Heterogenous organo- and metal catalysis using phosphine oxide derivatives anchored on multiwalled carbon nanotubes

Maria Cristina Ligi [1], Anna Flis [2], Giacomo Biagiotti [1,3], Giulia Serrano [3,4]
K. Michał. Pietrusiewicz [2,*] and Stefano Cicchi [1,3,5,*]

[1] Department of Chemistry, Università di Firenze, via della Lastruccia 3-13, 50019 Sesto Fiorentino, Firenze, Italy; mariacristina.ligi@unifi.it (M.C.L.); giacomo.biagiotti@unifi,it (G.B.)
[2] Department of Organic Chemistry, Maria Curie-Skłodowska University, ul. Gliniana 33, 20-614 Lublin, Poland; a.flis@poczta.umcs.lublin.pl
[3] INSTM (National Interuniversity Consortium of Materials Science and Technology), Via G. Giusti 9, 50121 Firenze, Italy
[4] Department of Industrial Engineering, Università di Firenze, via di S. Marta, 3-50139 Firenze, Italy; giulia.serrano@unifi.it
[5] Institute of Chemistry of OrganoMetallic Compounds ICCOM-CNR, Via Madonna del Piano 10, 50019 Sesto Fiorentino, Italy
* Correspondence: kazimierz.pietrusiewicz@poczta.umcs.lublin.pl (K.M.P.); stefano.cicchi@unifi.it (S.C.)

* Correspondence: kazimierz.pietrusiewicz@poczta.umcs.lublin.pl; stefano.cicchi@unifi.it.

