Electronic Supplementary Material (ESI) for RSC Advances.

Supplementary figures

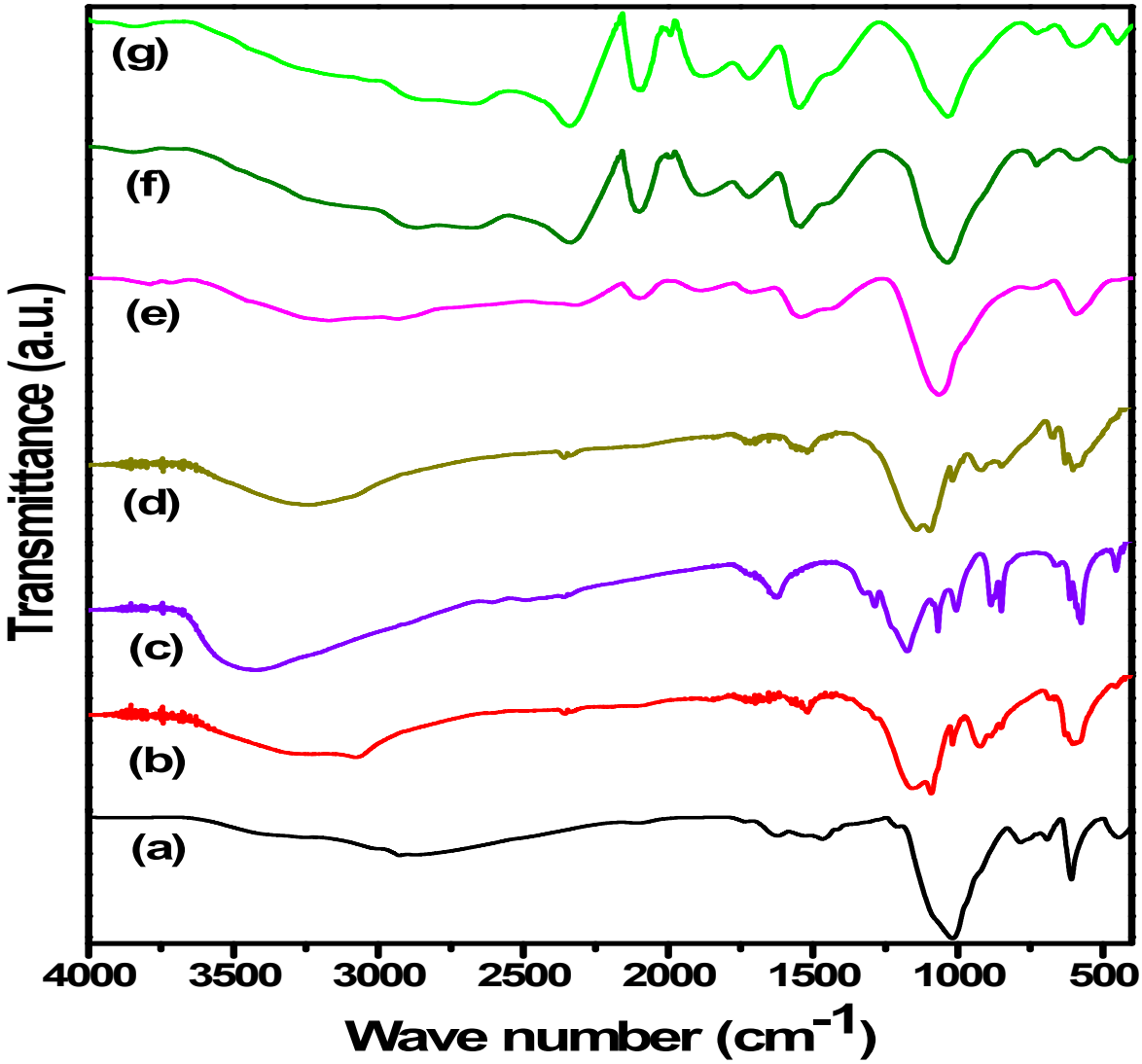


Figure S1: FTIR spectra (4000-400) of (a) AAPTMS@GO, (b) Ni-AAPTMS@GO, (c) Cu-AAPTMS@GO, (d) (1:1) Cu-Ni-AAPTMS@GO, (e) (1:1) Cu(0)-Ni(0)-AAPTMS@GO, (f) (1:2) Cu(0)-Ni(0)-AAPTMS@GO, and (g) (2:1) Cu(0)-Ni(0)-AAPTMS@GO.

