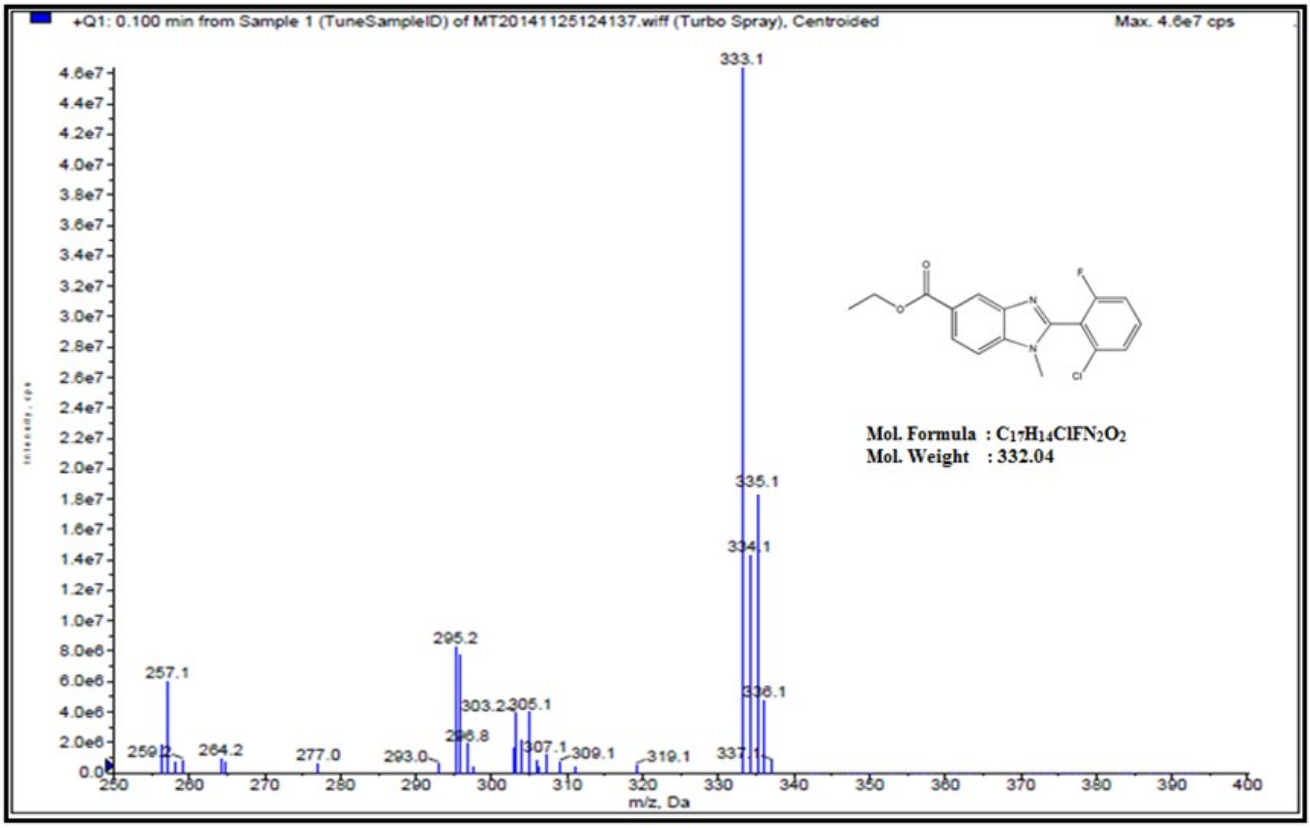
All solvents used were of analytical grade and chemicals were purchased from commercial vendors Sigma-Aldrich, Spectrochem India and used as such without purification.Melting points were determined in open capillaries and uncorrected (melting point apparatus: Sewell instruments Inc., India). The purity of the compounds was checked by thin layer chromatography on a silica coated aluminum sheet (silica gel F_{254}). IR spectra (ATR) were recorded on a Shimadzu FT IR 157-spectrophotometer. The ^{1}H NMR spectra were recorded on a Bruker Avance II 400 (400 MHz) spectrometer using TMS as internal standard. The ^{13}C NMR was recorded in 400 MHz Joel resonance-delta 2-NMR refractometer. Mass spectra were determined on a Joel SX 102/Da-600 mass spectrometer/data system using argon/xenon (6 kV,10 mA)as the FAB gas. Elemental analyses were carried out using a CHNS elemental analyzer.



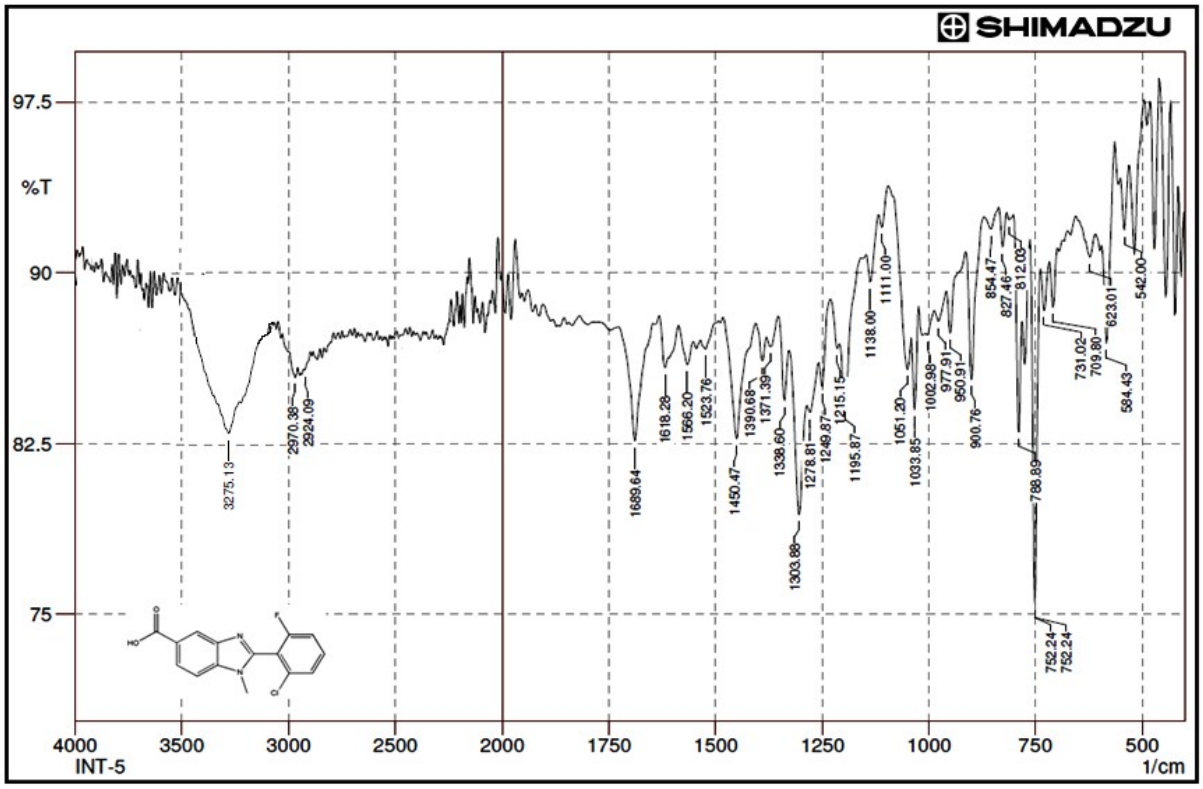
FT(ATR)-IR spectrum Ethyl 2-(2-chloro-6-flourophenyl)-1-methyl-1*H*-benzo[*d*]imidazole-5-carboxylate



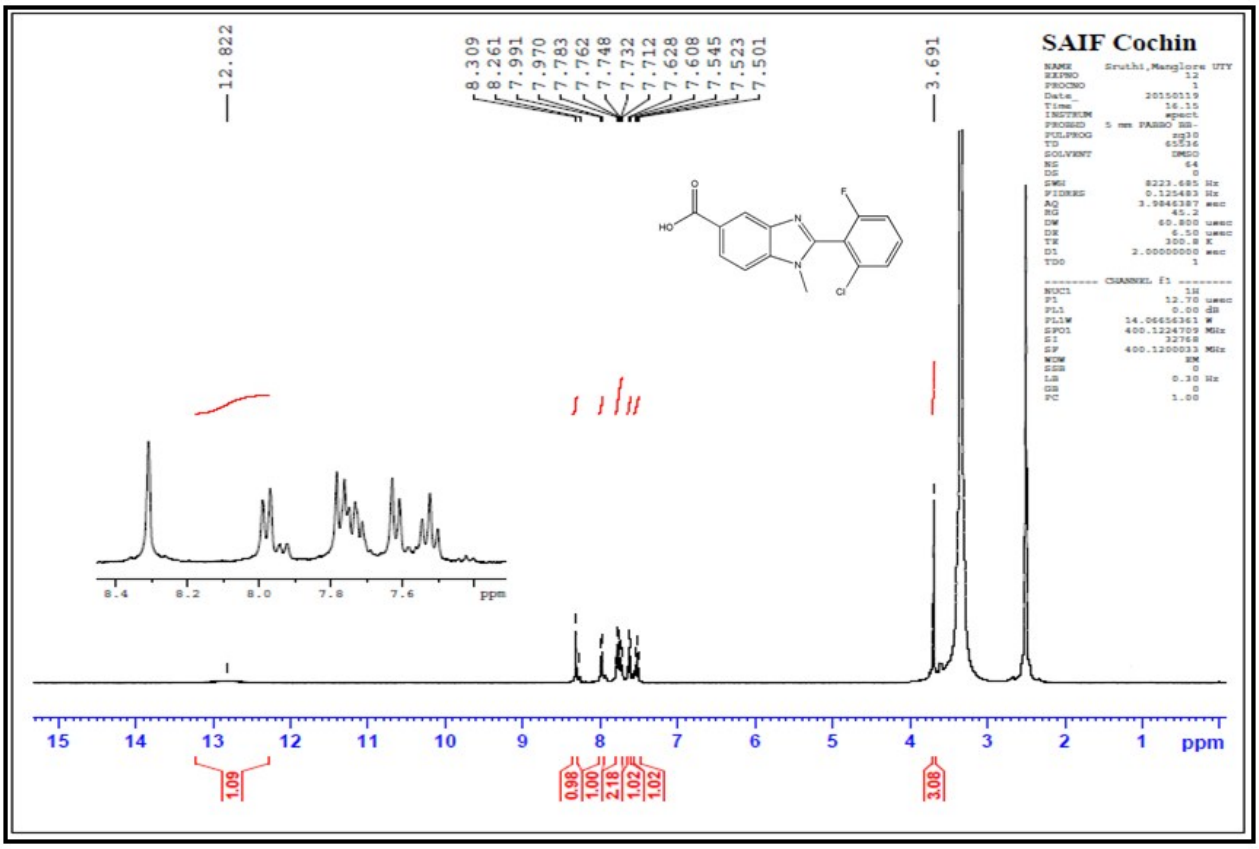
^{1}H NMR spectrum of Ethyl 2-(2-chloro-6-flourophenyl)-1-methyl-1*H*-benzo[*d*]imidazole-5-carboxylate



