

Figure S1. $^1\text{H-NMR}$ of ((4-Bromophenyl)(4,4-dimethyl-2,6-dioxocyclohexyl)methyl)phosphonic acid.

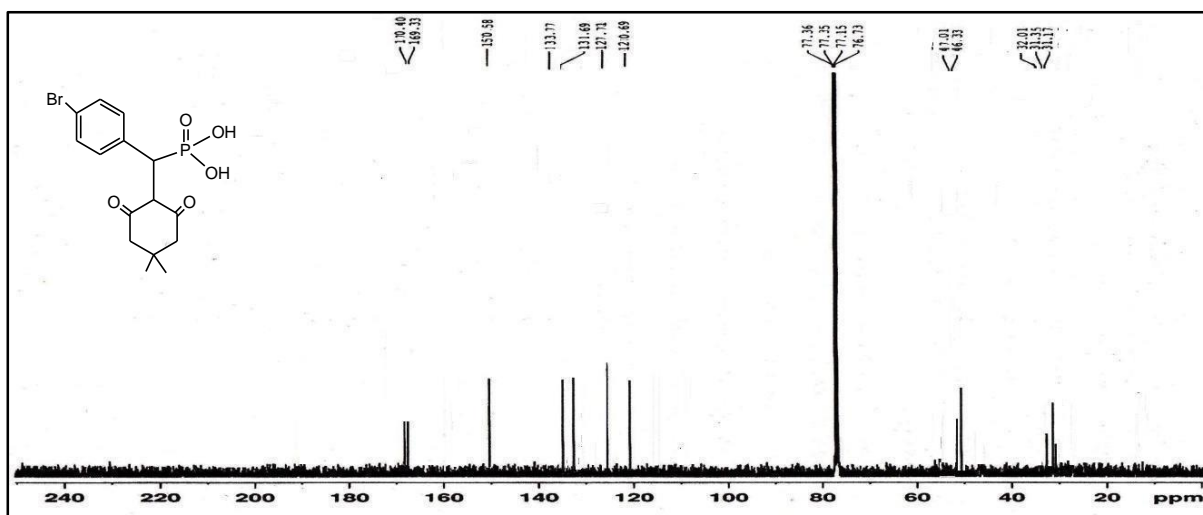


Figure S2. $^{13}\text{C-NMR}$ of ((4-Bromophenyl)(4,4-dimethyl-2,6-dioxocyclohexyl)methyl)phosphonic Acid.

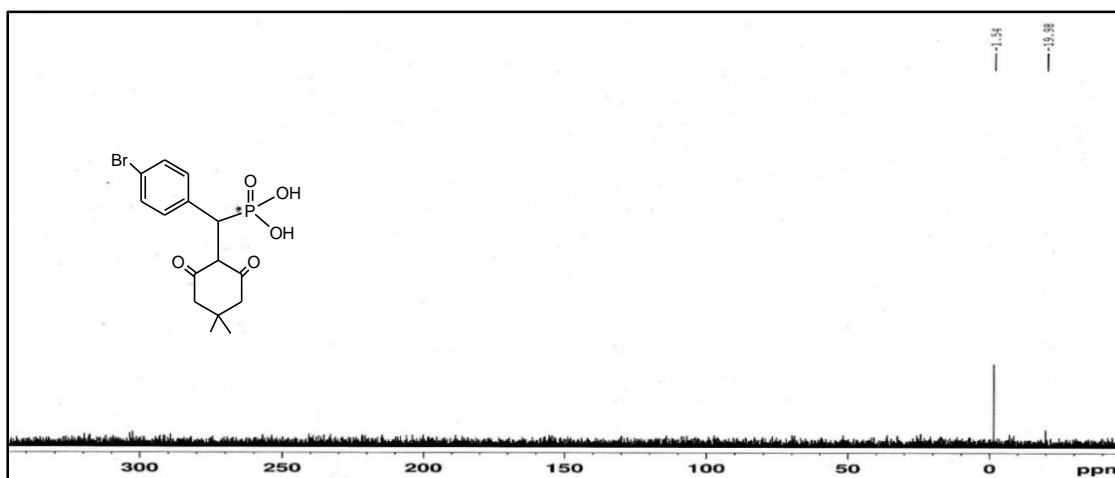


Figure S3. ^{31}P -NMR of ((4-Bromophenyl)(4,4-dimethyl-2,6-dioxocyclohexyl)methyl)phosphonic acid.