Supporting material

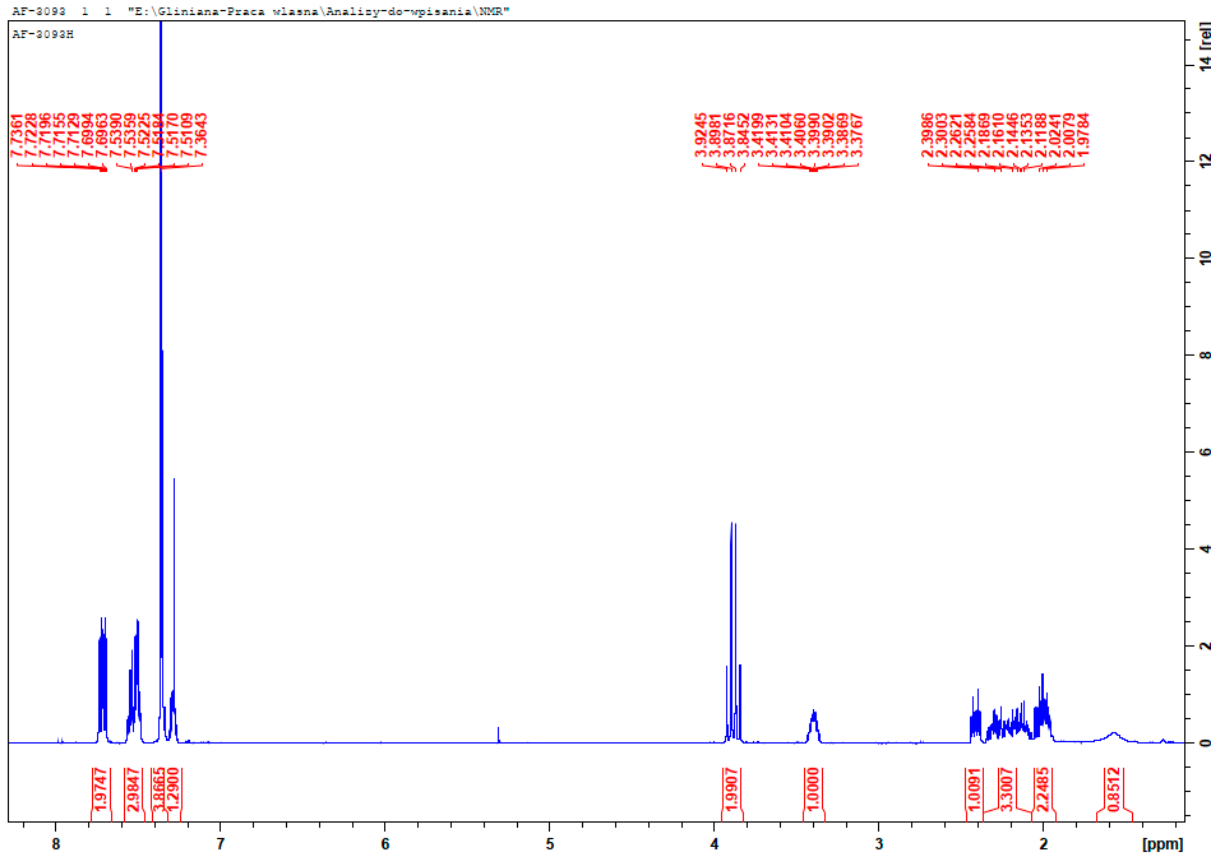

Figure S1. ^{1}H NMR of 1-phenyl-3-benzylaminophospholane 1-oxide **A**

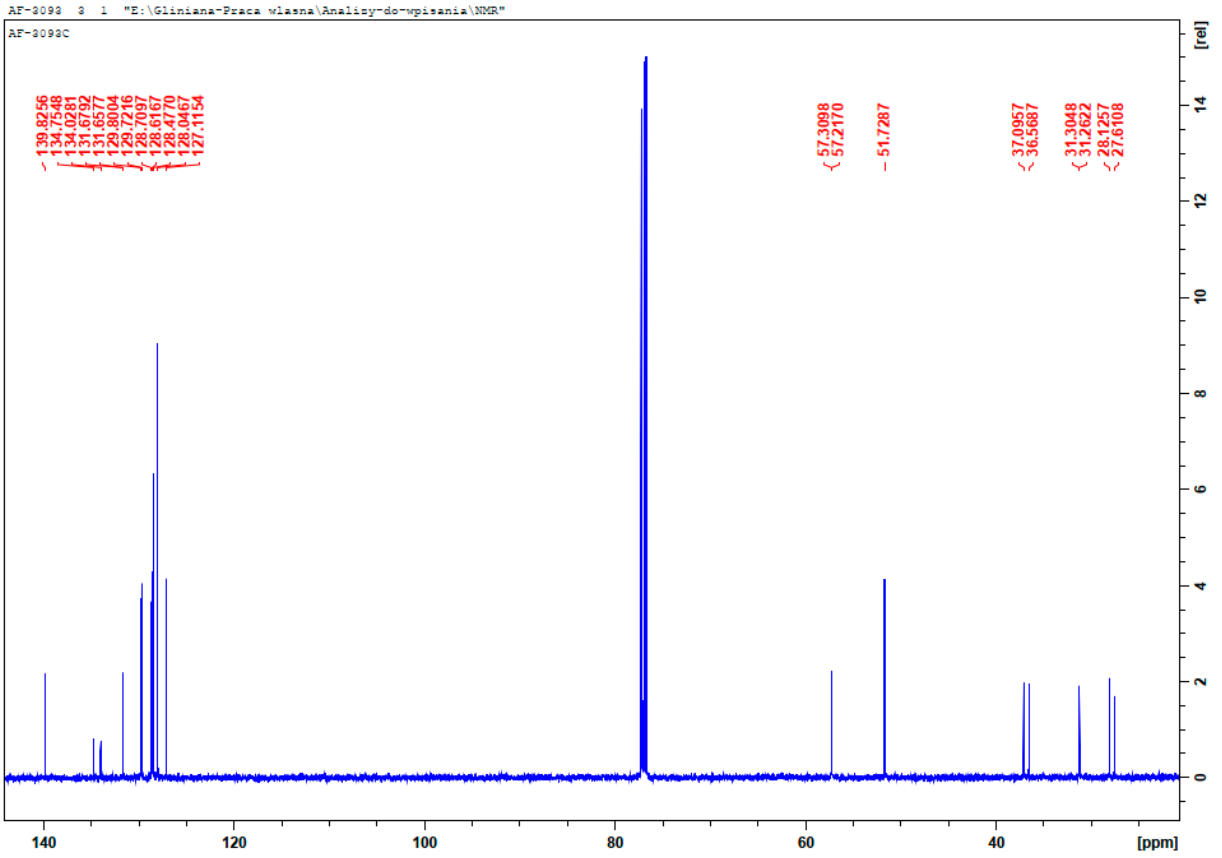

Figure S2. ^{13}C NMR of 1-phenyl-3-benzylaminophospholane 1-oxide **A**

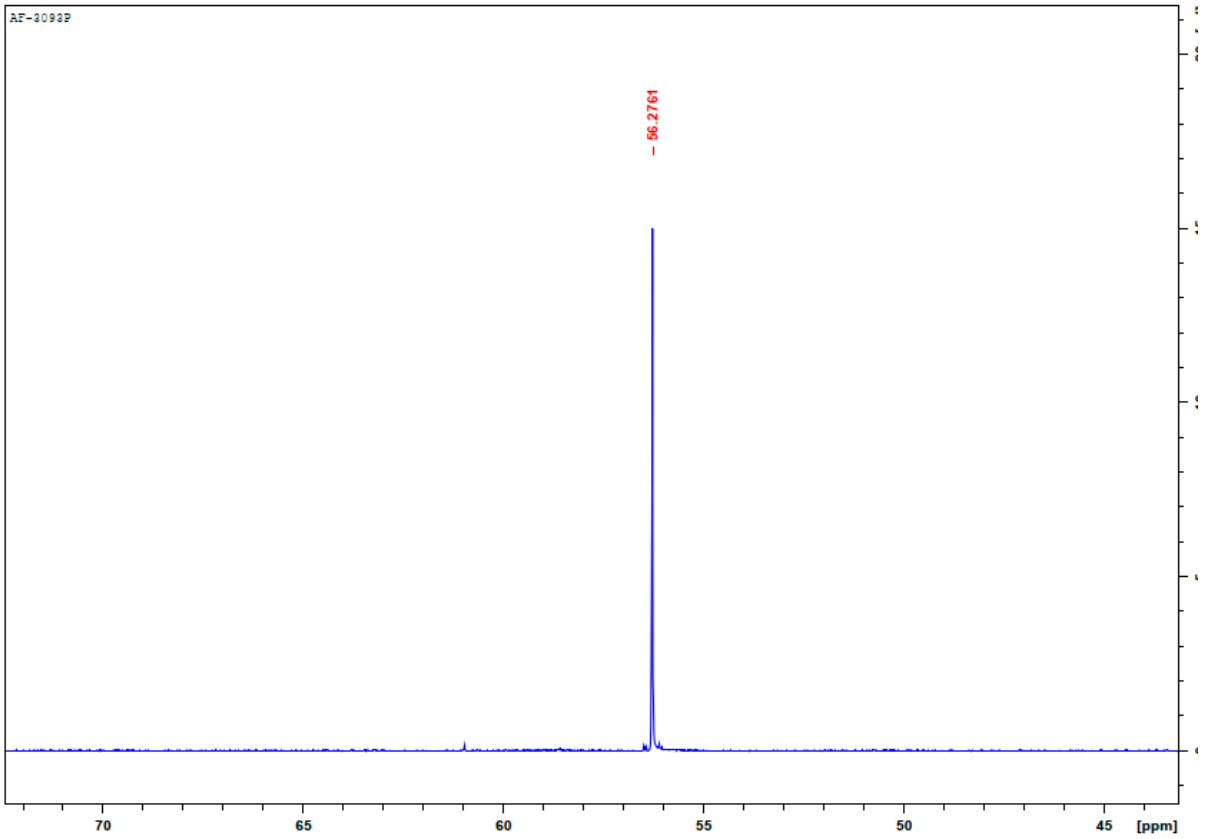

Figure S3. ^{13}P NMR of 1-phenyl-3-benzylaminophospholane 1-oxide **A**

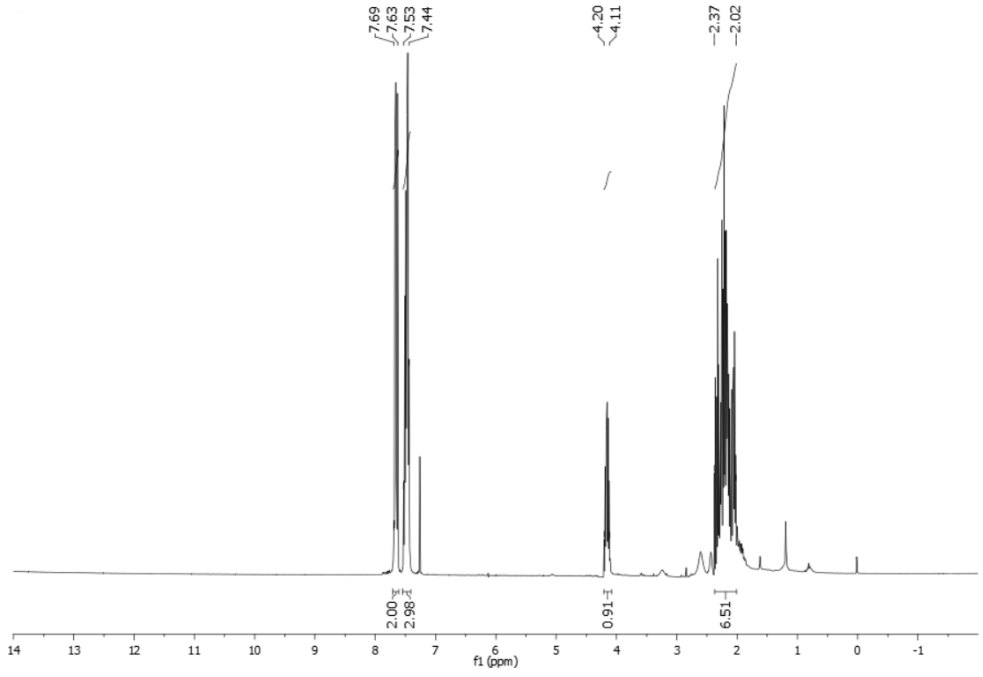

Figure S4. ^{1}H NMR of 3-azido-1-phenylpfospholane 1-oxide (**5**).

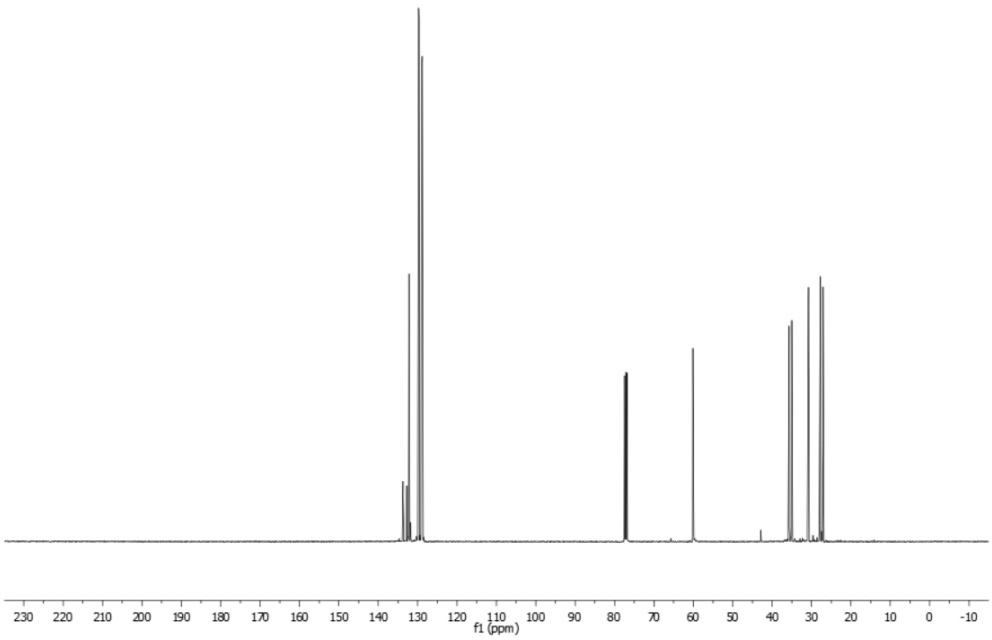

Figure S5. ^{13}C NMR Spectrum of 3-azido-1-phenylphospholane 1-oxide (**5**).

