

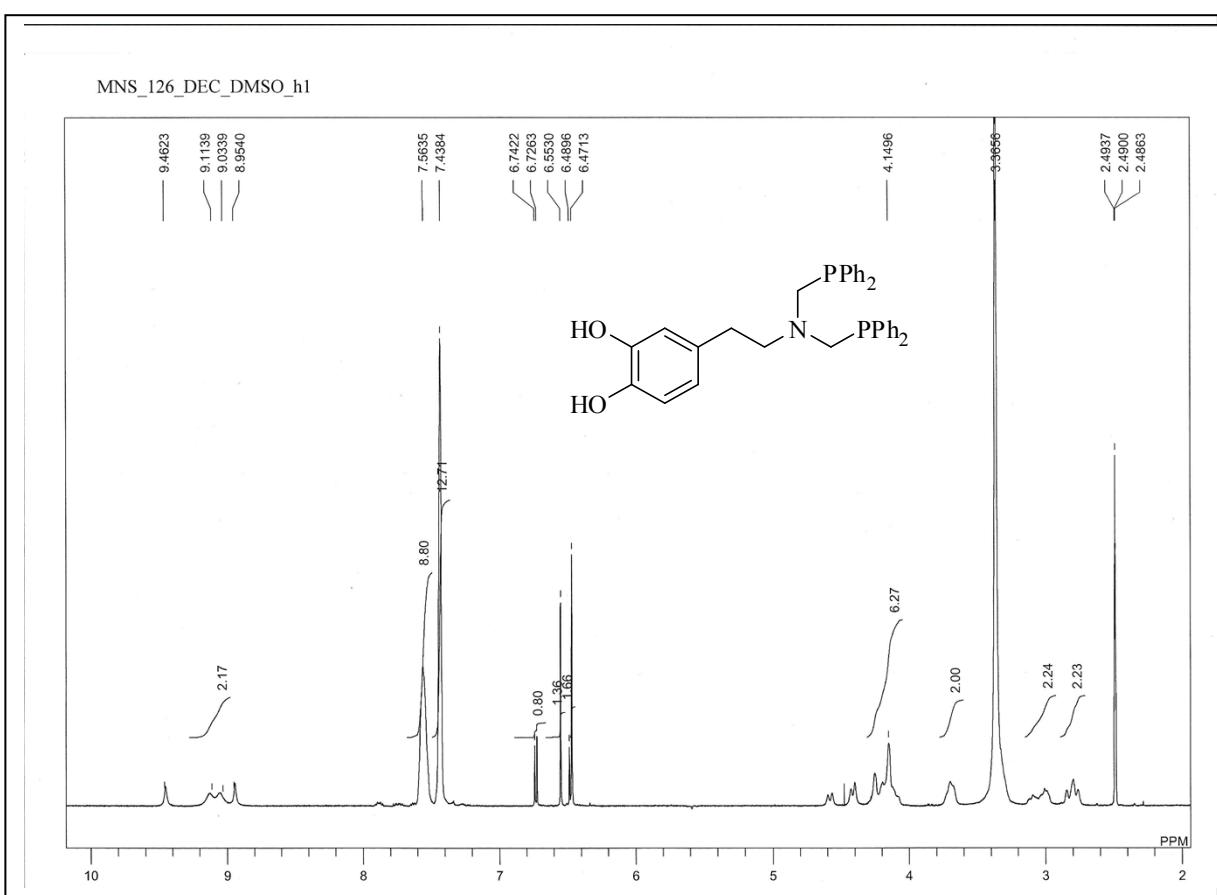
Supporting Information

Rhodium complex of bis(diphenylphosphinomethyl) dopamine-coated magnetic nanoparticles as efficient and reusable catalyst for hydroformylation of olefins