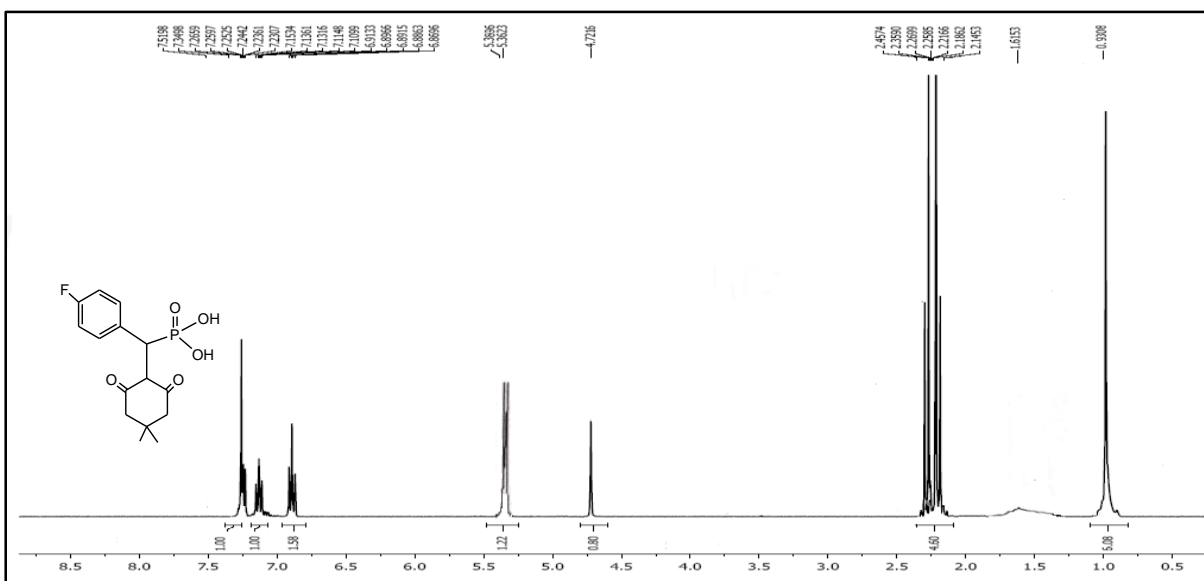


Figure S4. $^1\text{H-NMR}$ of ((4-Fluorophenyl)(4,4-dimethyl-2,6-dioxocyclohexyl)methyl)phosphonic acid.

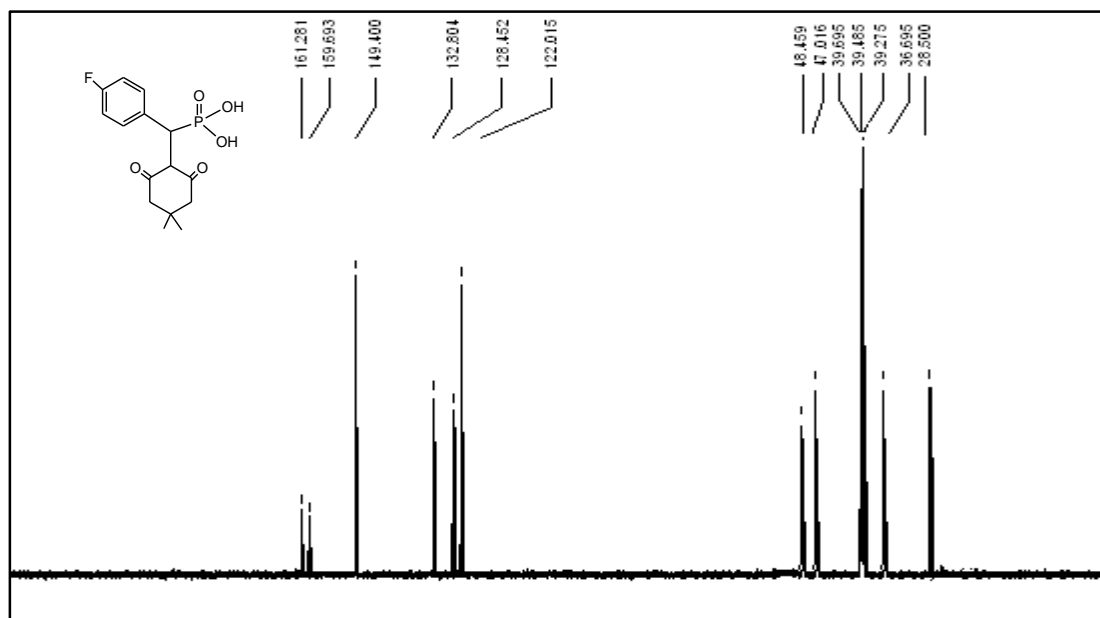


Figure S5. $^{13}\text{C-NMR}$ of ((4-Fluorophenyl)(4,4-dimethyl-2,6-dioxocyclohexyl)methyl)phosphonic acid.