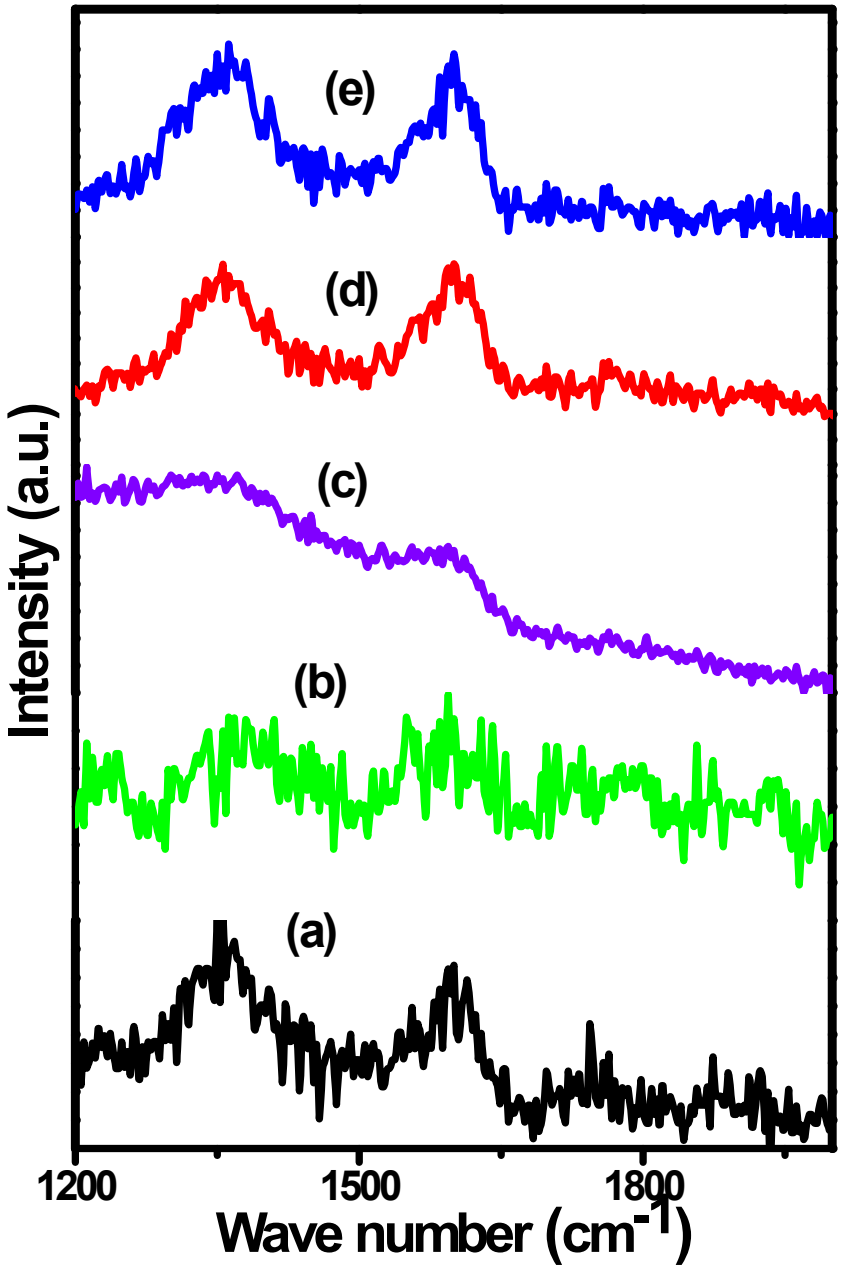


Figure S2: Raman spectra (1200-2000) of AAPTMS@GO (a), Cu-AAPTMS@GO (b), Ni-AAPTMS@GO (c), (1:1) Cu-Ni-AAPTMS@GO (d) and (1:1) Cu(0)-Ni(0)-AAPTMS@GO (e).