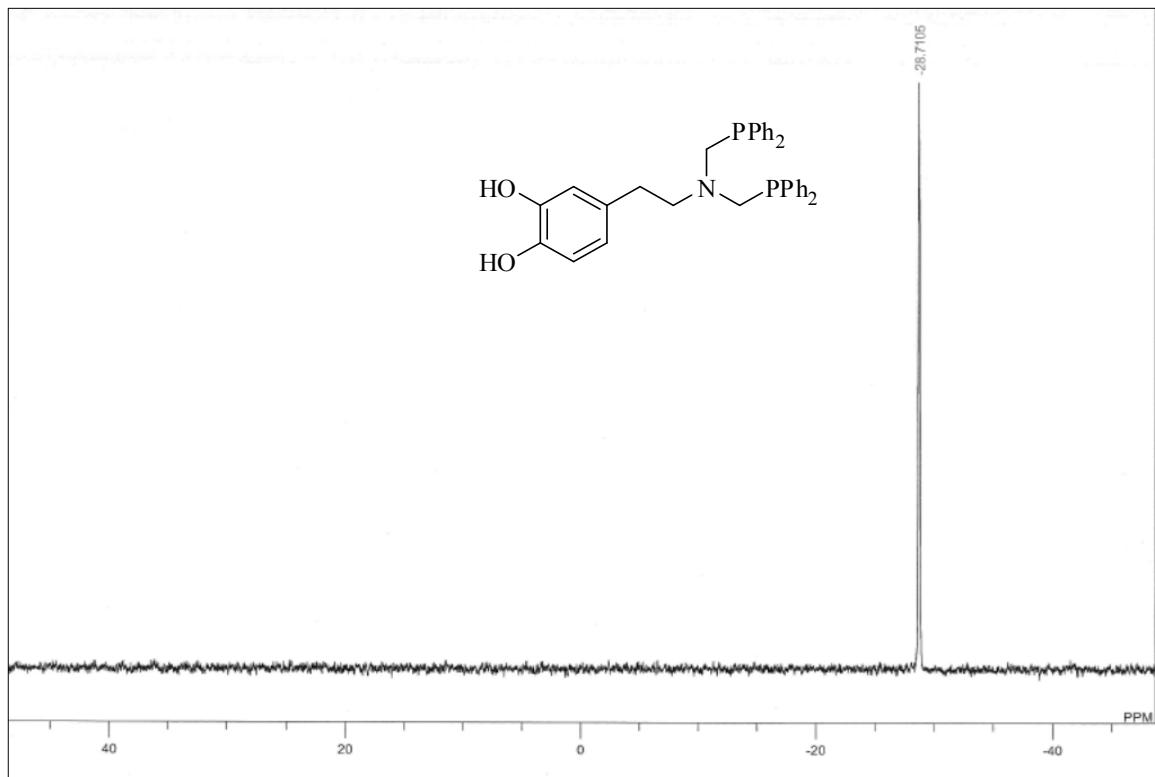
M. Nasiruzzaman Shaikh^{*,a}, M. Bououdina^b, Abiola Azeez Jimoh^a, Md. Abdul Aziz^a, Aasif Helal^a, Abbas Saeed Hakeem^a, Zain H. Yamani^a, Tae-Jeong Kim^c