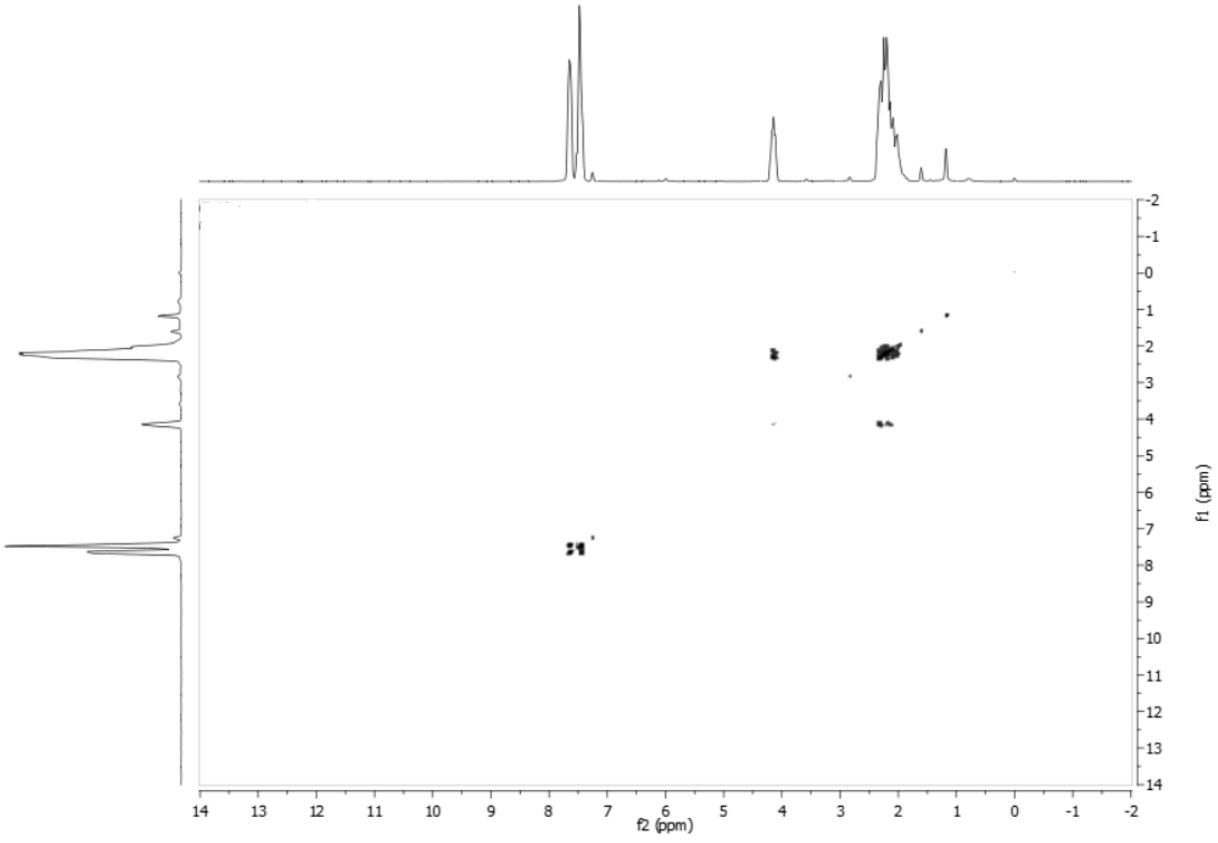

Figure S6. gCosy NMR Spectrum of 3-azido-1-phenylpfospholane 1-oxide (**5**).

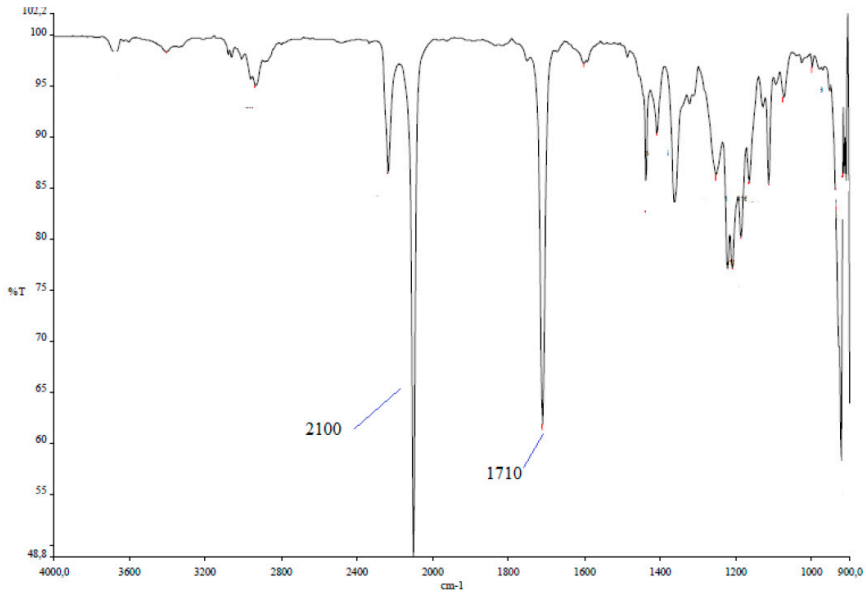

Figure S7. FT-IR Spectrum of 3-azido-1-phenylpfospholane 1-oxide (**5**).

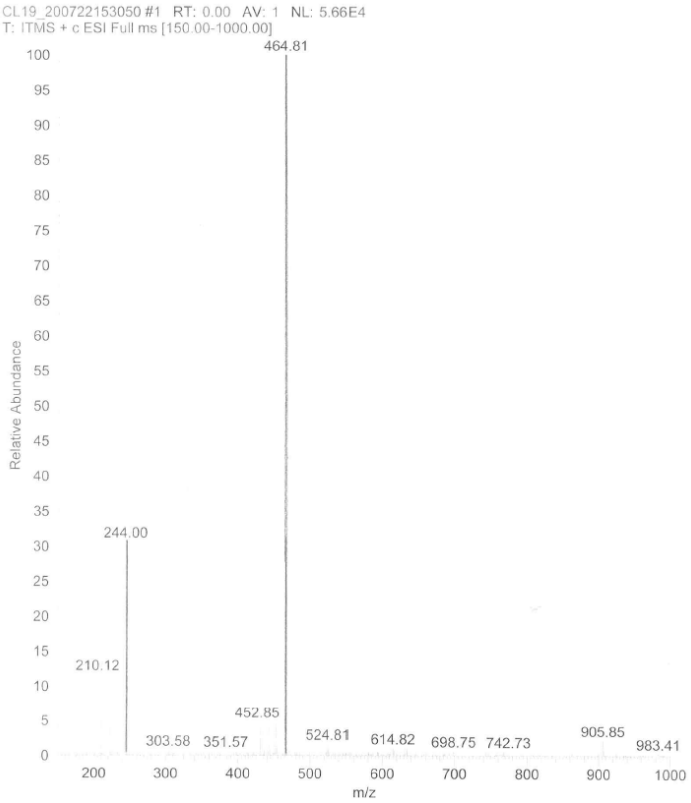

Figure S8. ESI-MS of 3-azido-1-phenylphospholane 1-oxide (**5**).