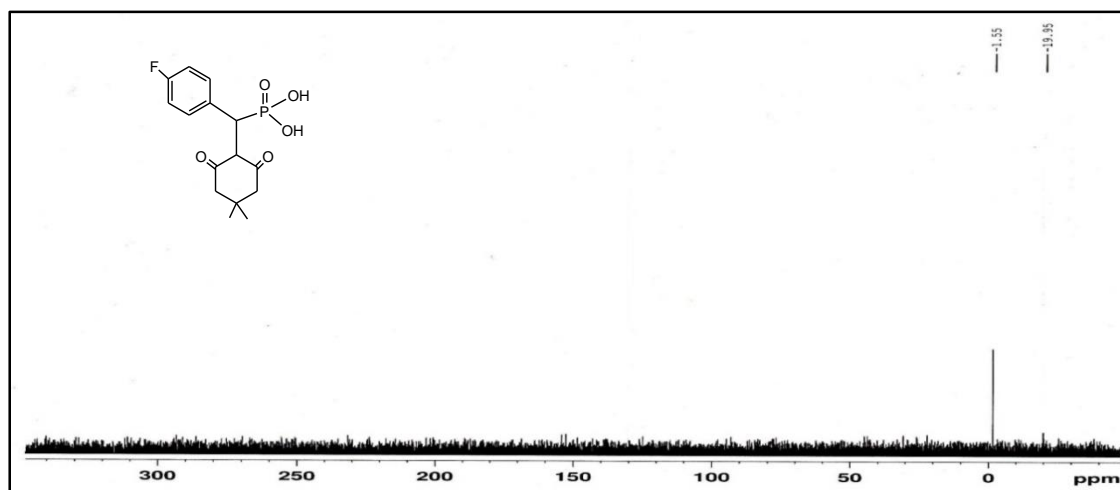


Figure S6. ^{31}P -NMR of ((4-Fluorophenyl)(4,4-dimethyl-2,6-dioxocyclohexyl)methyl)phosphonic acid.