Table of Contents

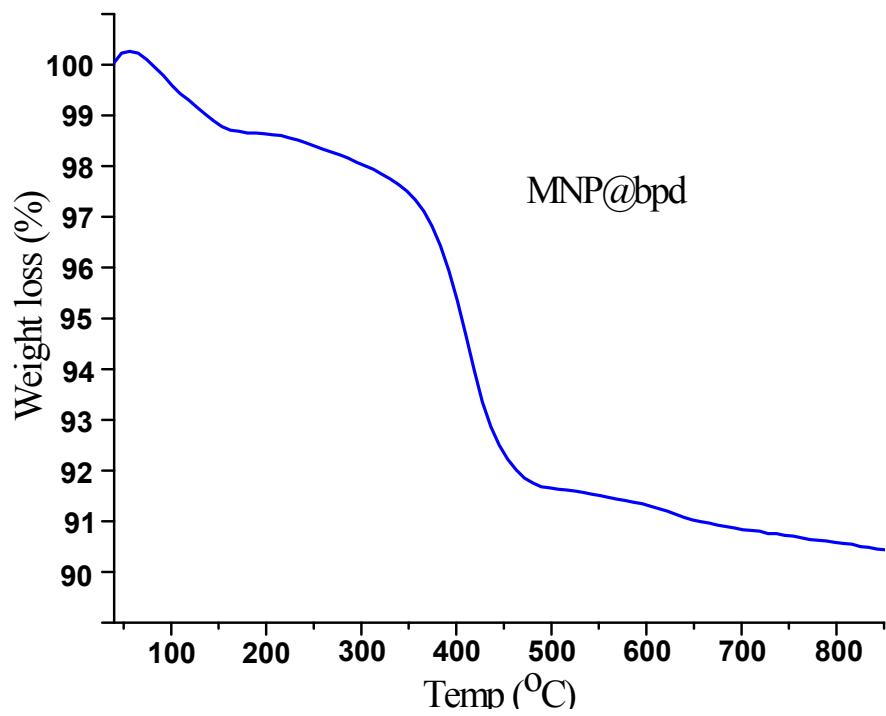
Data	Page Number
¹ H NMR spectrum (S1)	2
³¹ P NMR spectrum (S2)	3
TGA data (S3)	4
Table for Rietveld refinements results	5
GC and GC-MS spectra (S4-S12)	6-12



S1: ^1H NMR spectra of bis(diphenylphosphinomethyl) dopamine in $\text{DMSO}-d_6$ as solvent



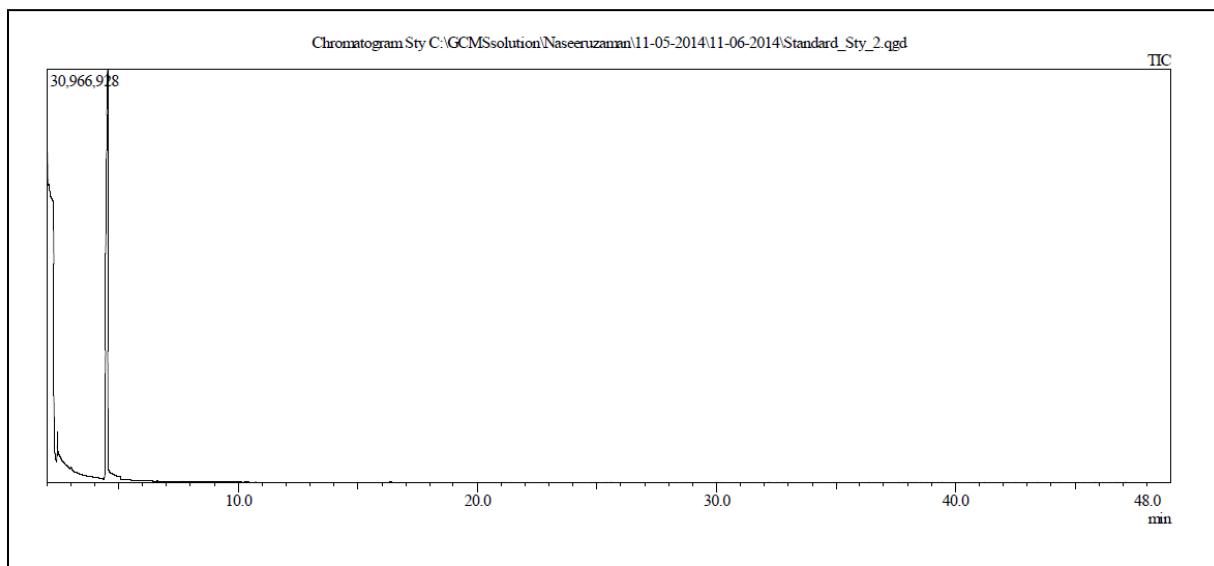
S2: ^{31}P NMR spectra of bis(diphenylphosphinomethyl) dopamine in $\text{DMSO}-d_6$ as solvent