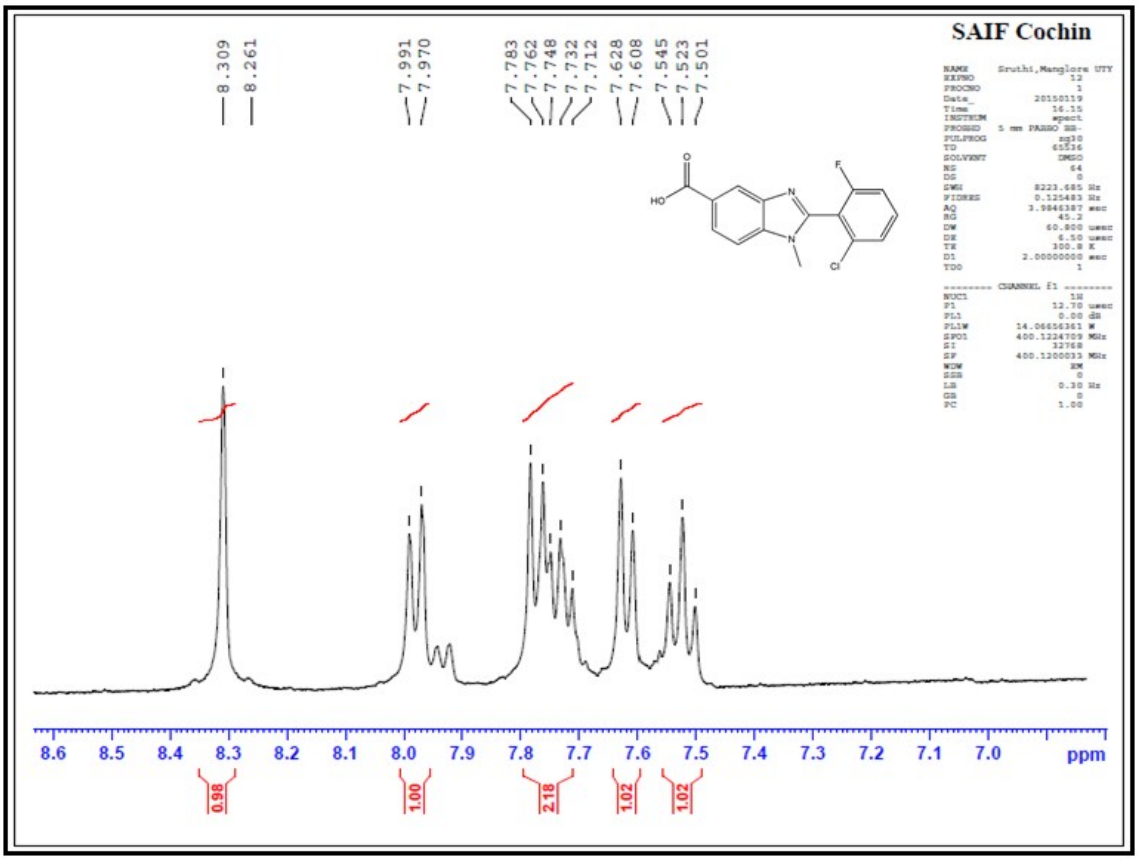
ESI-MS spectrum of Ethyl 2-(2-chloro-6-flourophenyl)-1-methyl-1*H*-benzo[*d*]imidazole-5-carboxylate



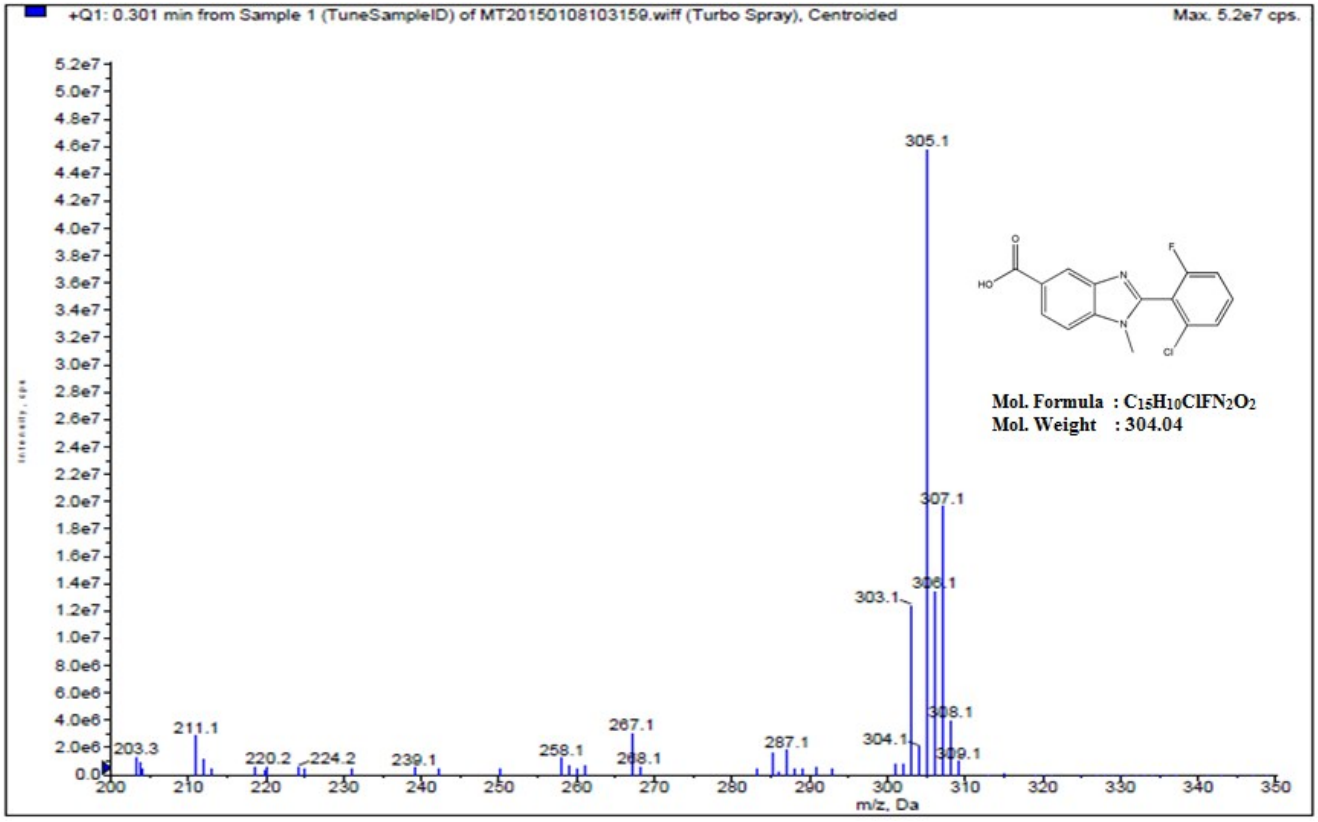
FT(ATR)-IR spectrum 2-(2-Chloro-6-fluorophenyl)-1-methyl-1H-benzo[d]imidazole-5-carboxylic acid



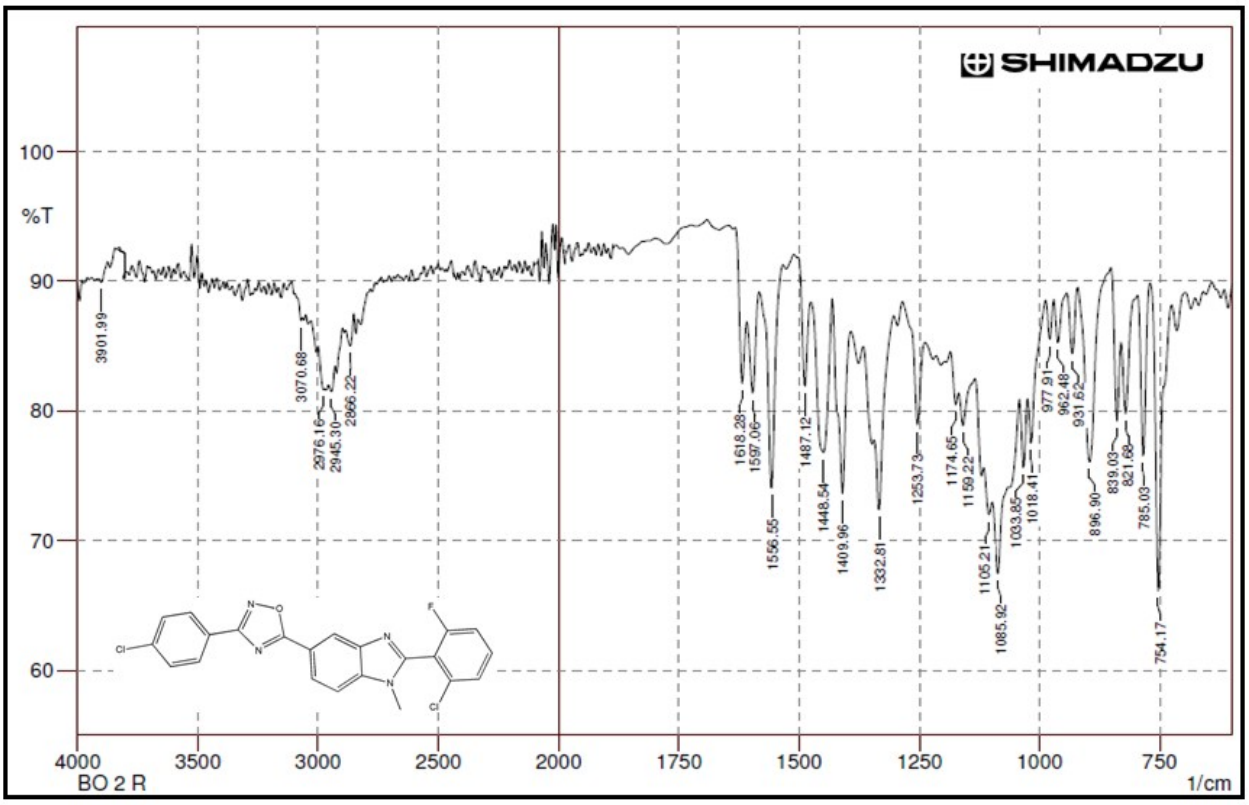
[1]H NMR spectrum of 2-(2-Chloro-6-fluorophenyl)-1-methyl-1H-benzo[d]imidazole-5-carboxylic acid