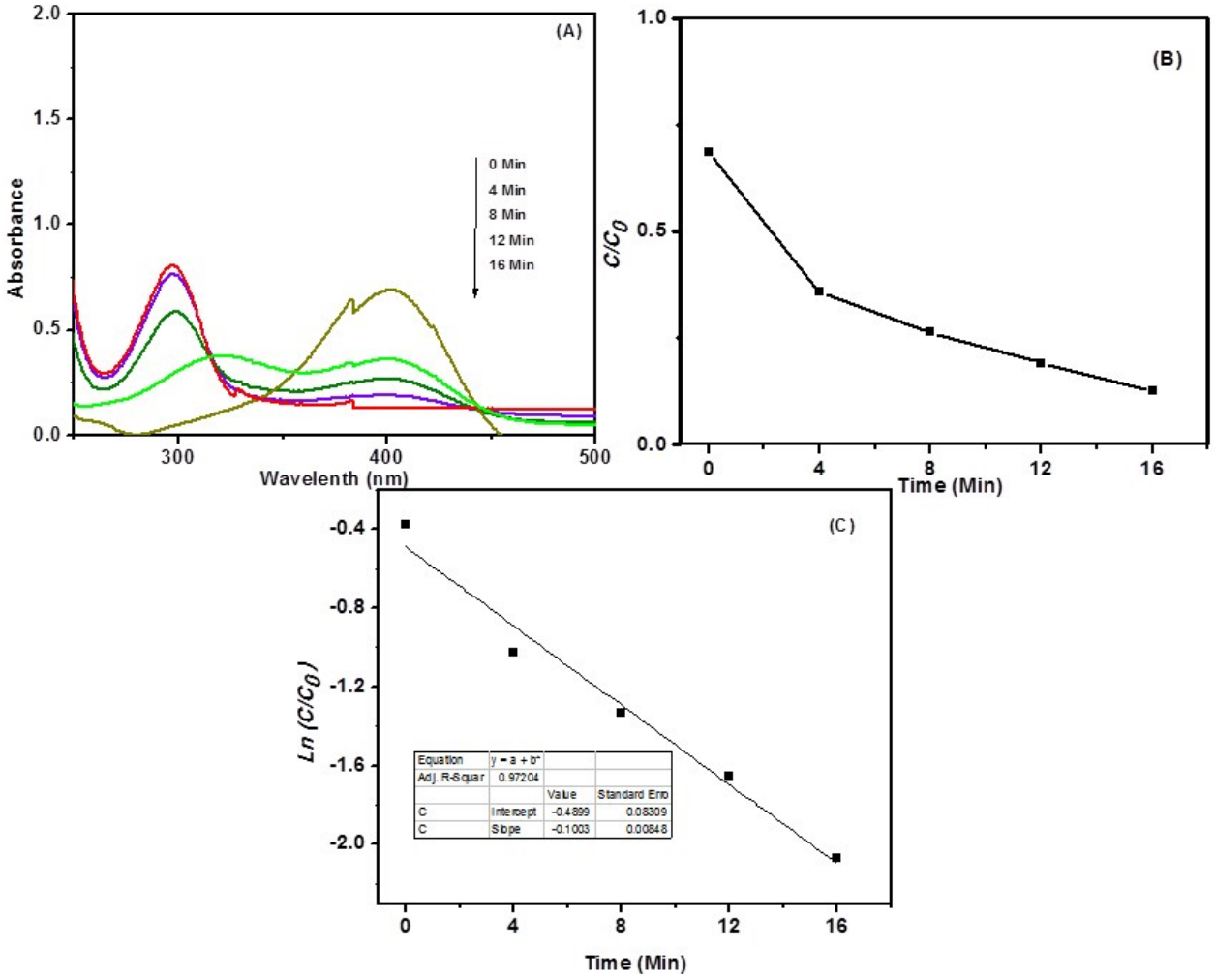
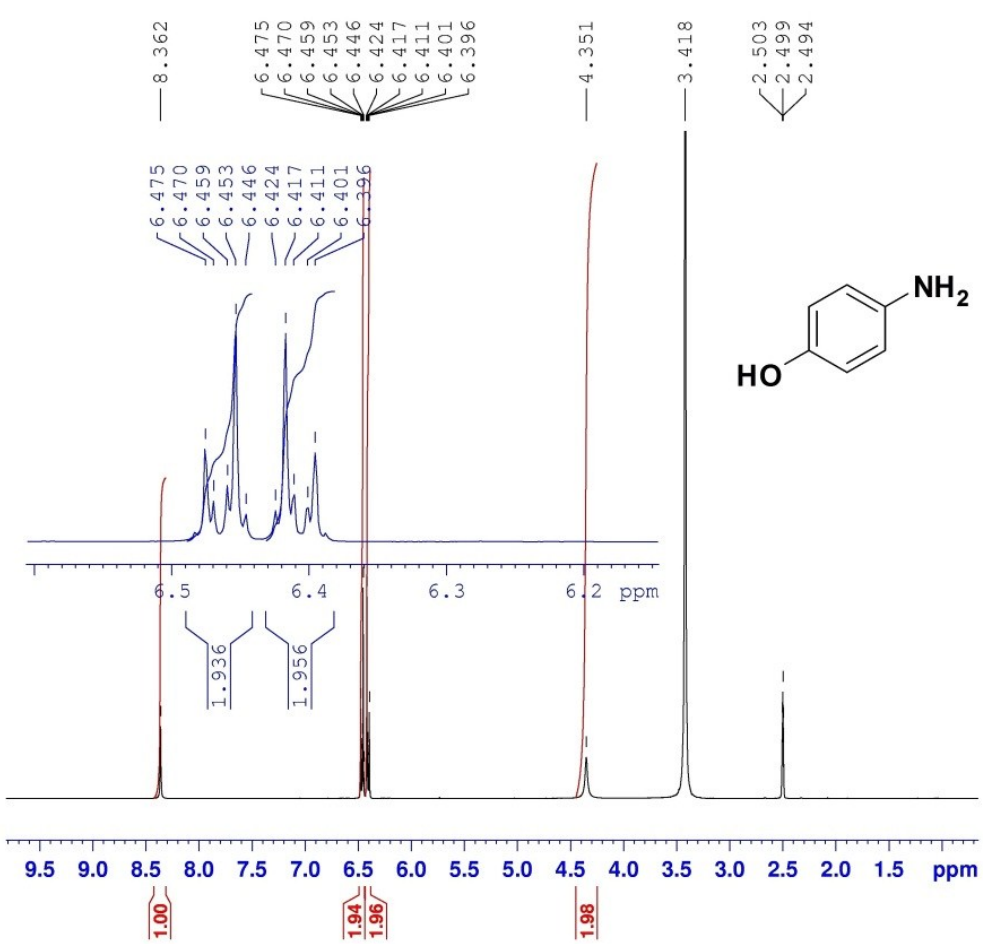