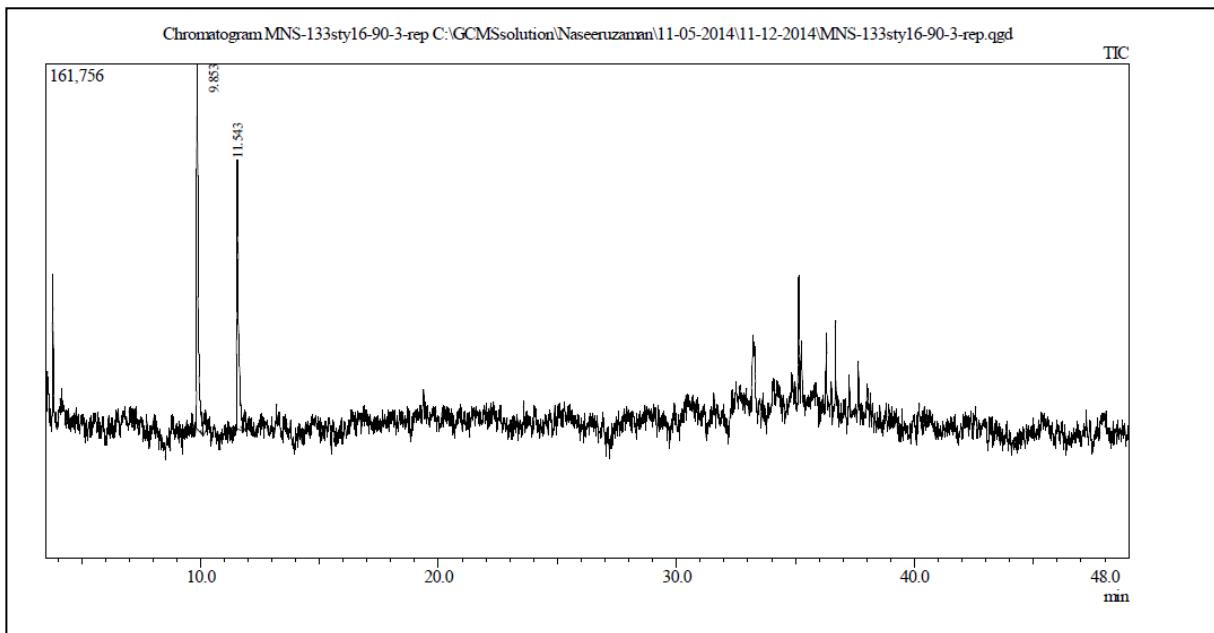
S3: TGA of the Fe₃O₄@bpd under argon atmosphere at 10°C/min heating rate

Table 1. Rietveld refinements results

Composition	Crystallite size (nm)	Microstrain (%)	Lattice parameter (Å)	Goodness of Fit (GoF)
Fe ₃ O ₄	7.0	0.160	a= 8.390 (7)	1.06
Fe ₃ O ₄ @bpd	7.2	0.421	a= 8.393 (8)	1.05



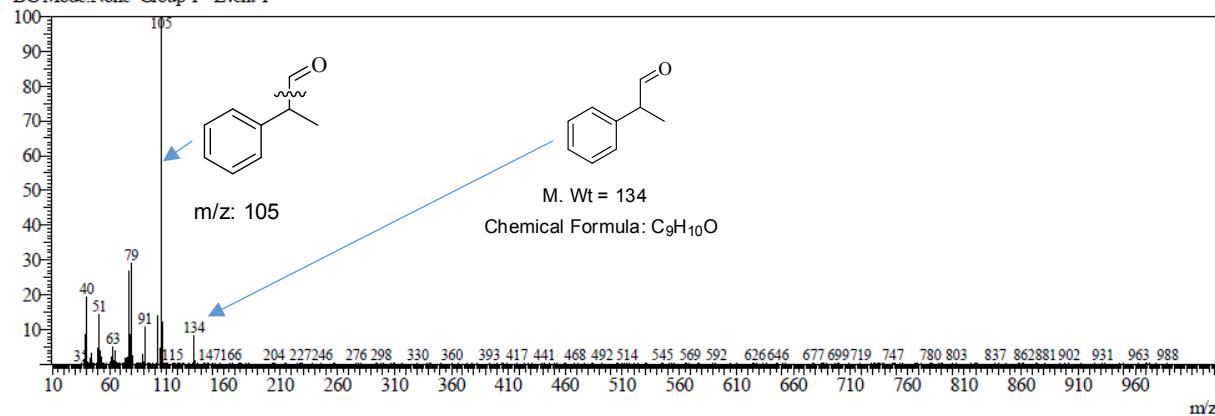
S4: GC spectrum of pure styrene in CH_2Cl_2