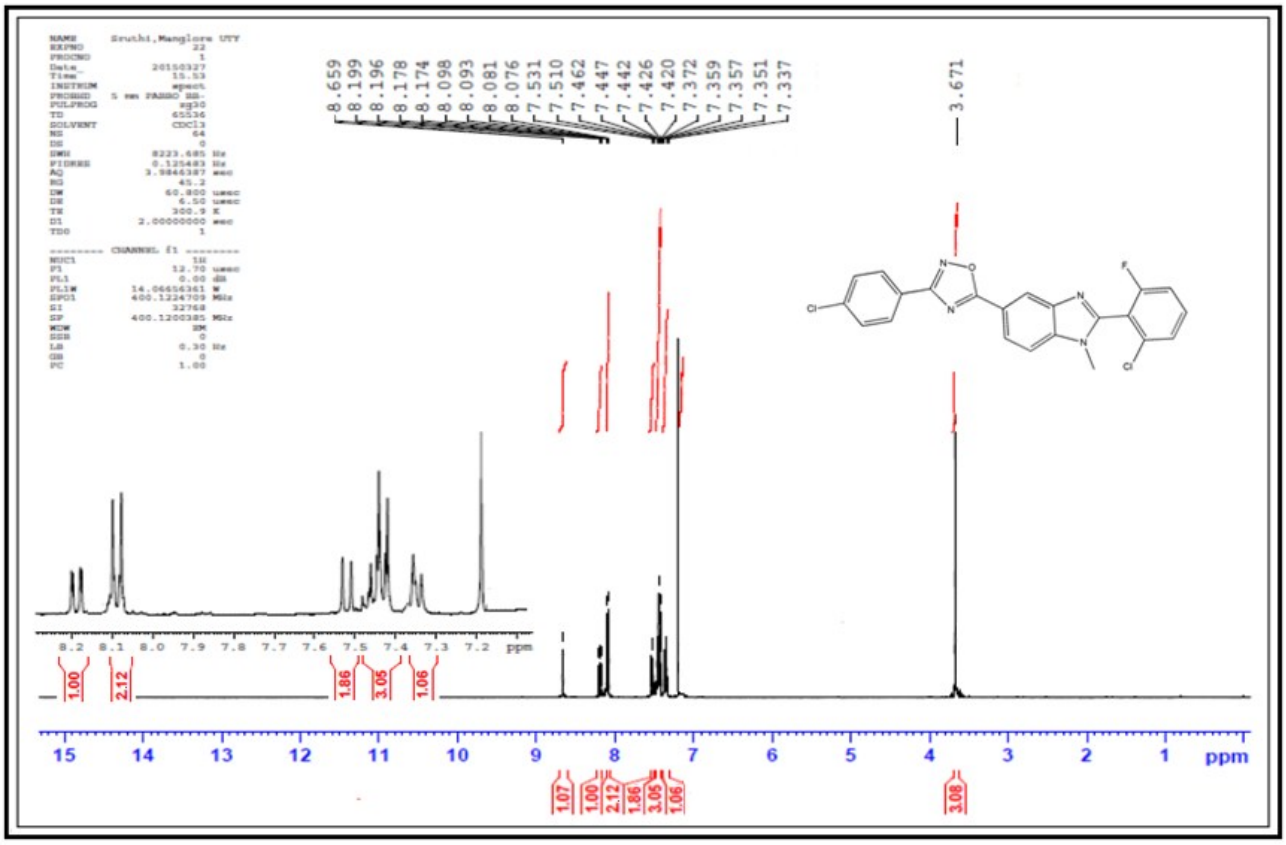
Expanded ^{1}H NMR spectrum of 2-(2-Chloro-6-fluorophenyl)-1-methyl-1H-benzo[d]imidazole-5-carboxylic acid



Mass spectrum of 2-(2-Chloro-6-fluorophenyl)-1-methyl-1H-benzo[d]imidazole-5-carboxylic acid



FT(ATR)-IR spectrum of 2-(2-Chloro-6-fluorophenyl)-5-(3-(4-chlorophenyl)-[1,2,4]-oxadiazol-5-yl)-1-methyl-1*H*-benzo[*d*]imidazole



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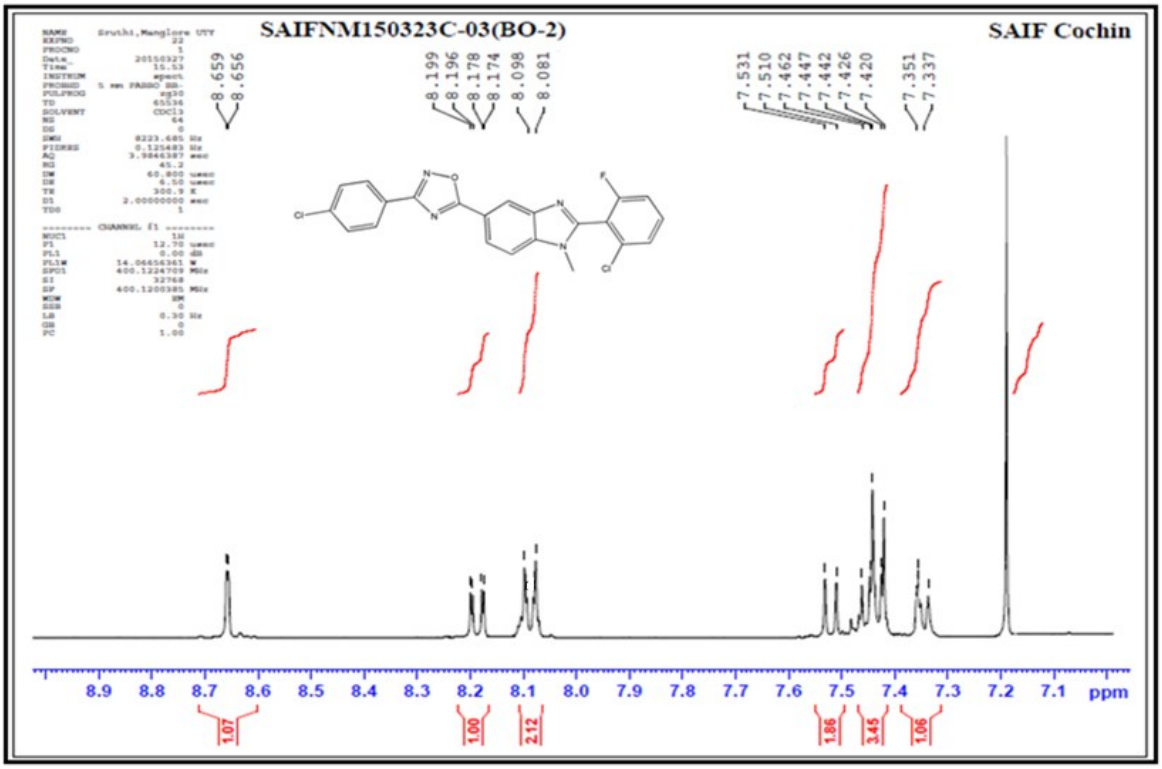