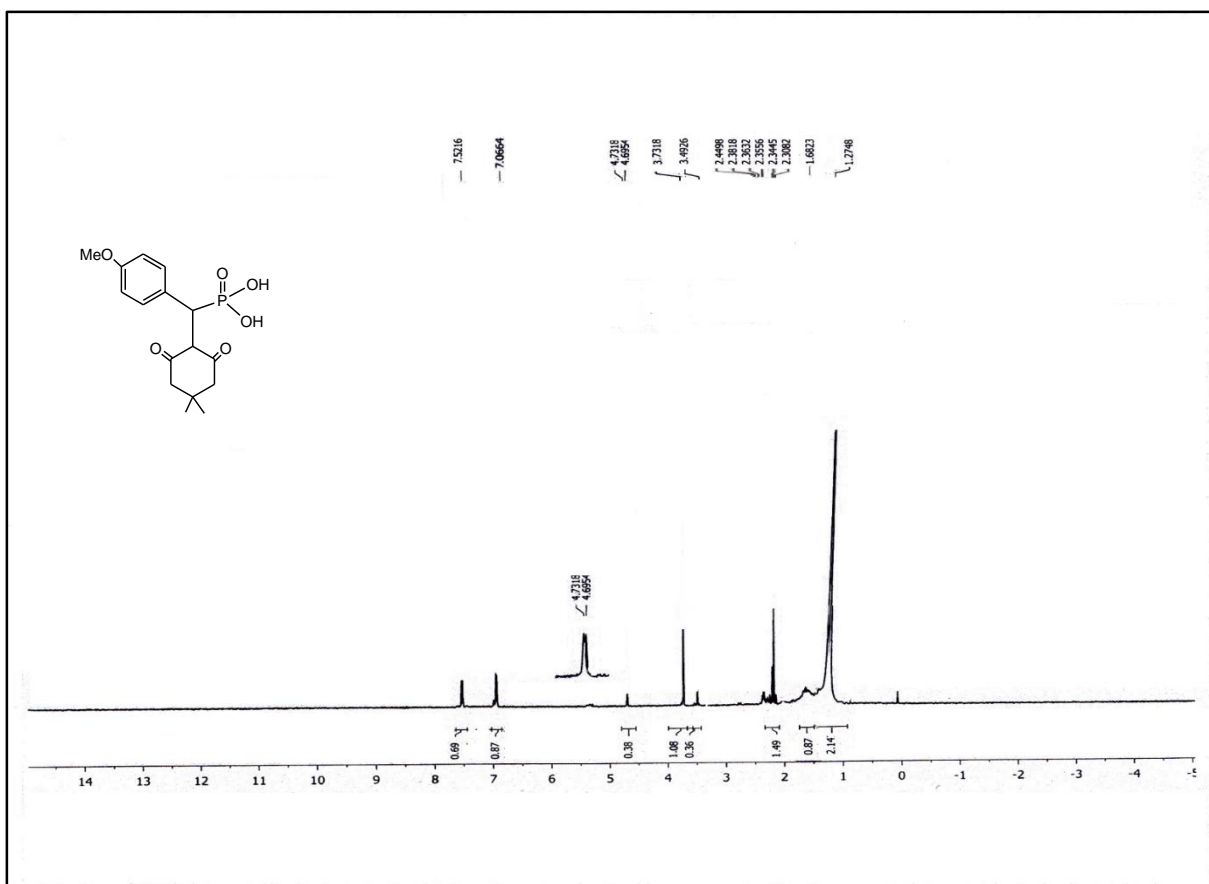


Figure S7. ¹H-NMR of [(4,4-Dimethyl-2,6-dioxo-cyclohexyl)-(4-methoxy-phenyl)-methyl]-phosphonic acid.

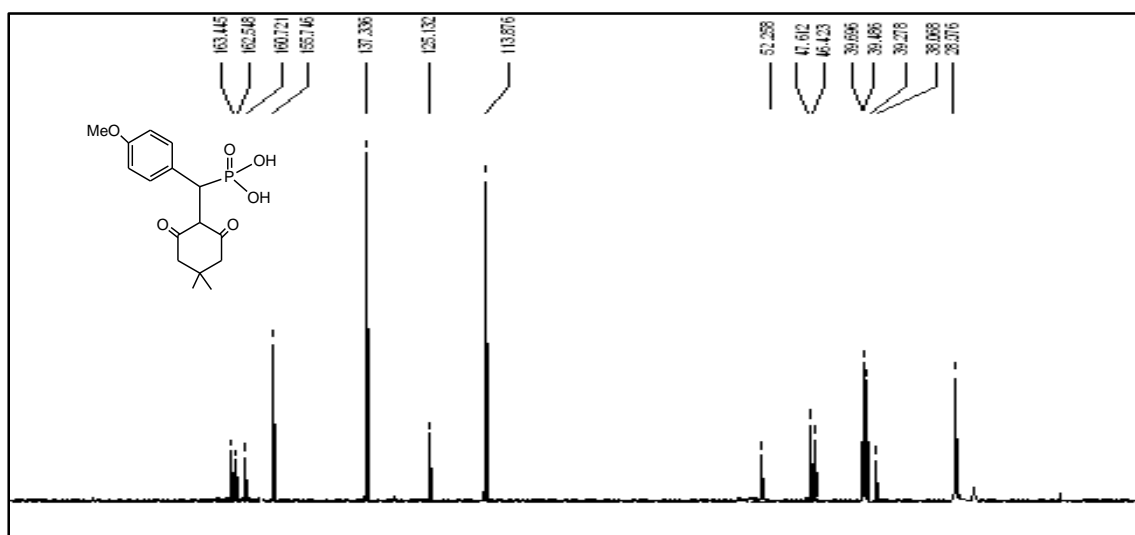


Figure S8. ¹³C-NMR of [(4,4-Dimethyl-2,6-dioxo-cyclohexyl)-(4-methoxy-phenyl)-methyl]-phosphonic acid.