S5: GC spectrum of hydroformylated linear and branched product of styrene in CH_2Cl_2

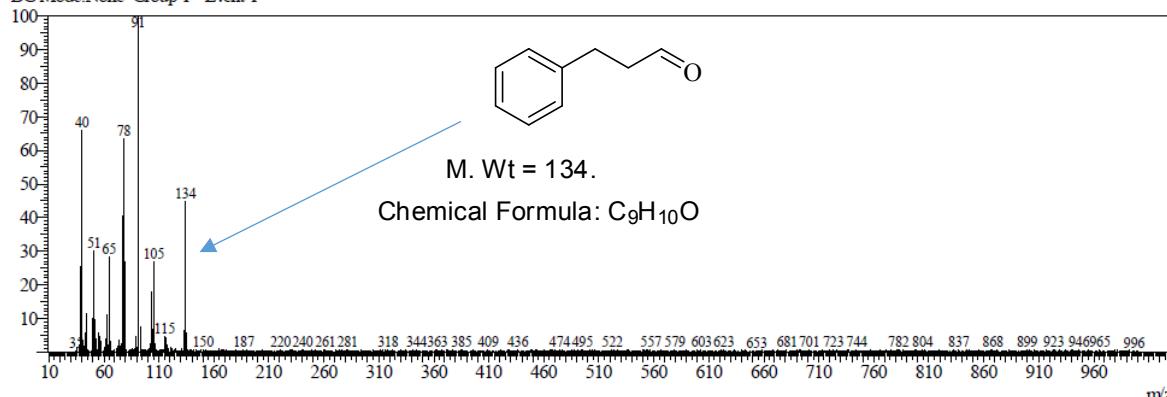
Line#1 R Time:9.855(Scan#:1272)
MassPeaks:901
RawMode:Single 9.855(1272) BasePeak:105(44127)
BG Mode:None Group 1 - Event 1