Figure S3: (A) UV–Vis absorption spectra during the catalytic reduction of p-nitrophenol over (1:1) Cu(0)-Ni(0)-AAPTMS@GO catalyst. (b) C/C0 and (c) ln(C/C0) versus reaction time for the reduction of p-nitro phenol over (1:1) Cu(0)-Ni(0)-AAPTMS@GO catalyst.



BRUKER

NAME	Feb08-2016-SBJ-Rana
EXPNO	20
PROCNO	1
Date_	20160209
Time	12.36
INSTRUM	spect
PROBHD	5 mm PABBO BB-
PULPROG	zg30
TD	32768
SOLVENT	DMSO
NS	16
DS	2
SWH	8223.685 Hz
FIDRES	0.250967 Hz
AQ	1.9923444 sec
RG	203
DW	60.800 usec
DE	6.50 usec
TE	298.3 K
D1	1.00000000 sec
TD0	1
======== CHANNEL f1 ========	
NUC1	1H
P1	10.00 usec
PL1	-3.00 dB
PL1W	15.48668575 W
SFO1	400.2224715 MHz
SI	16384
SF	400.2200000 MHz
WDW	EM
SSB	0
LB	0.30 Hz
GB	0
PC	1.00

Figure S4 (a): ^{1}H NMR spectrum of final product (p-aminophenol).