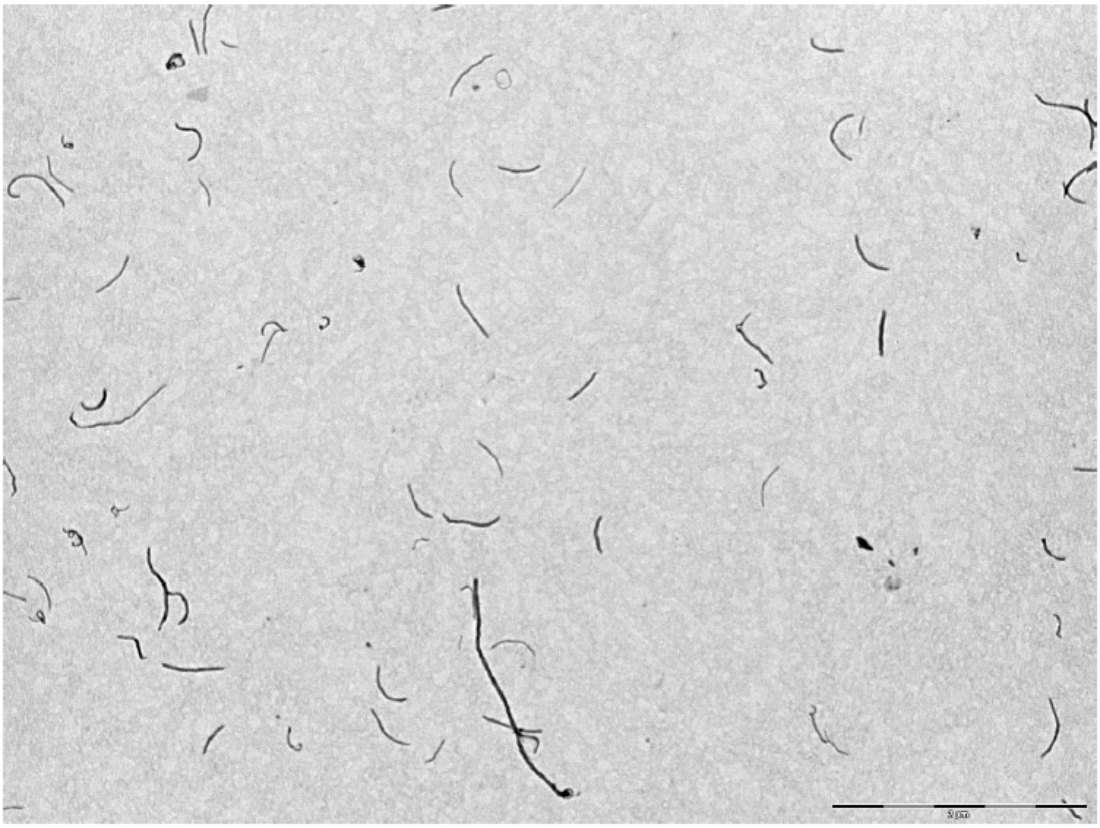

Figure S9. ox-CNTs **2**: TEM.

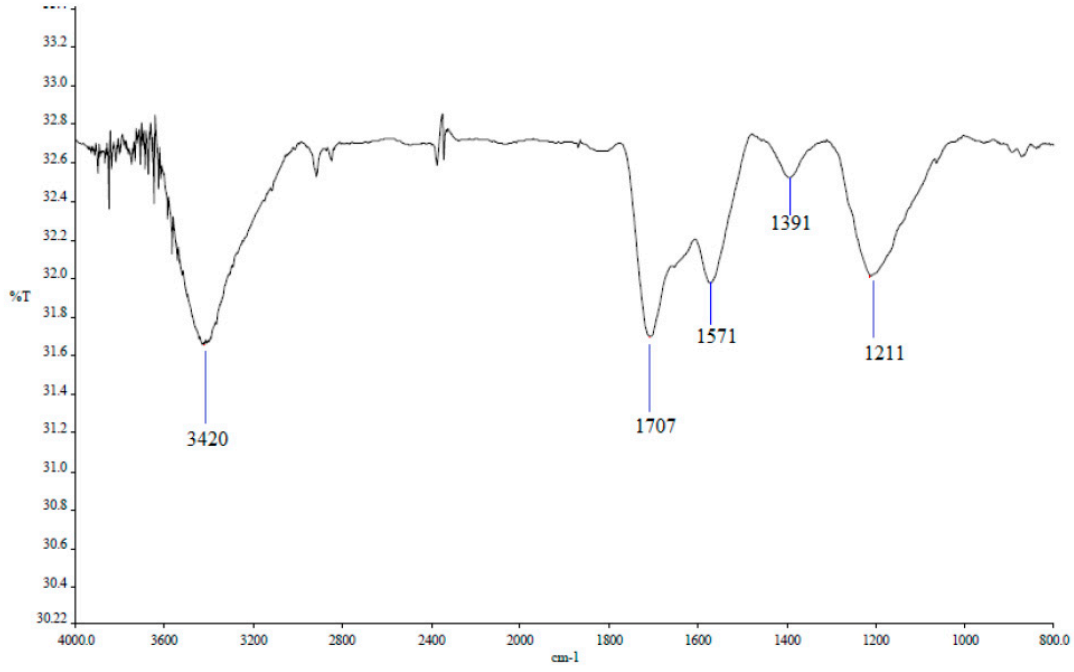

Figure S10 FT-IR Spectrum of ox-CNTs **2**.