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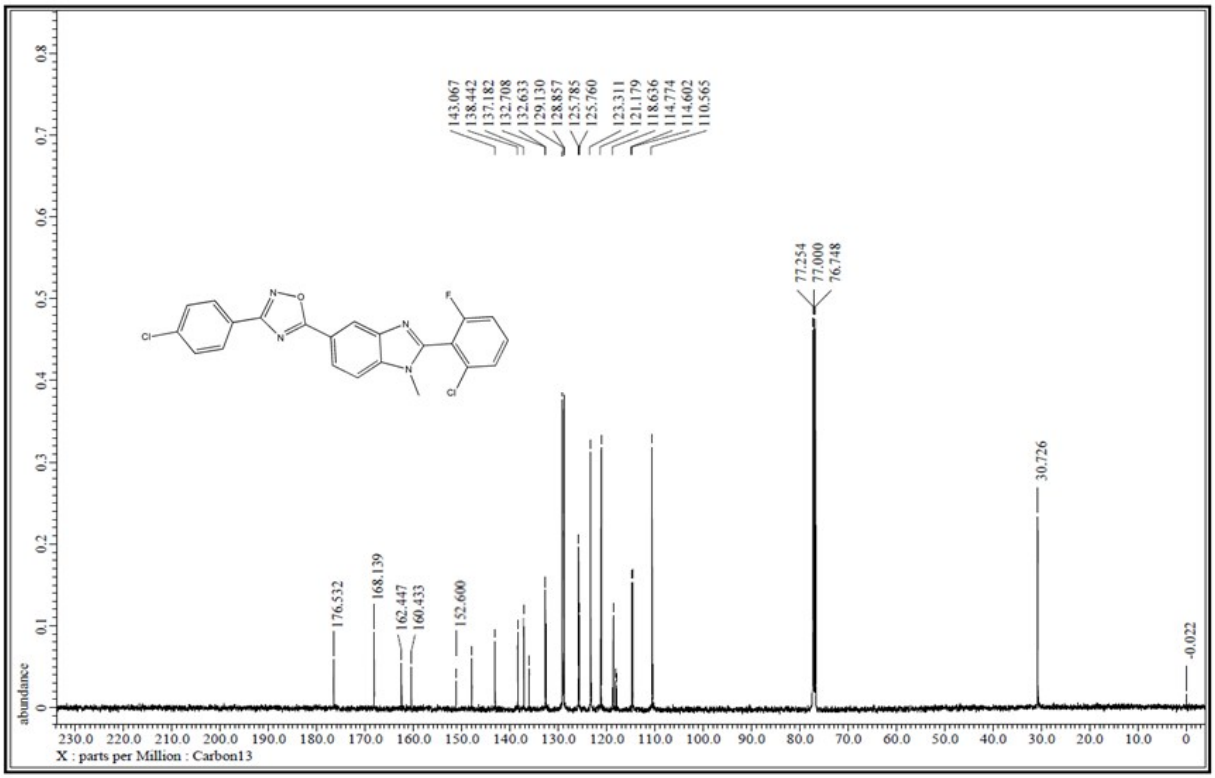
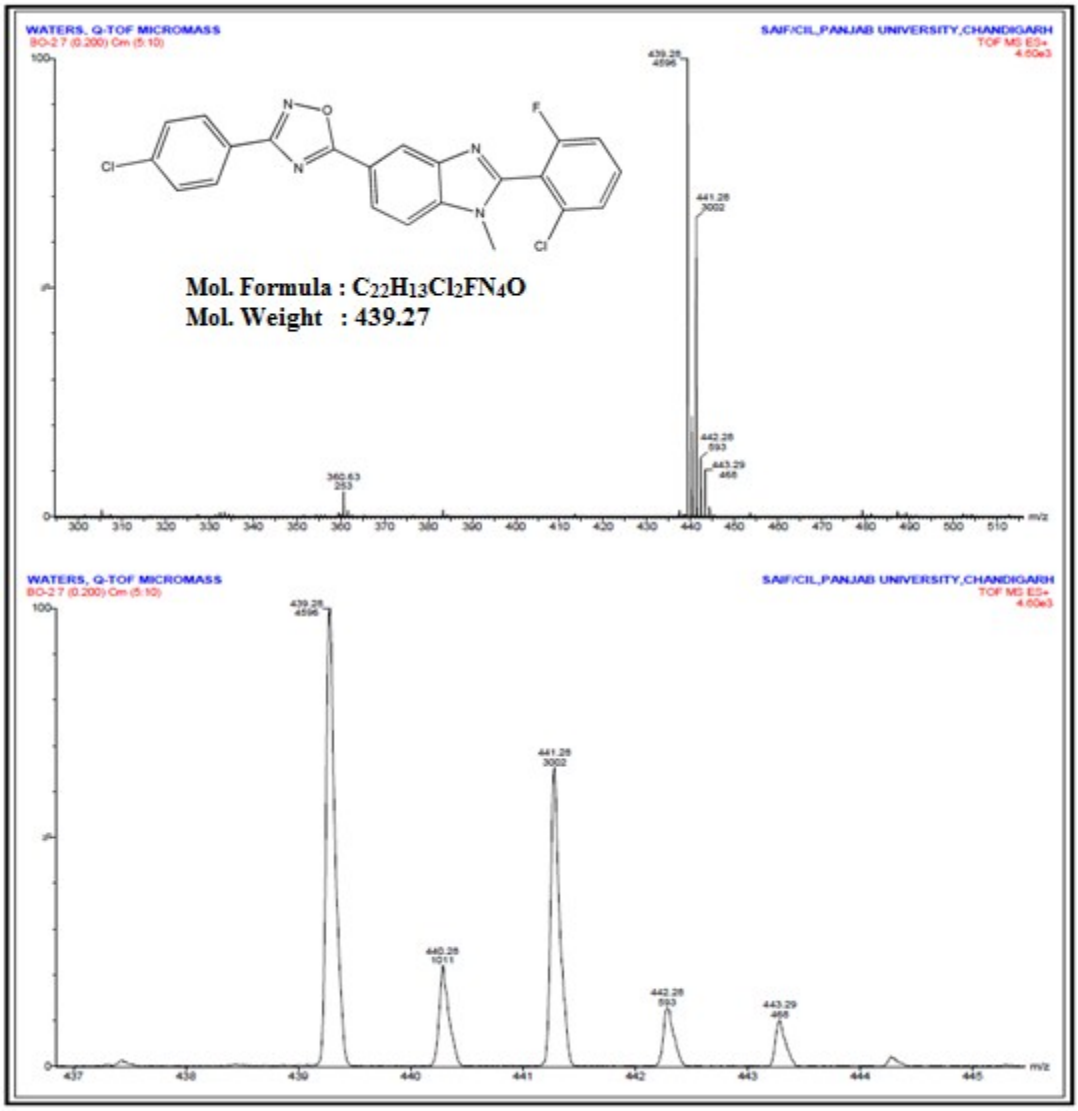


^{13}C NMR spectrum of 2-(2-Chloro-6-fluorophenyl)-5-(3-(4-chlorophenyl)-[1,2,4]-oxadiazol-5-yl)-1-methyl-1*H*-benzo[*d*]imidazole



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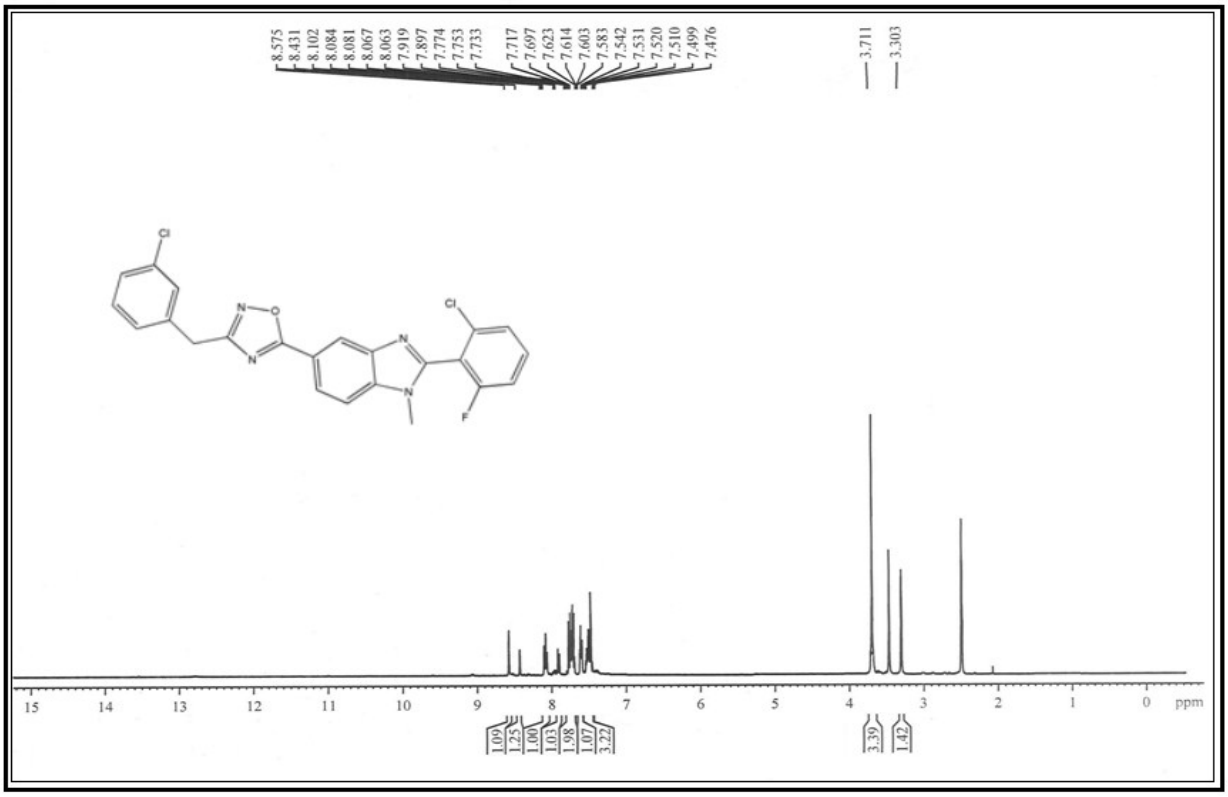
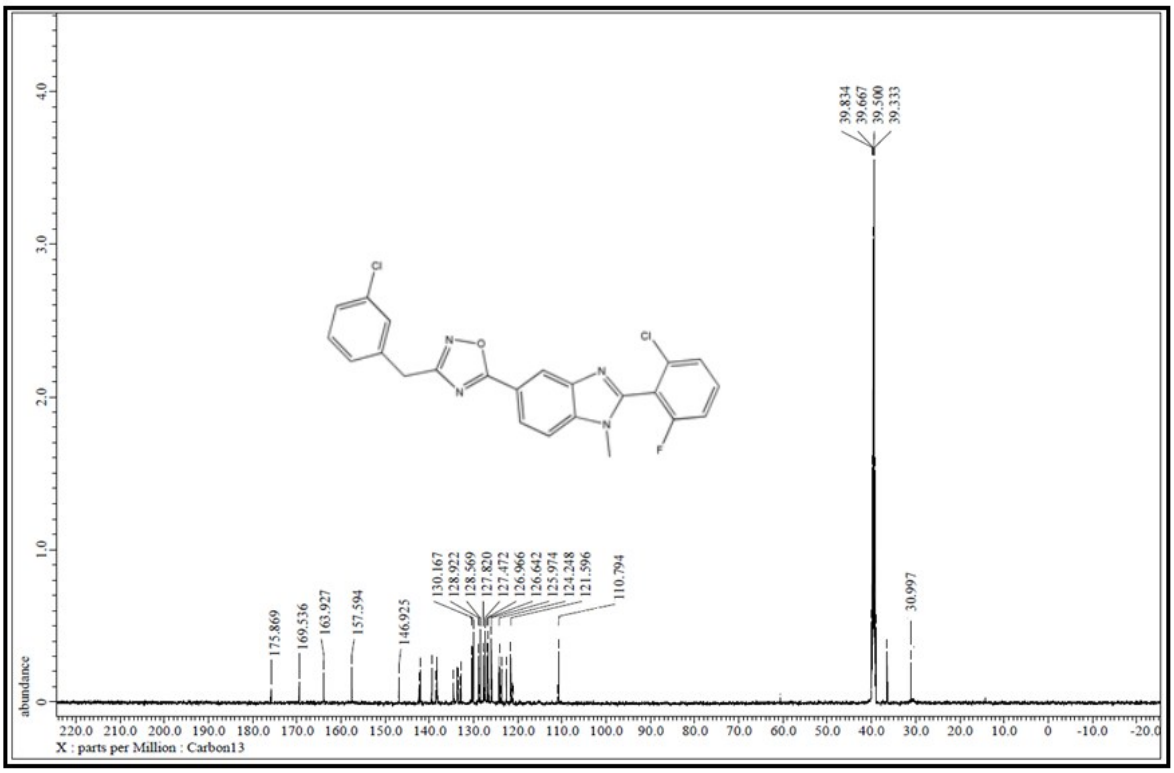