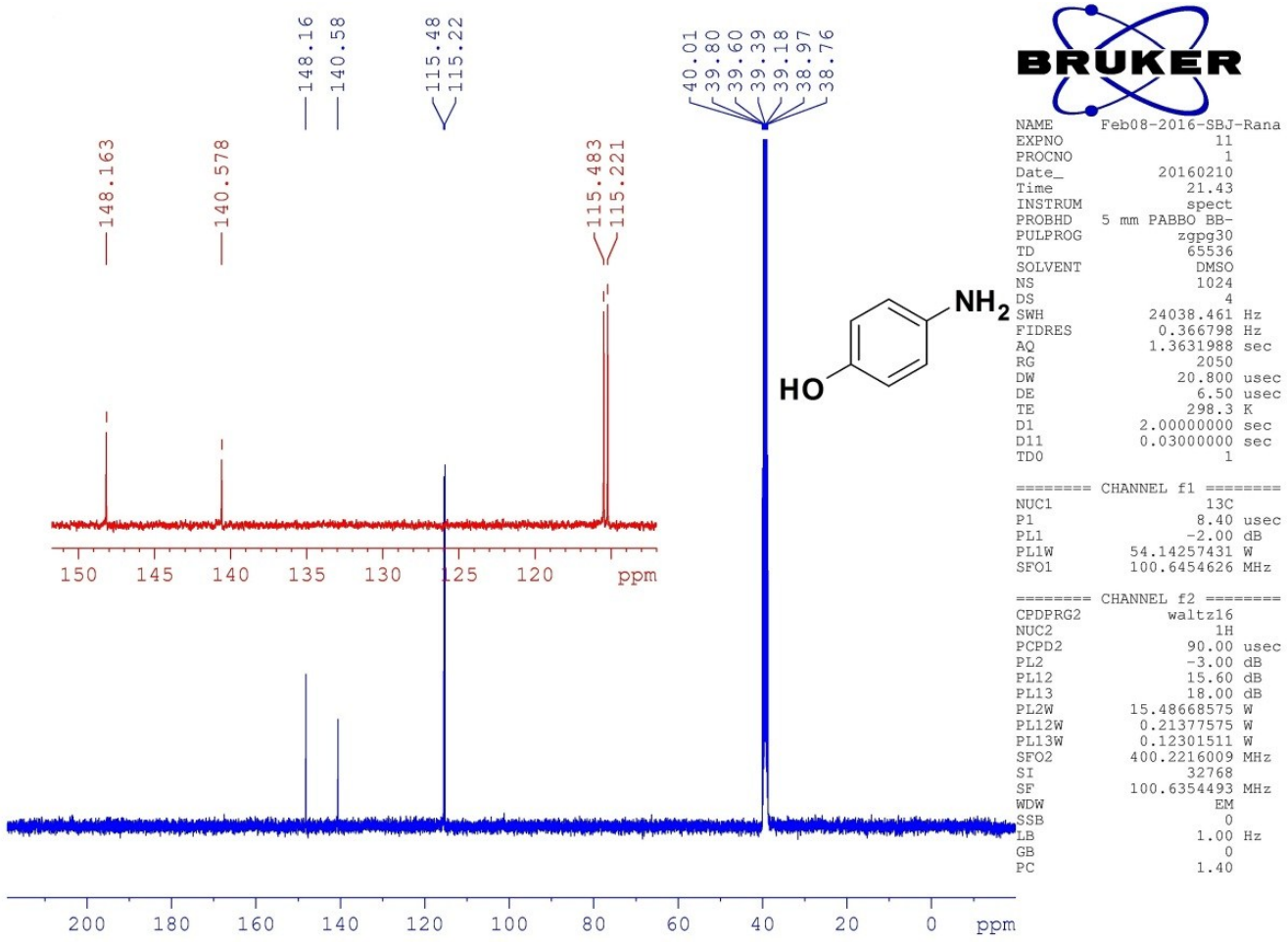


Figure S4(b): ^{13}C NMR spectrum of final product (p-aminophenol).