A

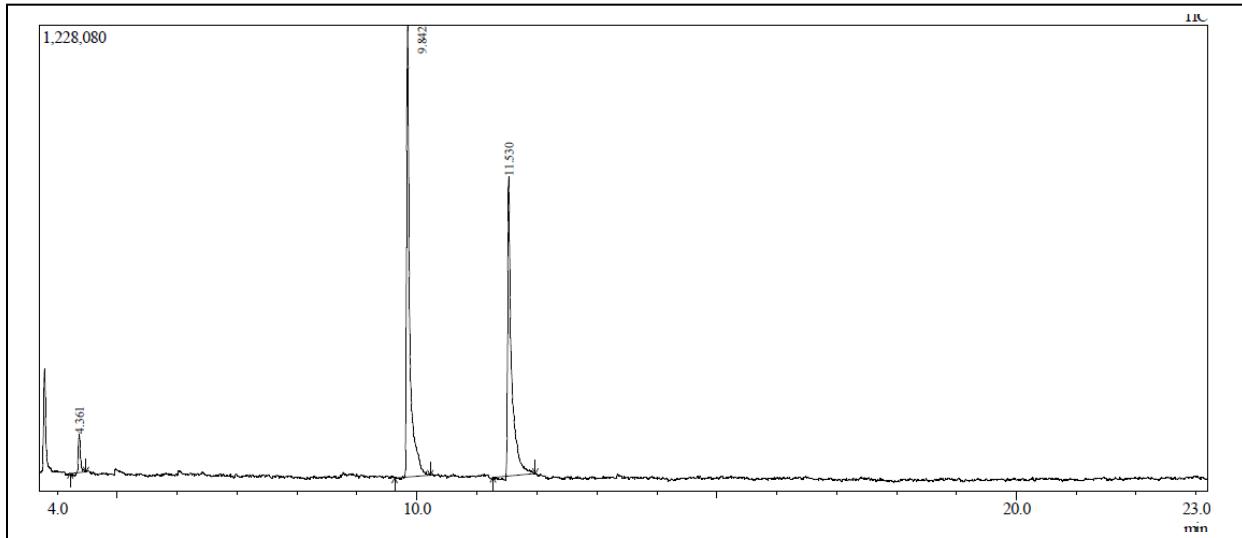


Line#2 R Time:11.565(Scan#:1614)
MassPeaks:923
RawMode:Single 11.565(1614) BasePeak:91(10506)
BG Mode:None Group 1 - Event 1

B



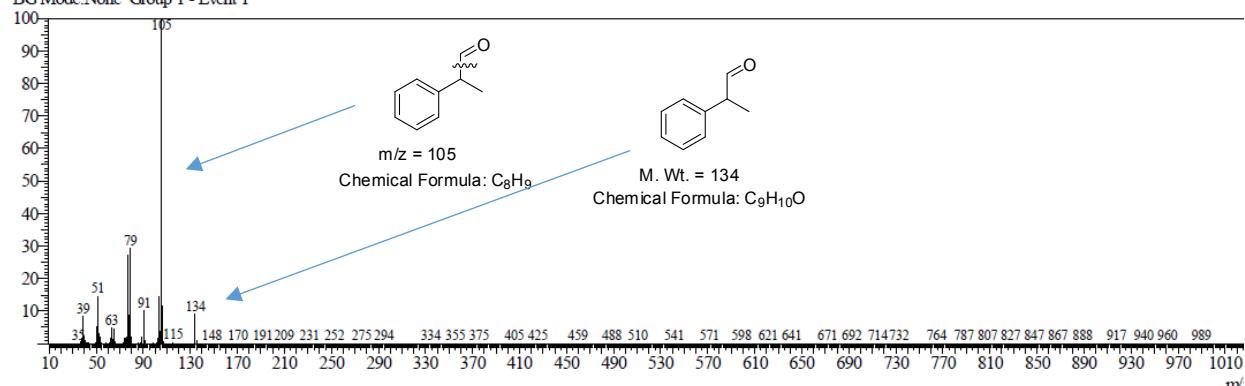
S6: Mass spectrum of hydroformylated A) branched and B) Linear product of styrene in CH₂Cl₂



S7: GC spectrum of hydroformylated linear and branched product of styrene in CH_2Cl_2 after 2nd cycle of the reaction