^{1}H NMR spectrum of 2-(2-Chloro-6-fluorophenyl)-5-(3-(3-chlorobenzyl)-[1,2,4]-oxadiazol-5-yl)- 1-methyl-1*H*-benzo[*d*]imidazole



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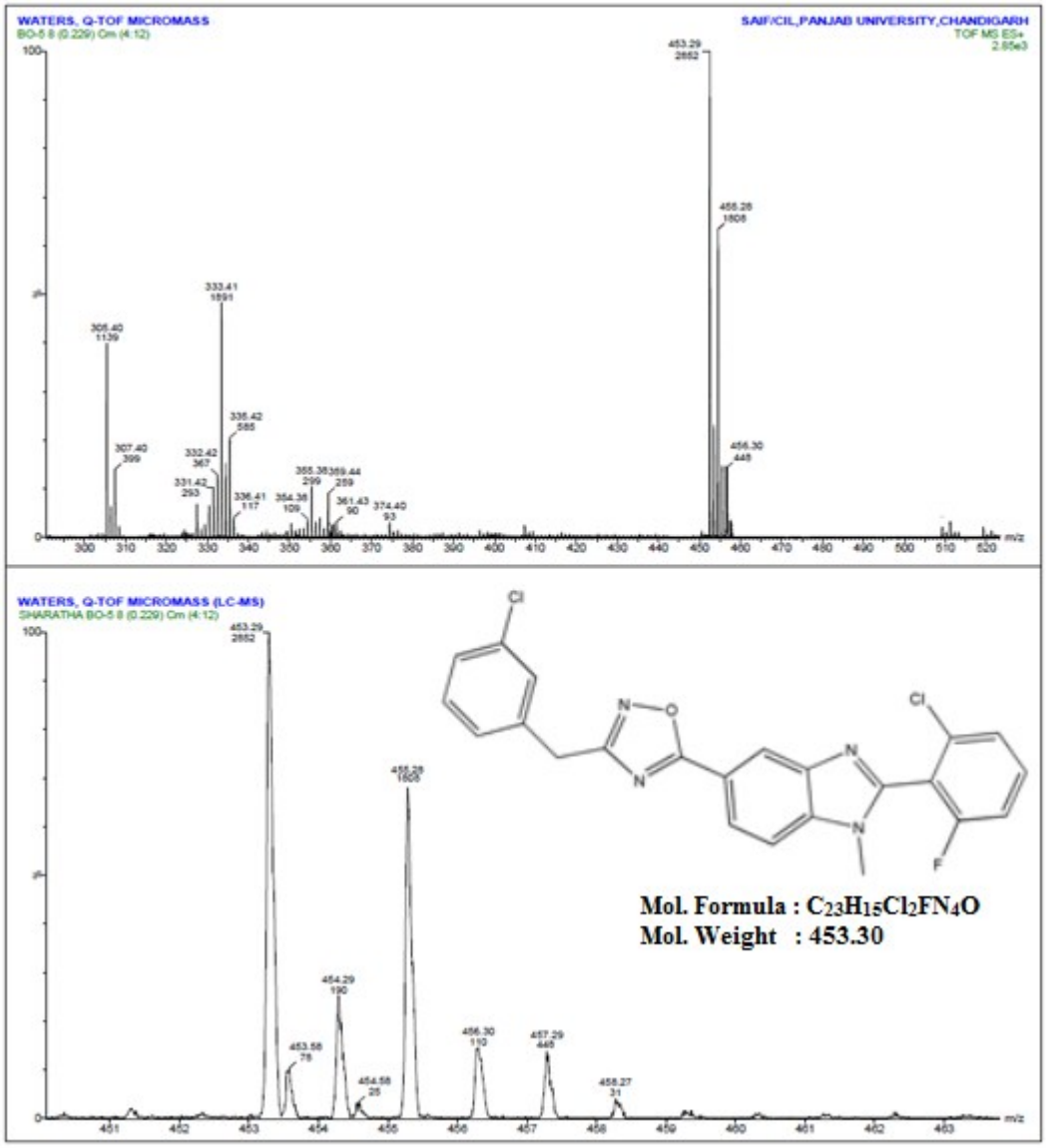