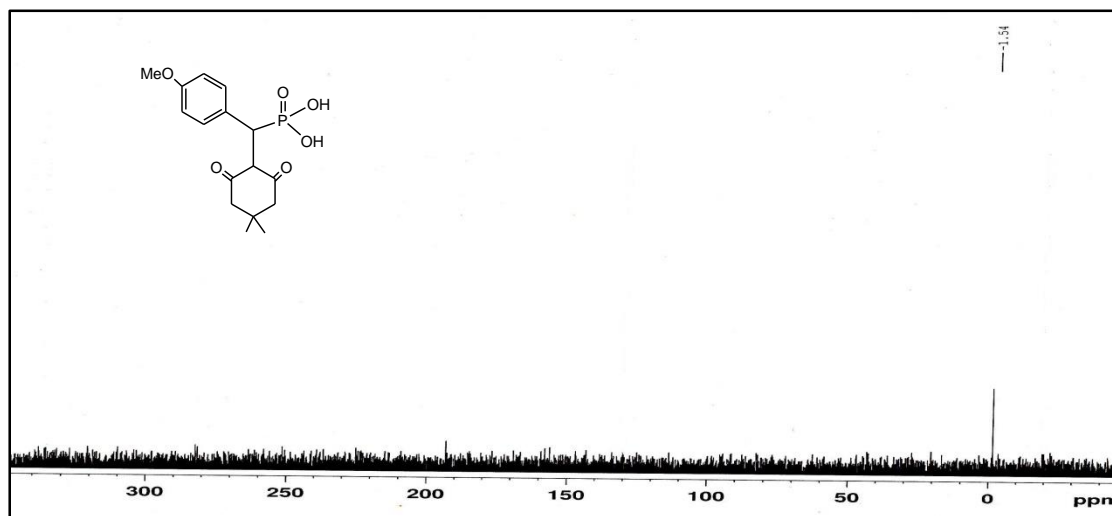
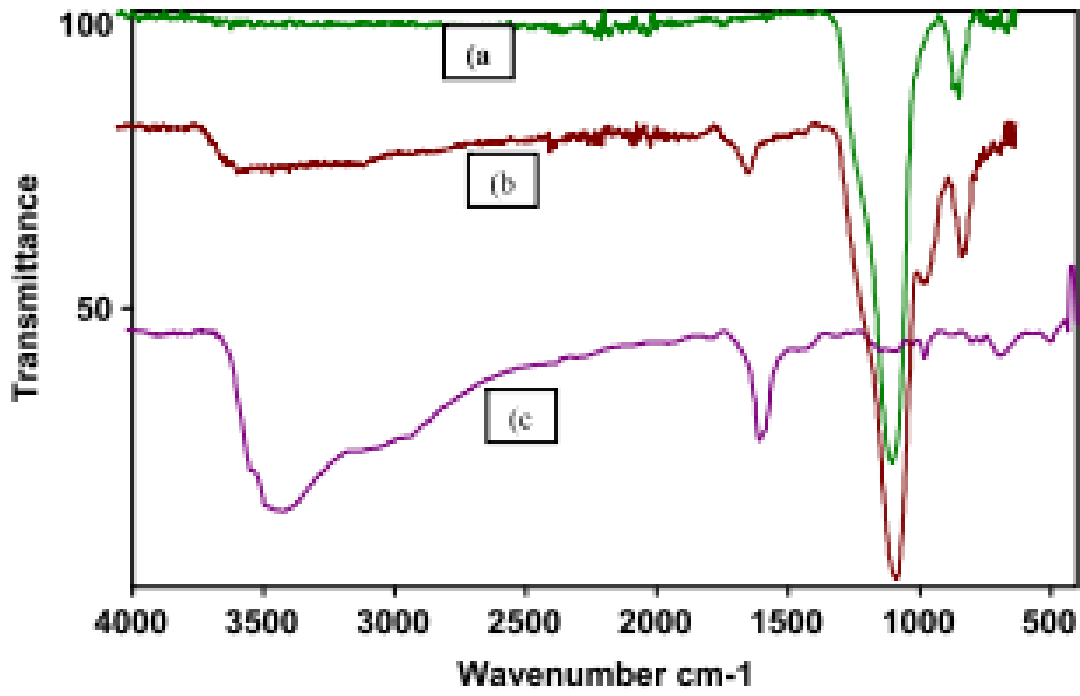


Figure S9. ^{31}P -NMR of [(4,4-Dimethyl-2,6-dioxo-cyclohexyl)-(4-methoxy-phenyl)-methyl]-phosphonic acid.



Figure

Figure S10. ATR spectrum of: (a) nano-SiO₂, (b) nano-SnCl₄·SiO₂, and (c) SnCl₄.