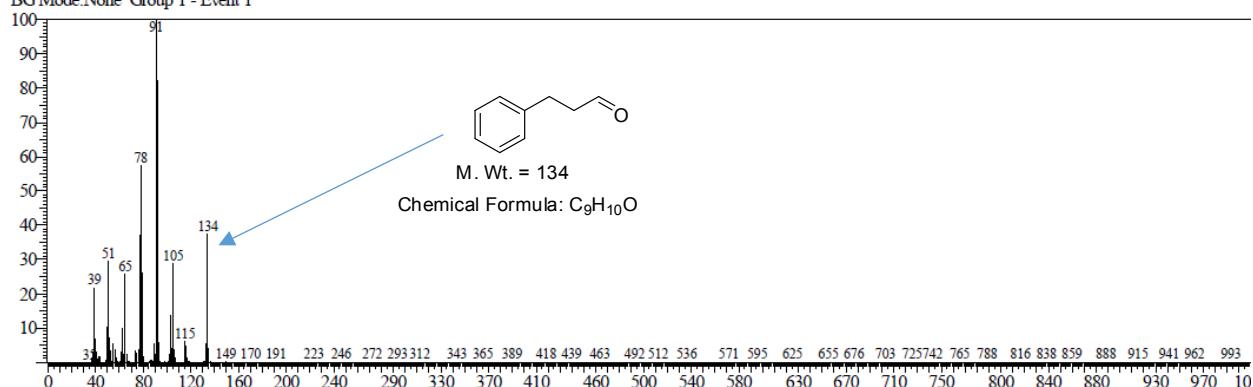
Line#2 R.Time:9.845(Scan#:1230)
 MassPeaks:868
 RawMode:Single 9.845(1230) BasePeak:105(419355)
 BG Mode:None Group 1 - Event 1

A

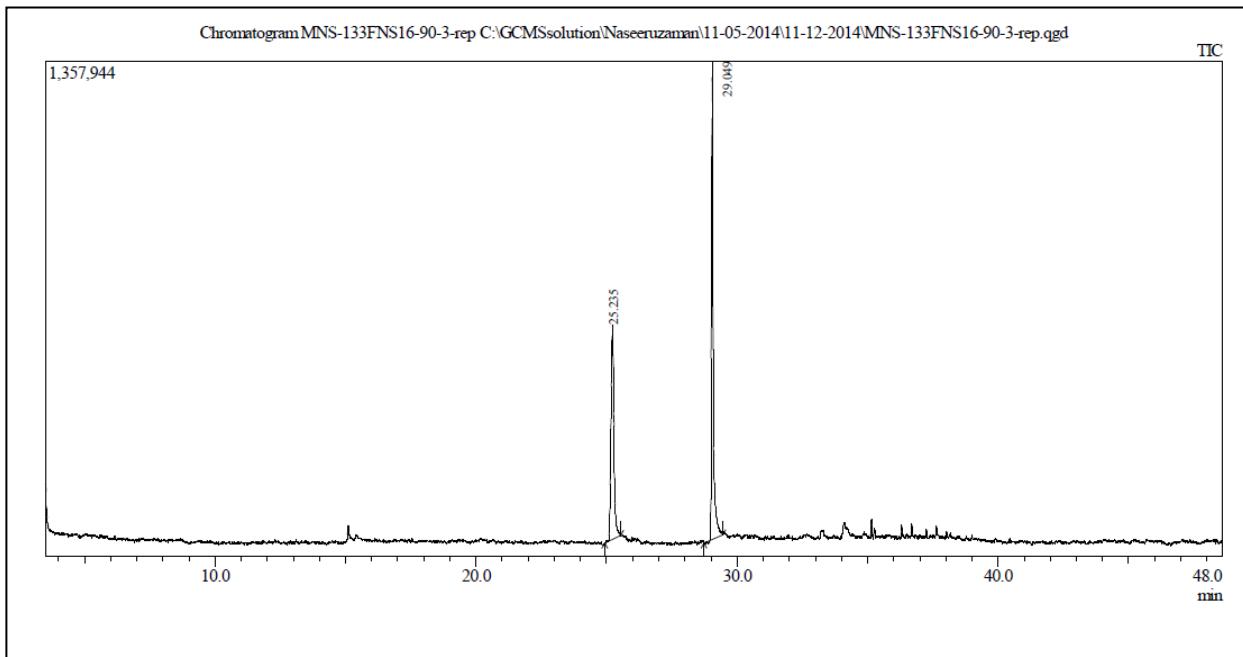


Line#3 R.Time:11.540(Scan#:1569)
 MassPeaks:837
 RawMode:Single 11.540(1569) BasePeak:91(121391)
 BG Mode:None Group 1 - Event 1