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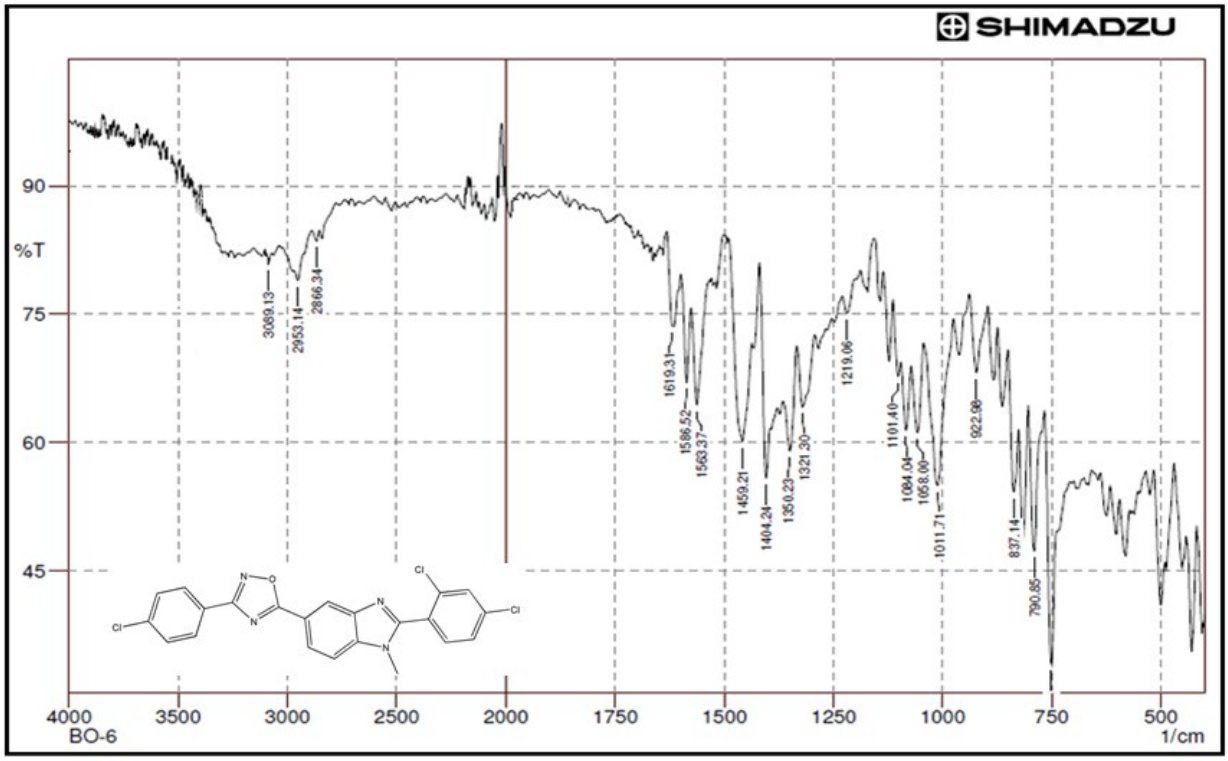
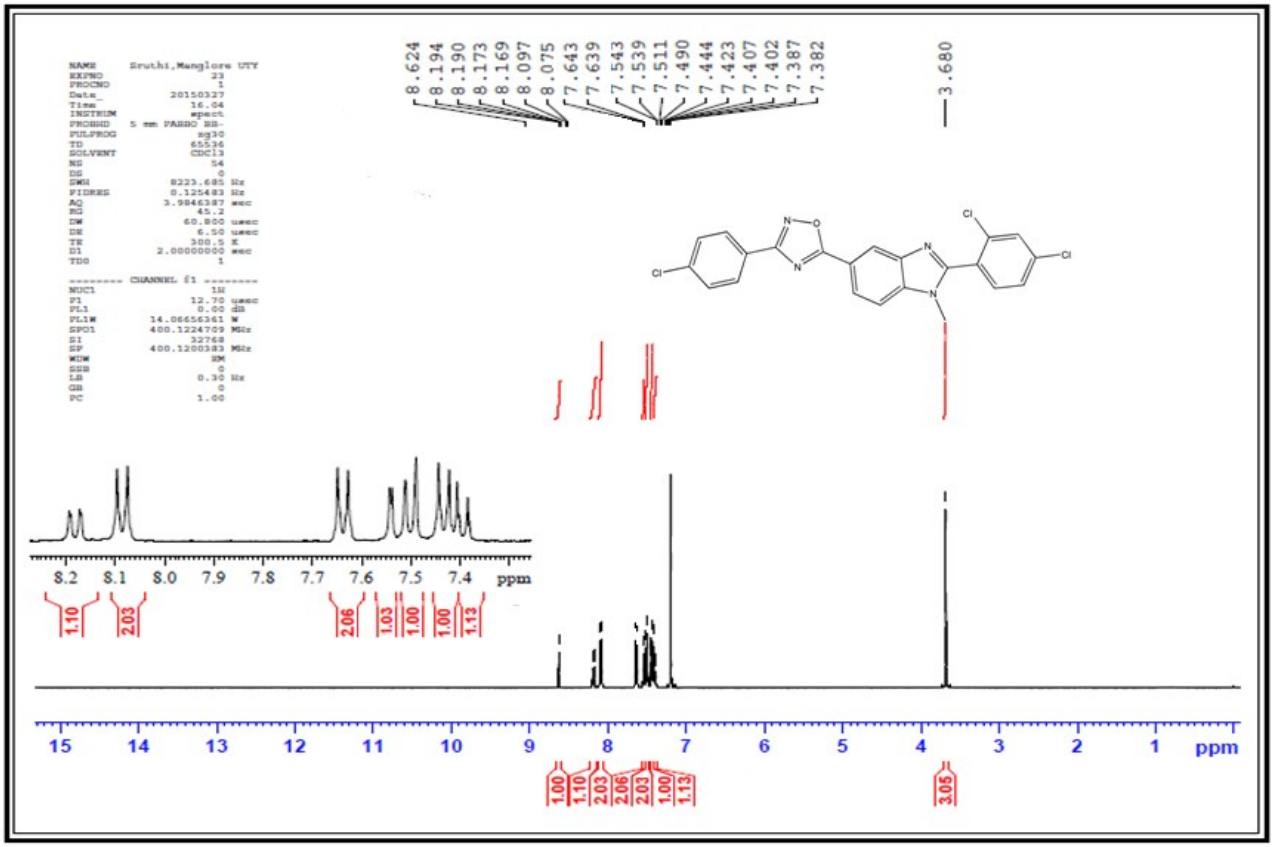
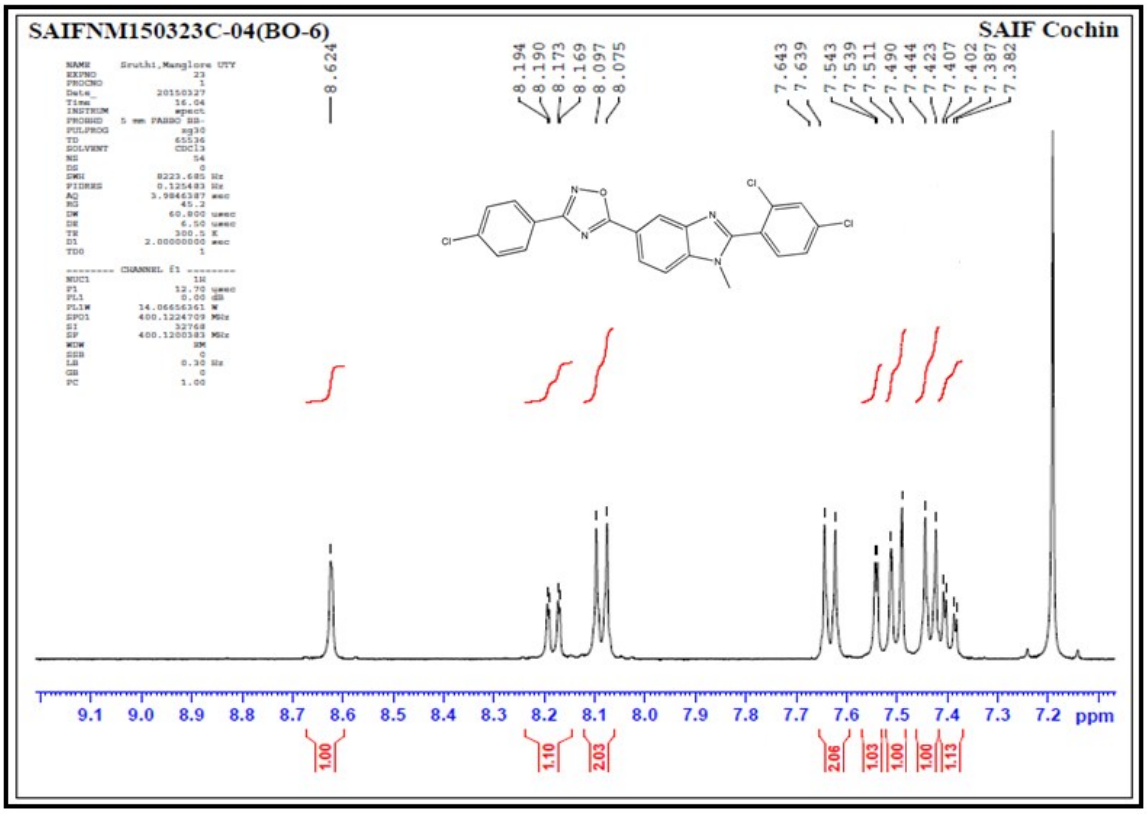


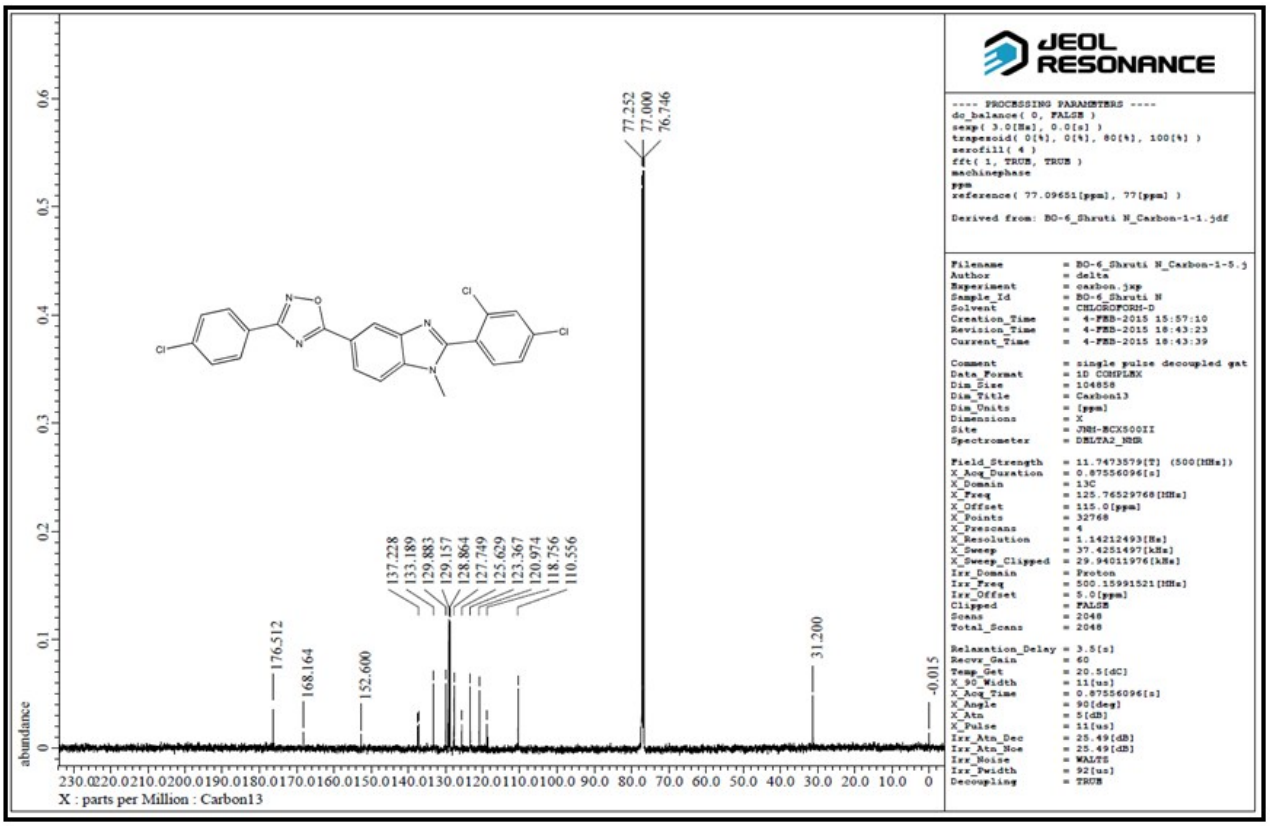
IR spectrum of 2-(2,4-dichlorophenyl)-5-(3-(4-chlorophenyl)-[1,2,4]-oxadiazol-5-yl)-1-methyl-1H-benzo[d]imidazole