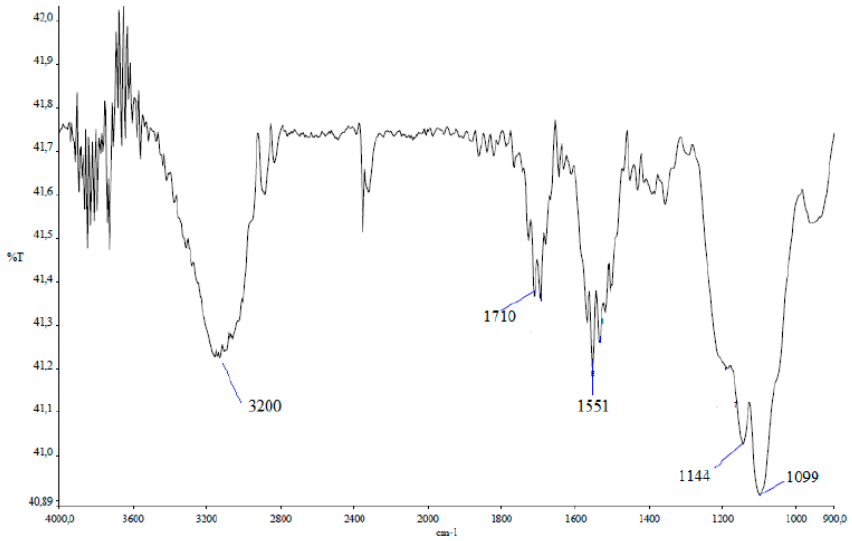

Figure S11. FT-IR spectrum of **6**

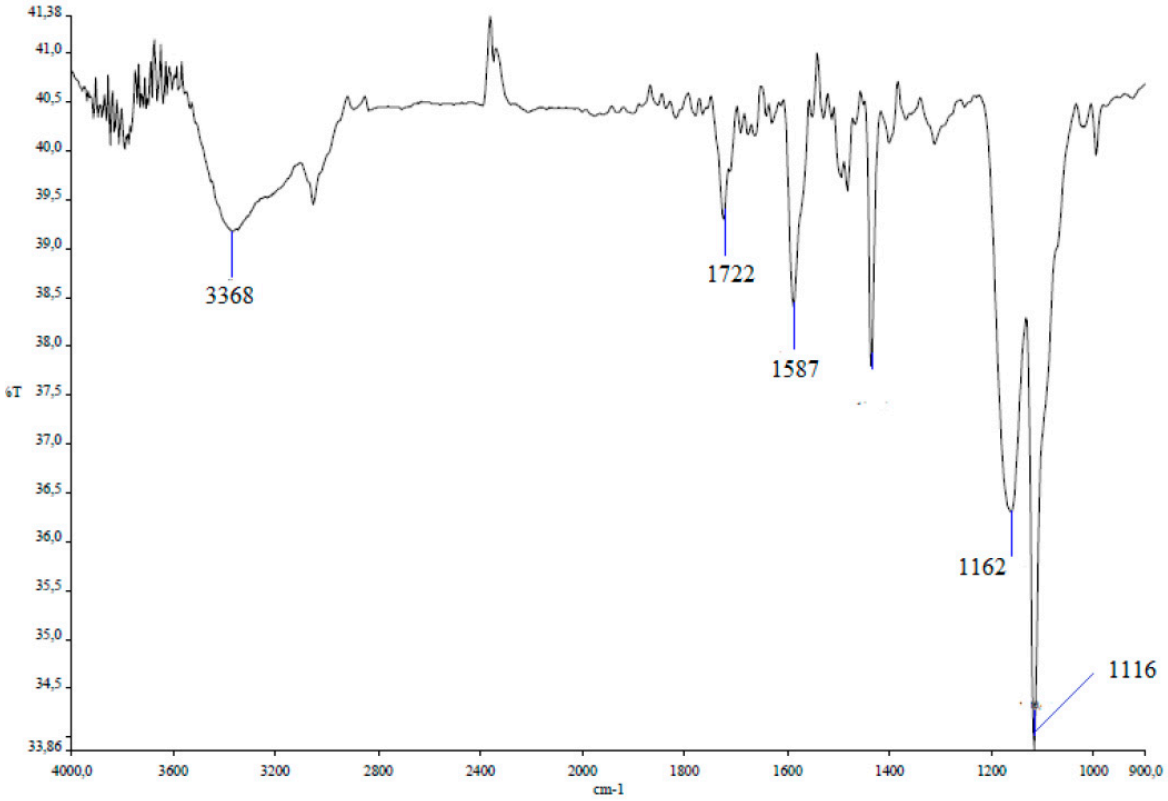

Figure S12. FT-IR spectrum of **7**.

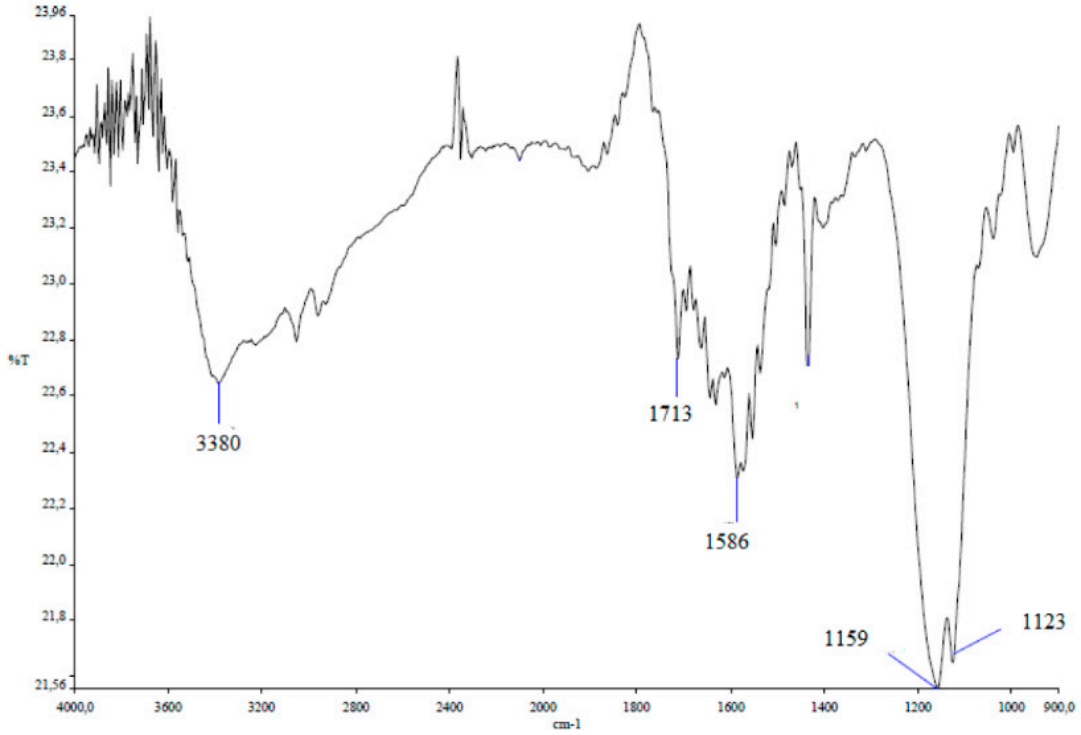

Figure S13. FT-IR spectrum of **8**.