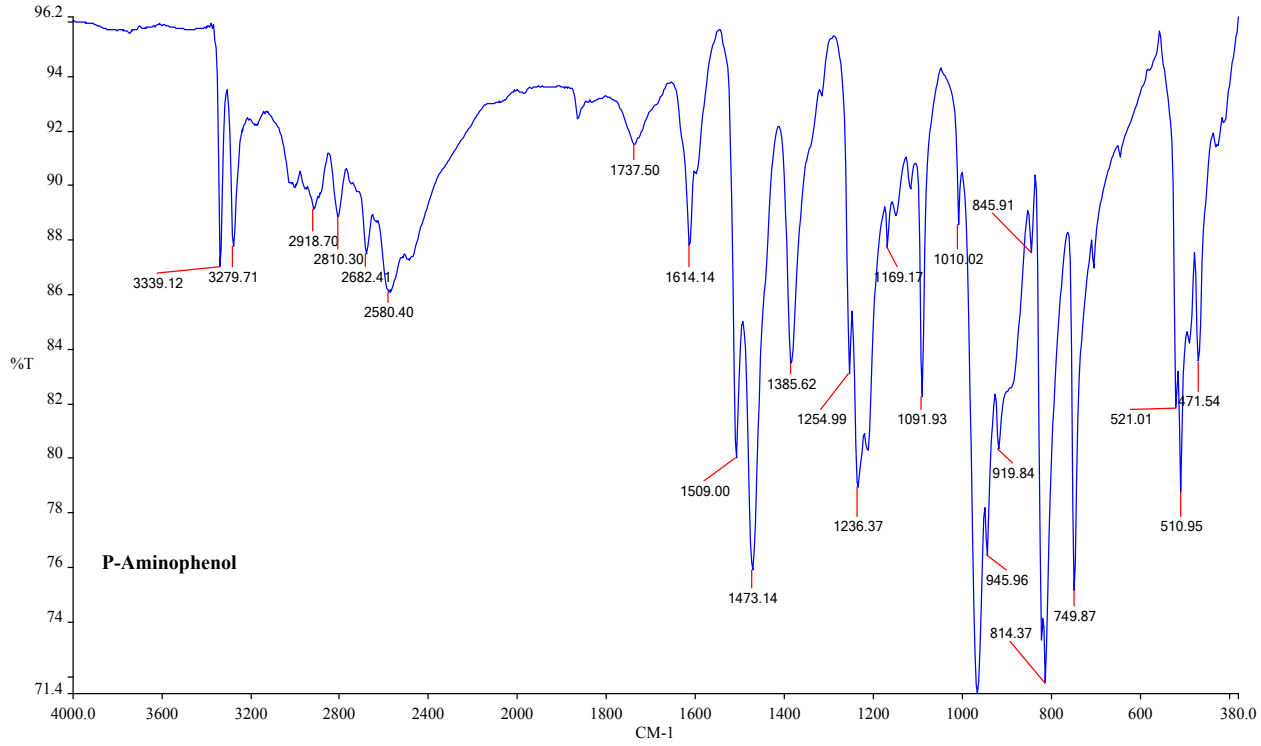


Figure S4(c): FTIR spectrum of final product (p-aminophenol).