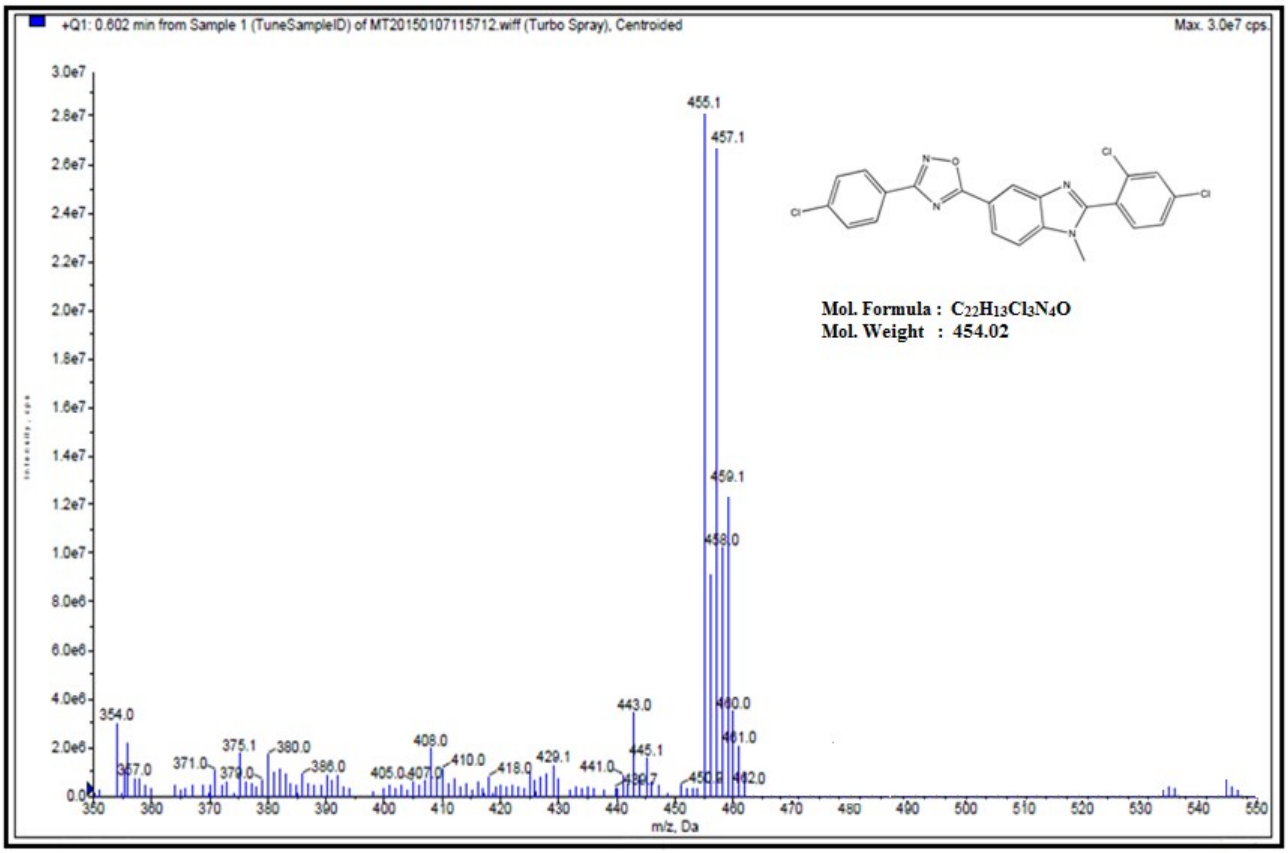
[1]H-NMR spectrum of 2-(2,4-Dichlorophenyl)-5-(3-(4-chlorophenyl)-[1,2,4]-oxadiazol-5-yl)-1-methyl-1H-benzo[d]imidazole



Expanded ^{1}H-NMR spectrum of 2-(2,4-Dichlorophenyl)-5-(3-(4-chlorophenyl)-[1,2,4]-oxadiazol-5-yl)-1-methyl-1H-benzo[d]imidazole



^{13}C NMR spectrum of 2-(2,4-Dichlorophenyl)-5-(3-(4-chlorophenyl)-[1,2,4]-oxadiazol-5-yl)-1-methyl-1*H*-benzo[d]imidazole



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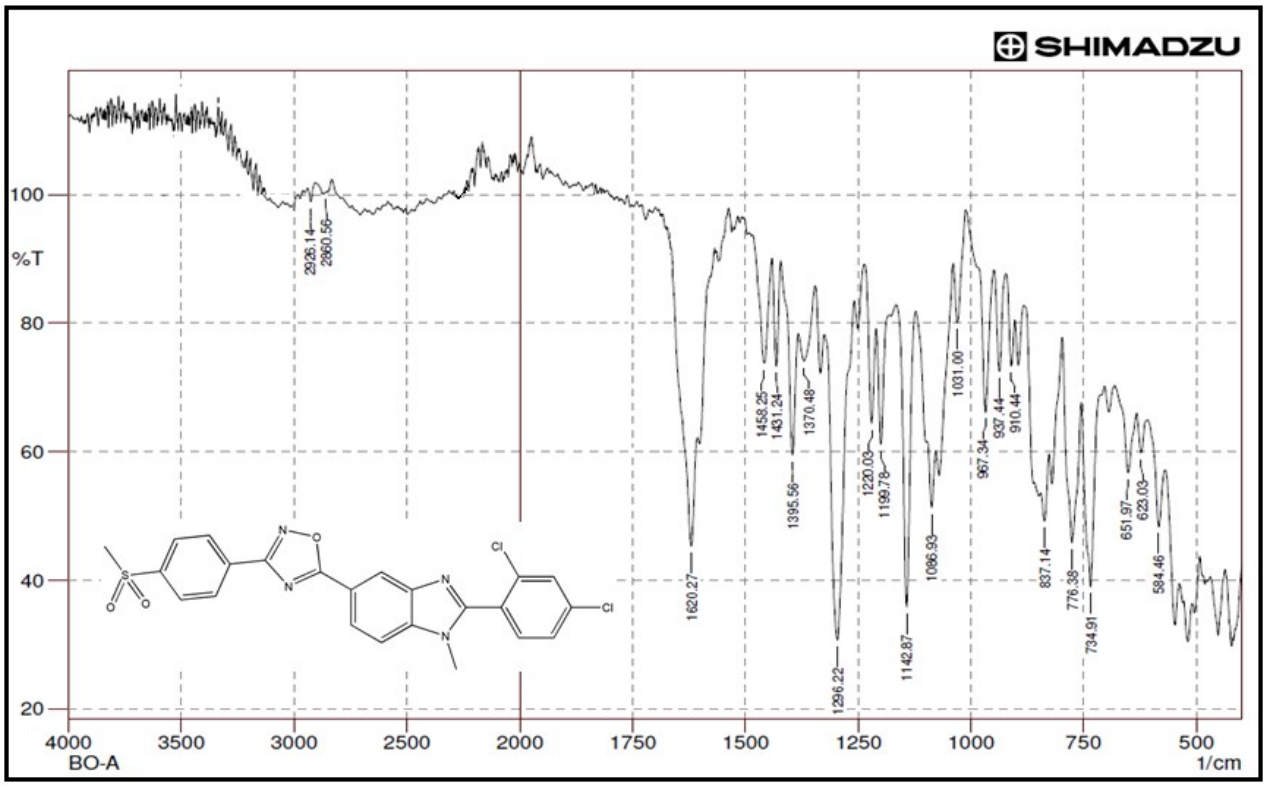
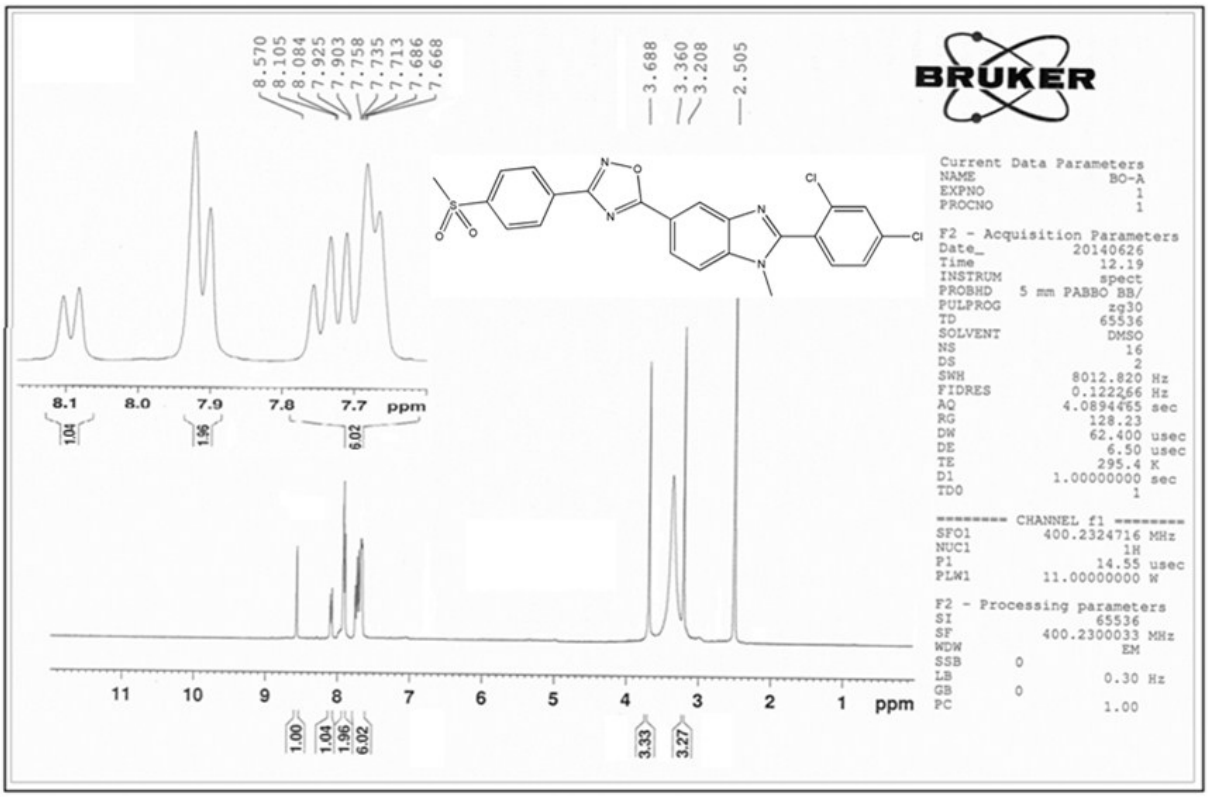


FT(ATR)-IR spectrum of 2-(2,4-Dichlorophenyl)-5-(3-(4-(methylsulfonyl)phenyl)-[1,2,4]-oxadiazol-5-yl)- 1-methyl-1*H*-benzo[d]imidazole