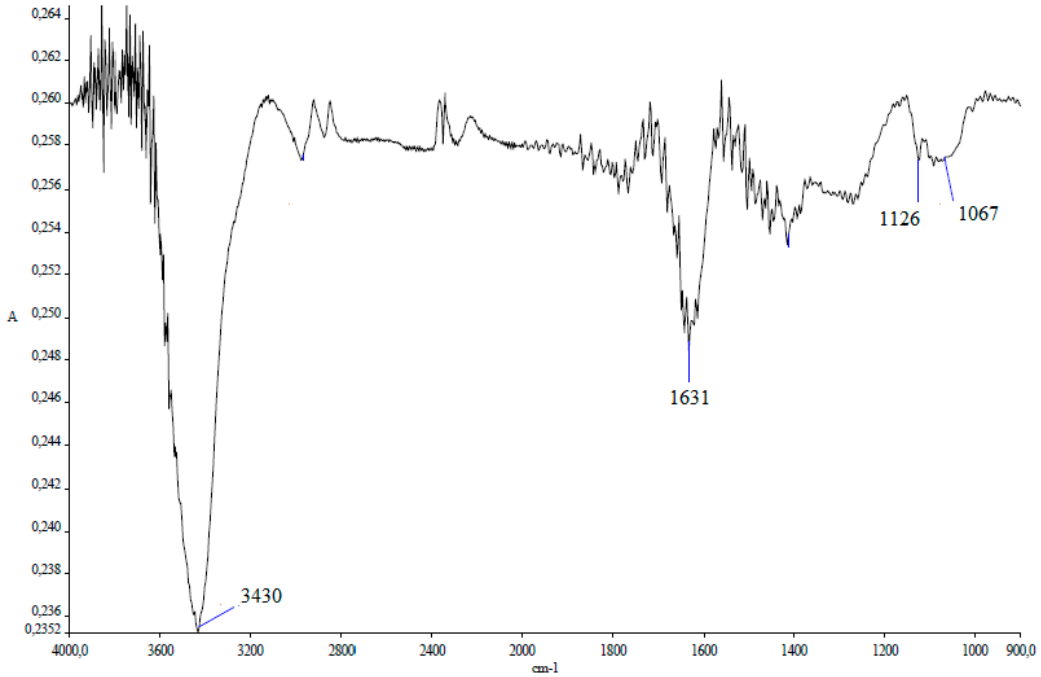

Figure S14. FT-IR spectrum of **9**

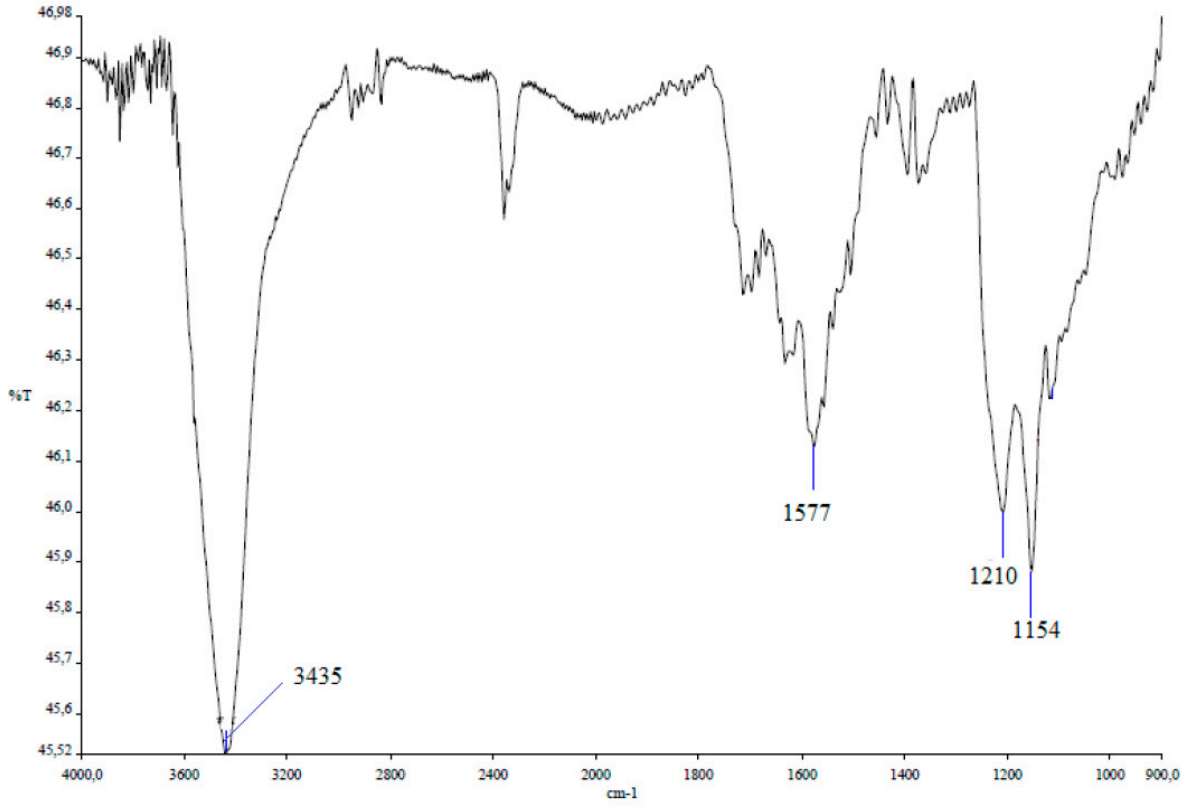

Figure S15. FT-IR spectrum of **10**.

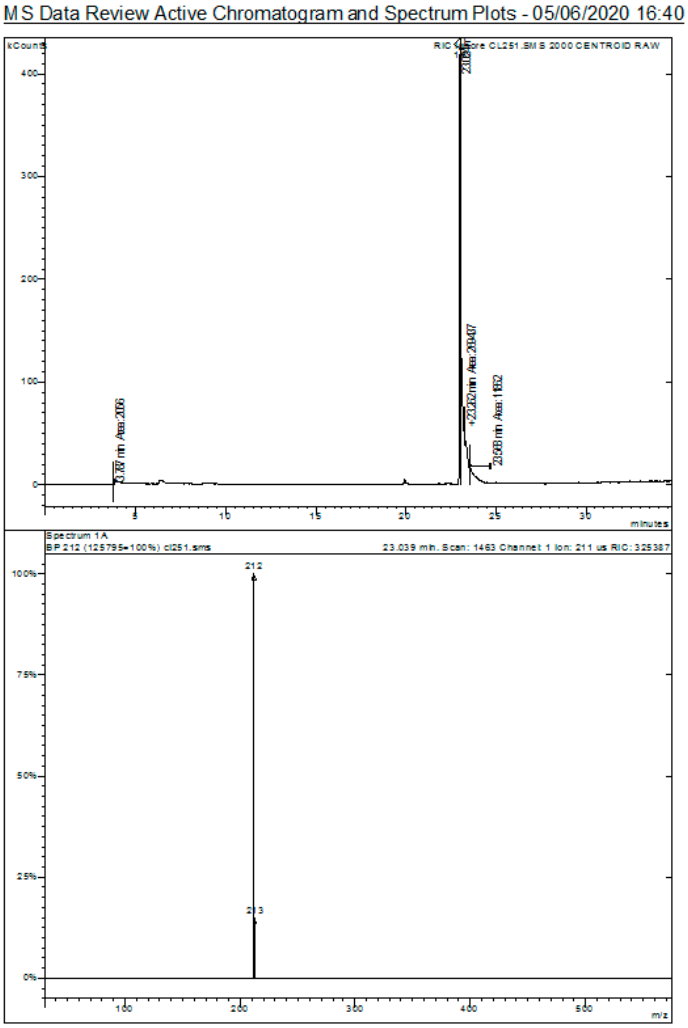

Figure S16. GC-MS Spectrum of N-Benzylbenzamide.

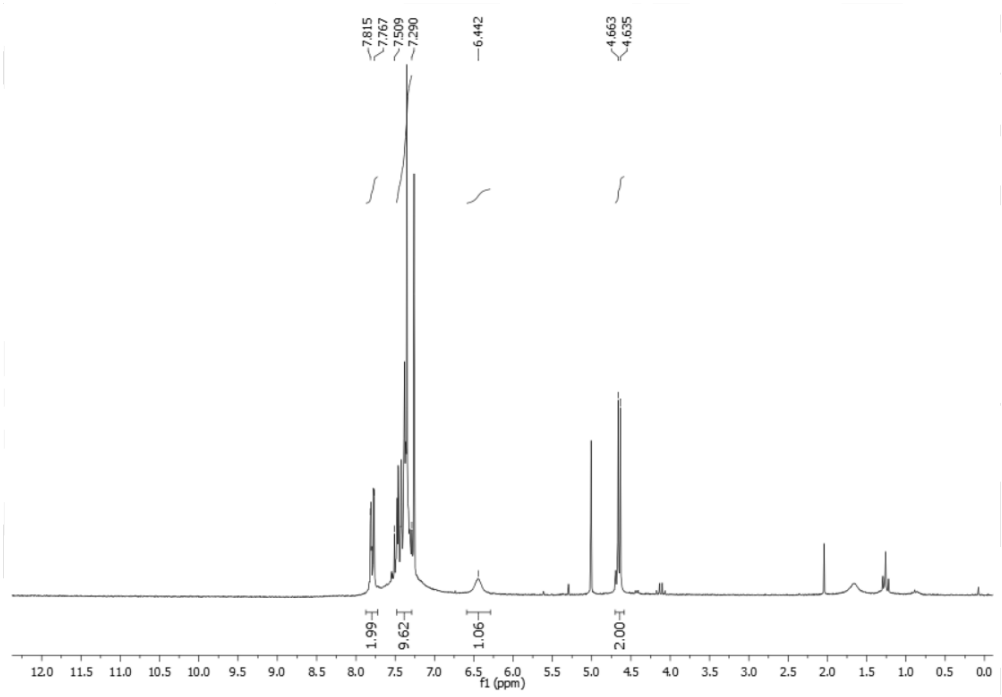

Figure S17. ^{1}HNMR Spectrum of N-Benzylbenzamide.

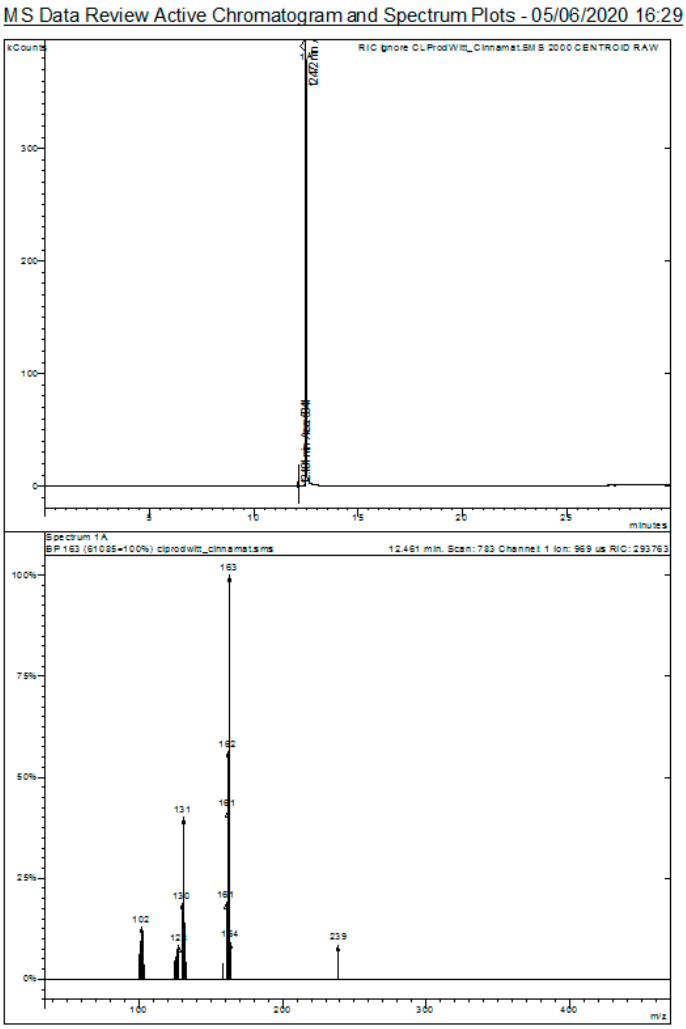

Figure S18. GC-MS Spectrum of methyl cinnamate.