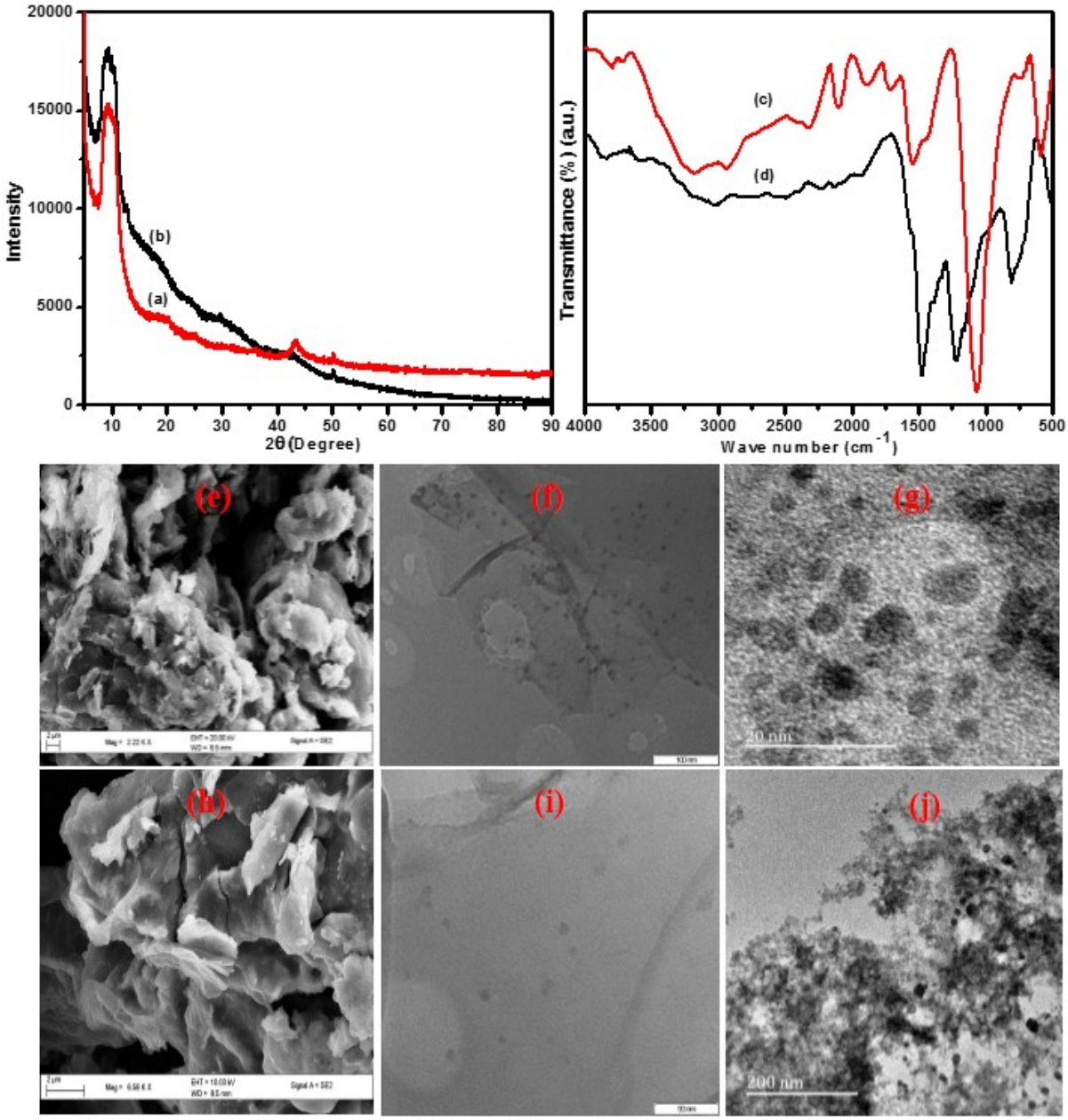


Figure S5: XRD of (a) 6th cycle (b) 7th cycle of reused catalyst and FTIR spectra of (c) 6th cycle (d) 7th cycle of reused catalyst, SEM image of (e) 6th cycle (scale bar = 2μm) (h) 7th cycle (scale bar = 2μm), TEM image of (f) 6th cycle (scale bar =100 nm) (i) 7th cycle (scale bar = 50 nm), and HRTEM analysis of (g) 6th cycle (scale bar =20 nm) (j) 7th cycle (scale bar = 200 nm) of reused (1:1) Cu(0)-Ni(0)-AAPTMS@GO catalyst.