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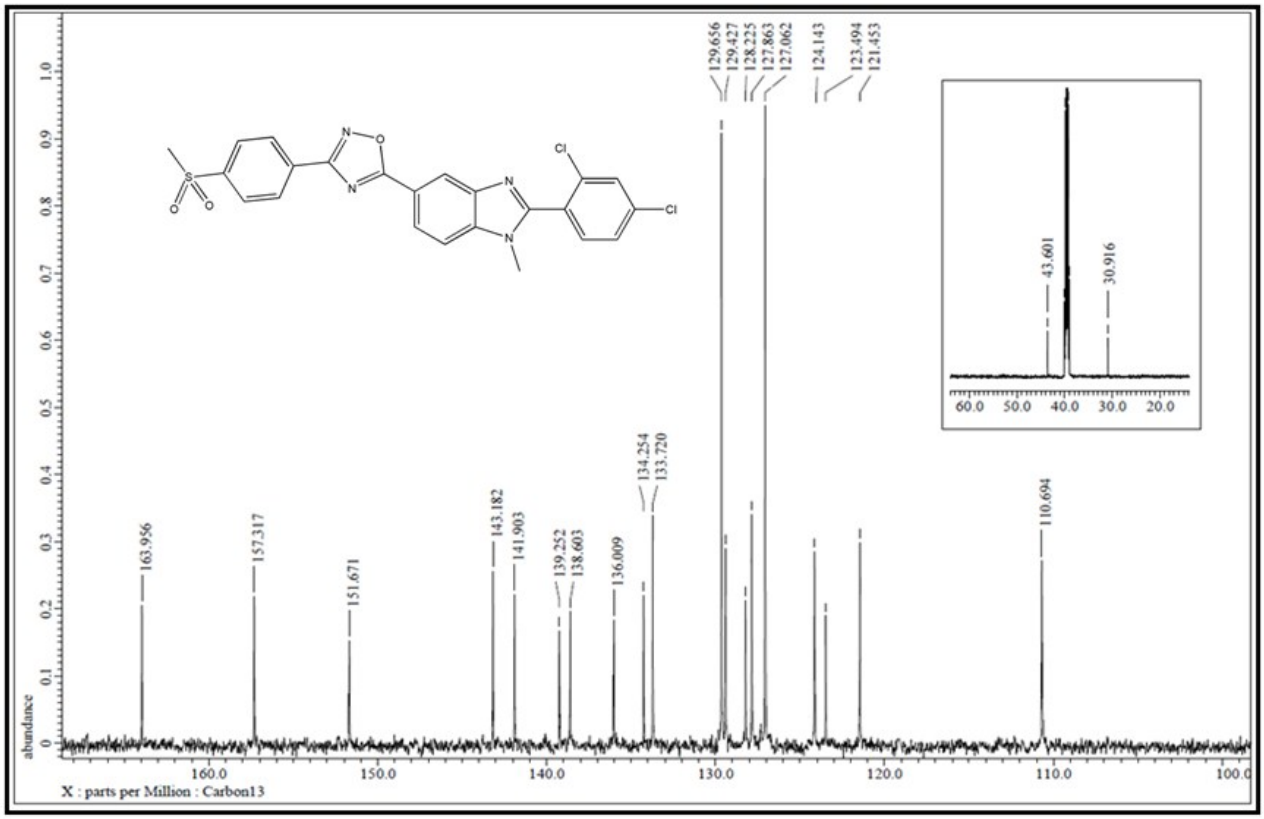

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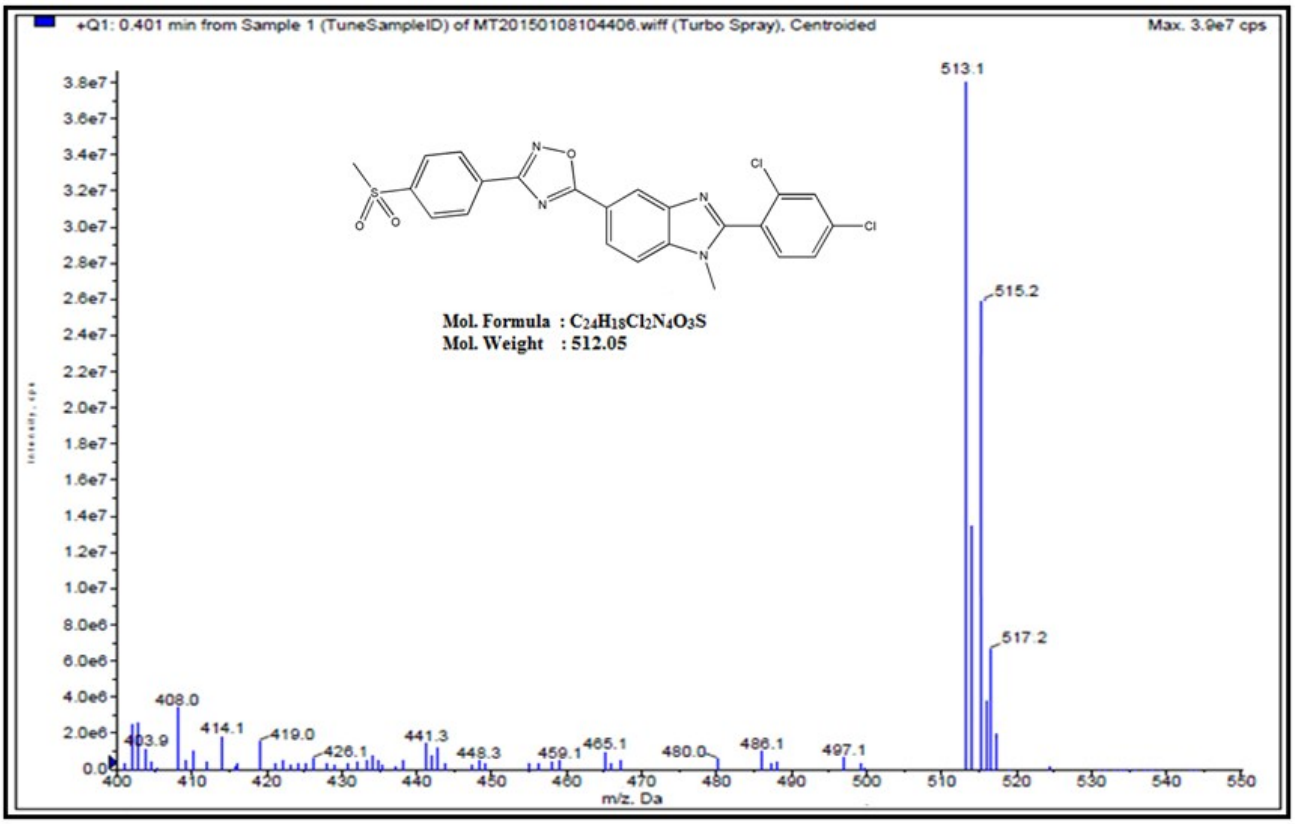

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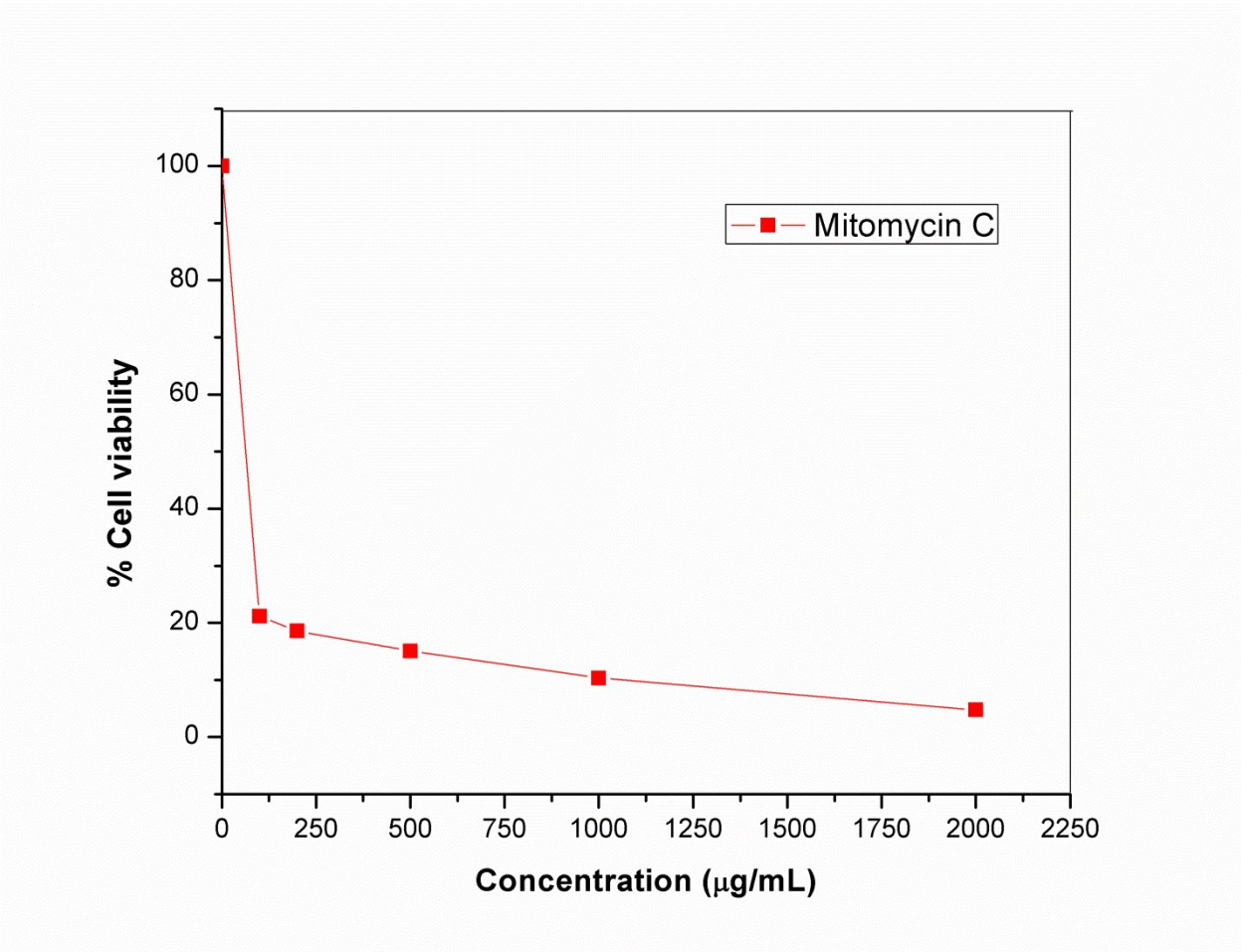

Percentage cell viability verses Concentration graph for standard drug Mitomycin C against kidney embryonic cell line HEK 293.