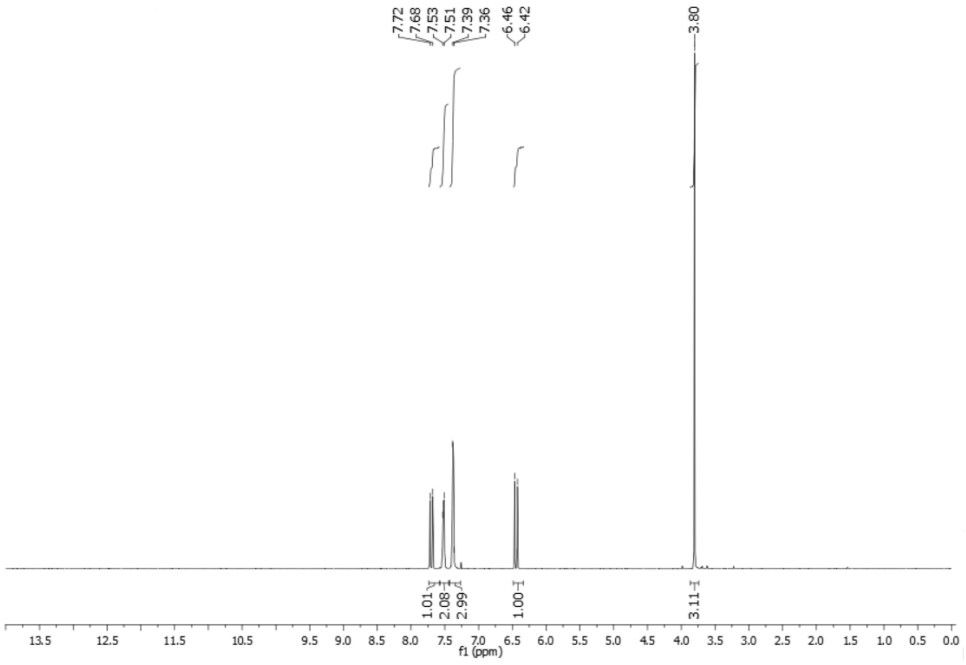

Figure S19. ^{1}HNMR of methyl cinnamate.

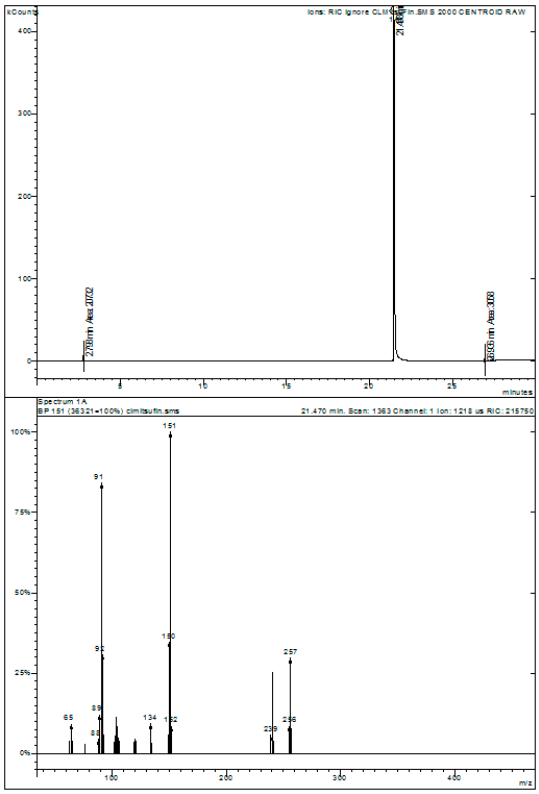

Figure S20. GC-MS Spectrum of benzyl 4-nitrobenzoate.

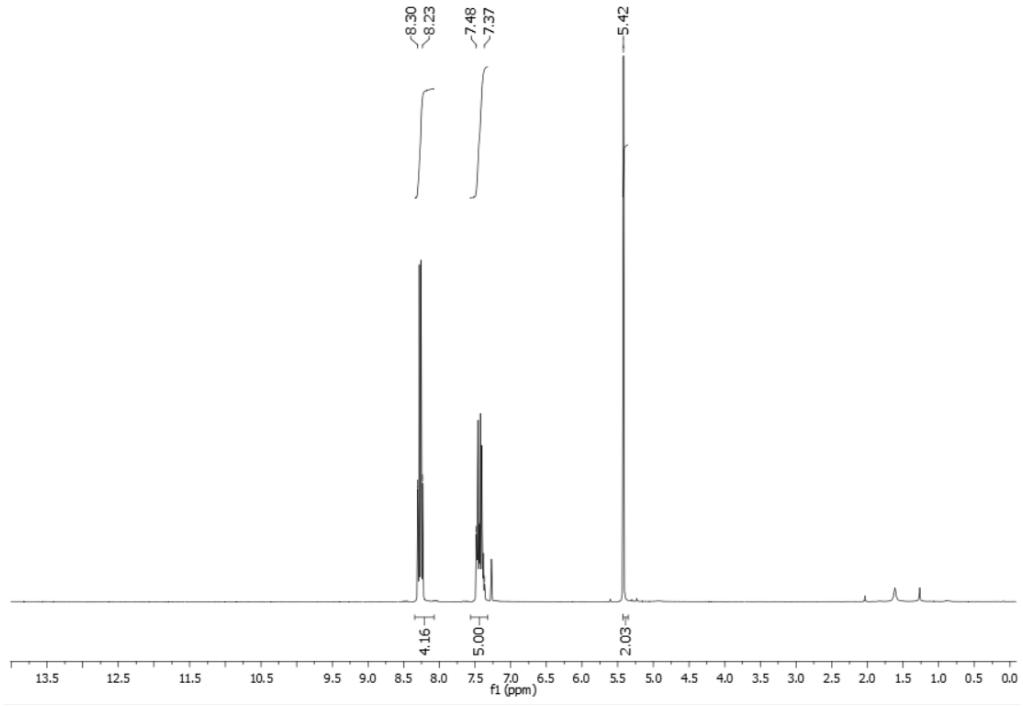

Figure S21. ^{1}HNMR of benzyl 4-nitrobenzoate.