B



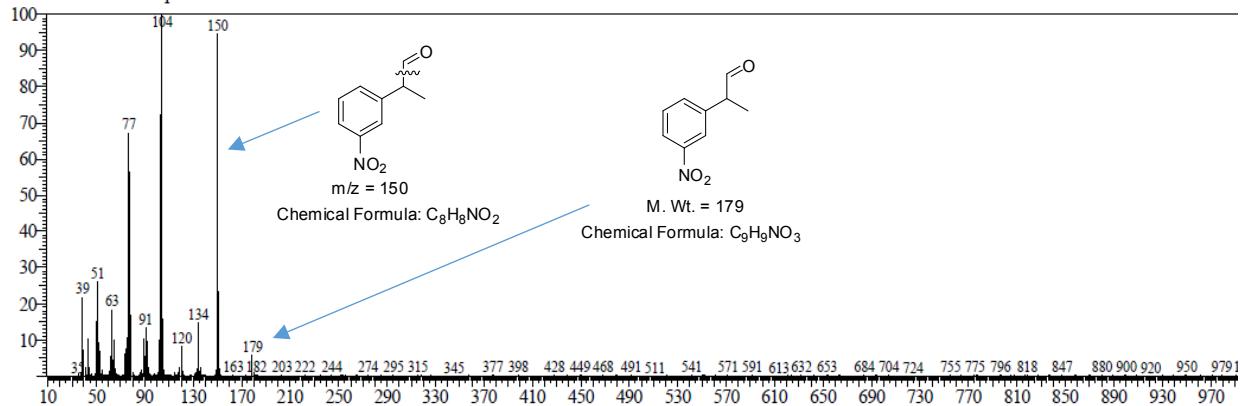
S8: Mass spectrum of hydroformylated A) Styrene (starting compound) B) branched and C) Linear product in CH_2Cl_2



S9: GC spectrum of hydroformylated linear and branched product of 3-nitro styrene in CH_2Cl_2

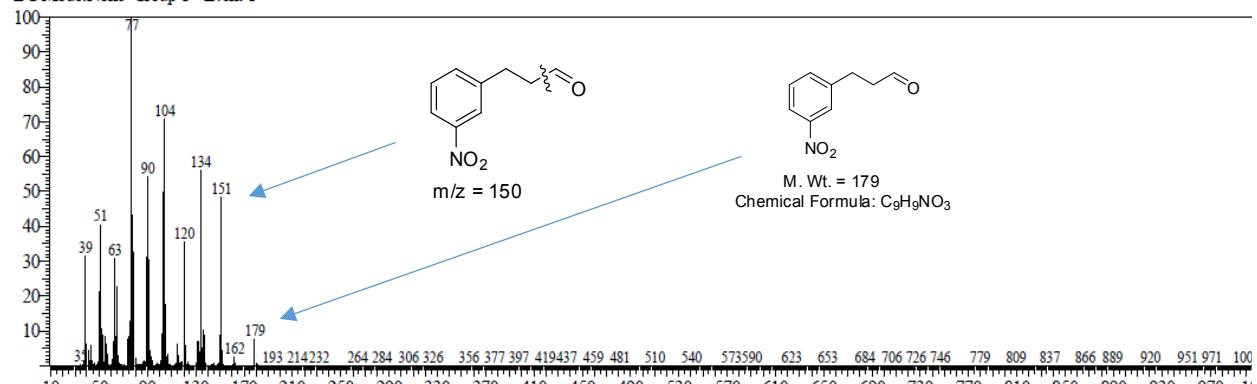
Line#1 R.Time:25.240(Scan#:4349)
 MassPeaks:869
 RawMode:Single 25.240(4349) BasePeak:104(81746)
 BG Mode:None Group 1 - Event 1

A



Line#2 R.Time:29.055(Scan#:5112)
 MassPeaks:877
 RawMode:Single 29.055(5112) BasePeak:77(133650)
 BG Mode:None Group 1 - Event 1

B



S10: Mass spectrum of hydroformylated A) branched and B) Linear product of 3-nitro styrene in CH_2Cl_2