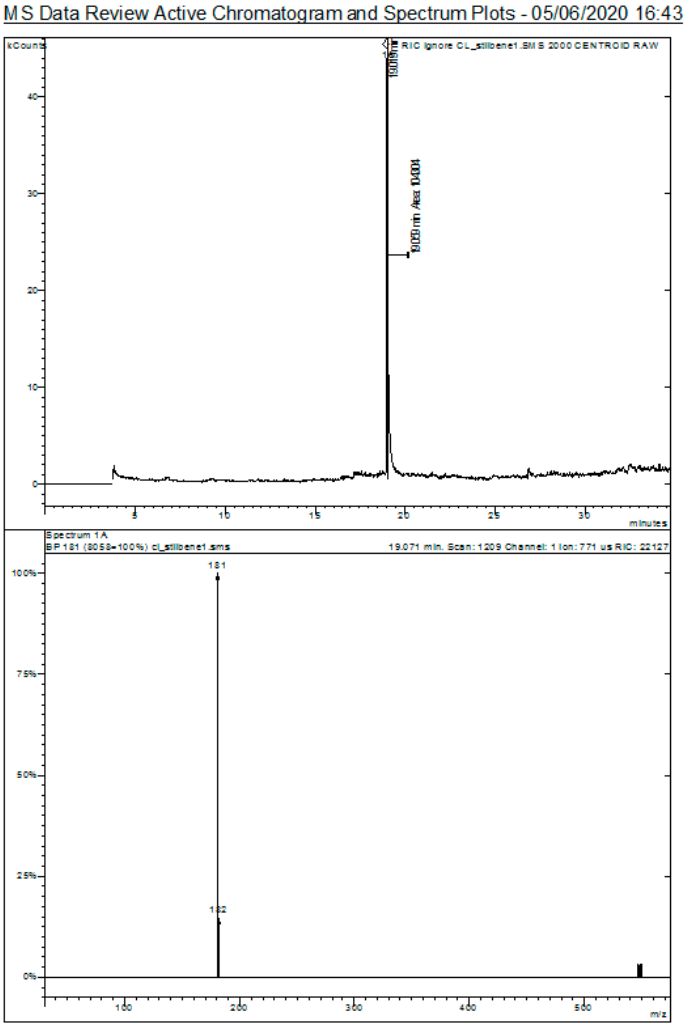

Figure S22. GC-MS Spectrum of trans-Stilbene.

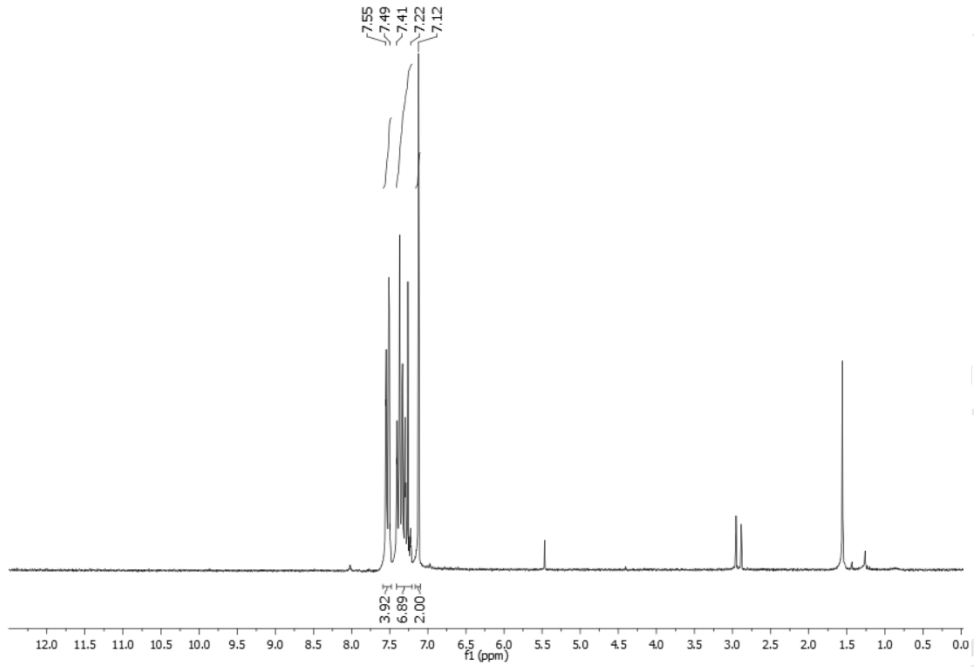

Figure S23. ^{1}HNMR of trans-stilbene.

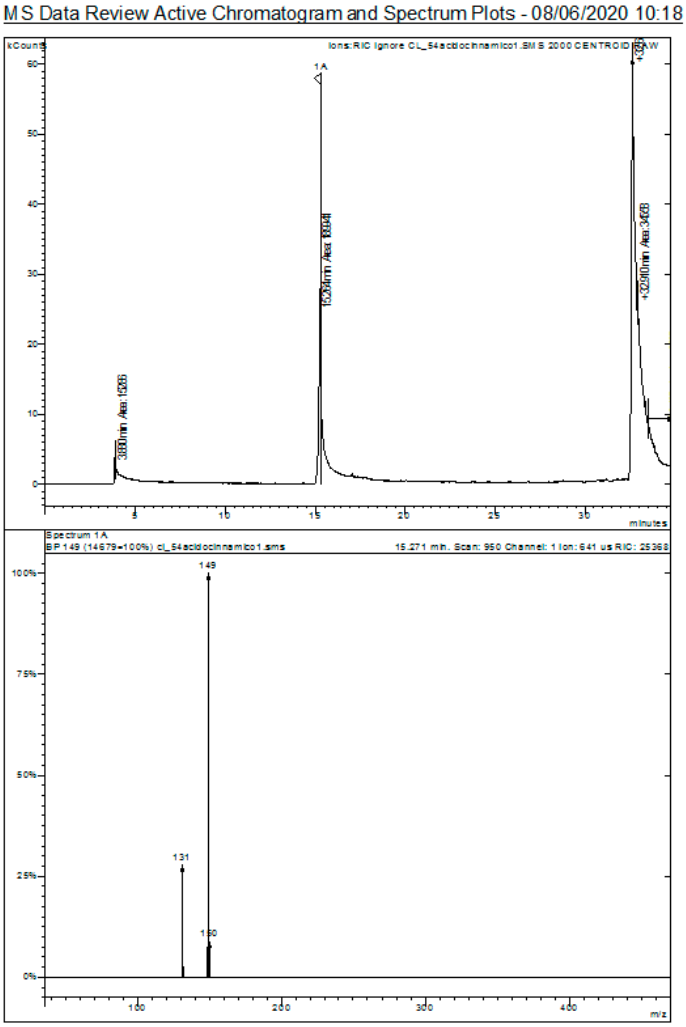

Figure S24. GC-MS Spectrum of trans-cinnamic acid.

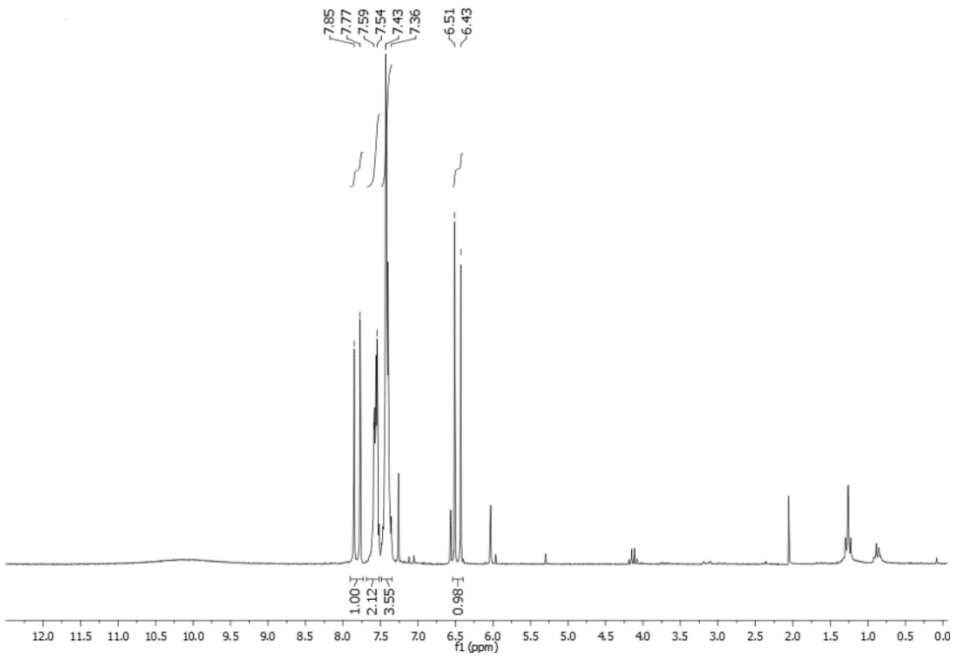

Figure S25. ^{1}HNMR of trans-cinnamic acid.