Electronic Supplementary Material (ESI) for New Journal of Chemistry.
This journal is © The Royal Society of Chemistry and the Centre National de la Recherche Scientifique 2017

Supporting Information

Augmenting the catalytic performance of spinel nanoferrites ($CoFe_2O_4$ and $NiFe_2O_4$) via incorporation of Al in to the lattice

Ankita Goyal[a], S. Bansal[b], B. Chudasama[c], K.B. Tikoo[d], V. Kumar[d] and Sonal Singhal[a*]

[a]Department of Chemistry, Panjab University, Chandigarh, 160014, India.
[b]Department of Science and Technology, New Delhi
[c]School of Physics & Materials Science, Thapar University, Patiala, 147004, India.
[d]HRTEM Lab Facility , NIPER, SAS Nagar-160062, Punjab, India.

[*]sonal1174@gmail.com; sonal@pu.ac.in

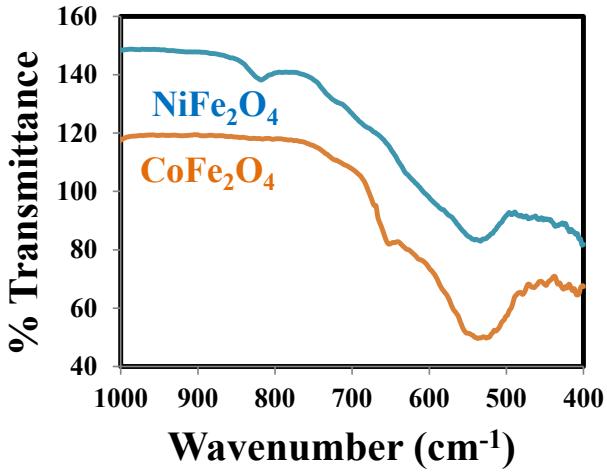


Fig. S1. The FT-IR spectra for $CoFe_2O_4$ and $NiFe_2O_4$ spinel nanoferrites.

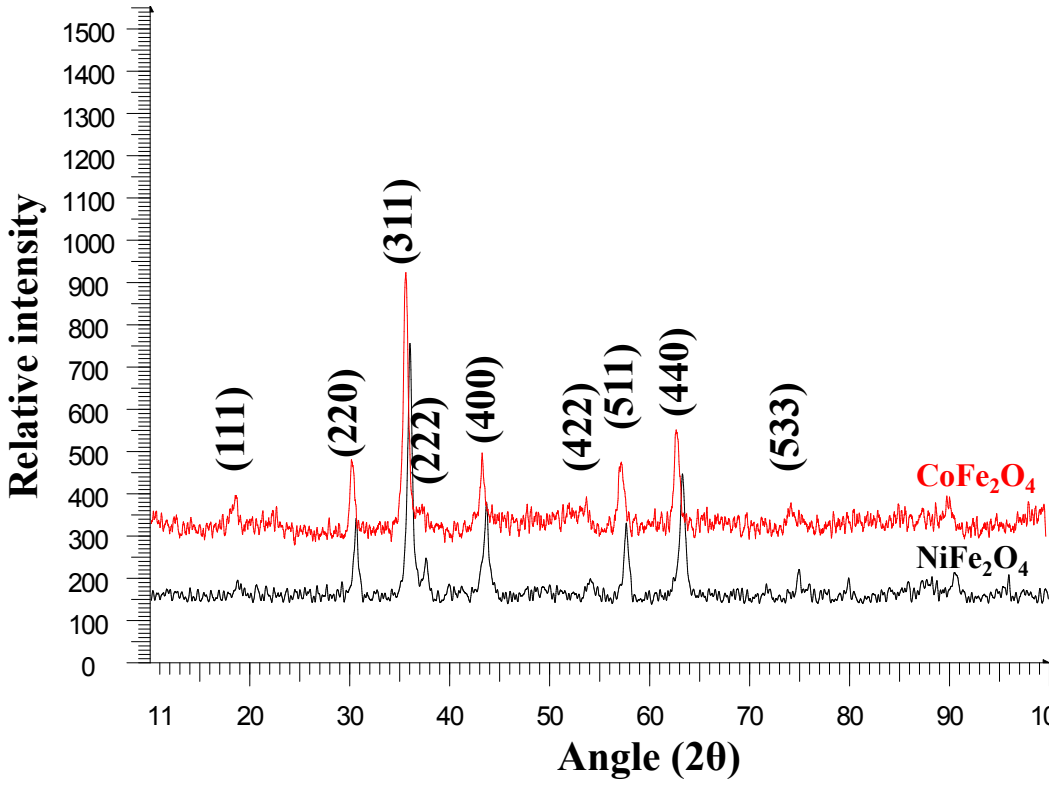


Fig. S2. The powder XRD patterns for $NiFe_2O_4$ and Co Fe_2O_4 nanoferrites.

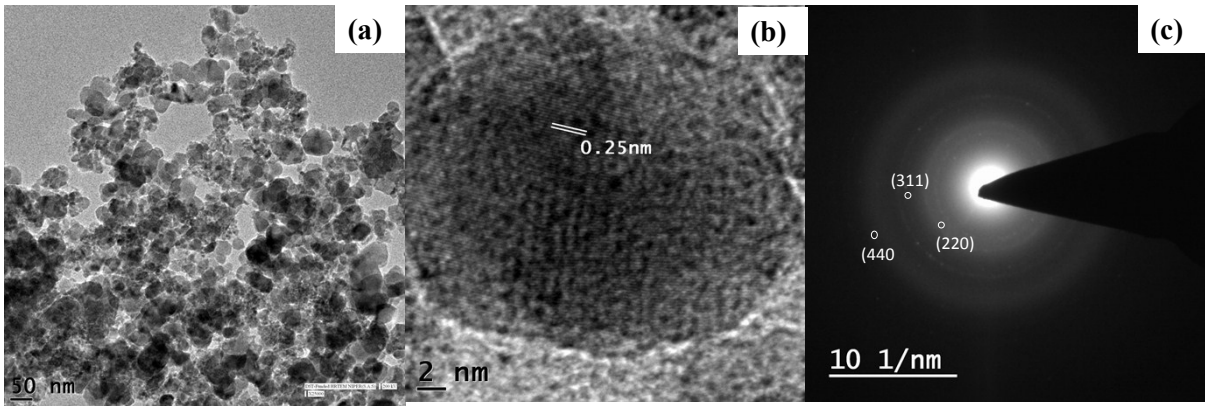


Fig. S3. HR-TEM images displaying (a) Quasi-spherical particles, (b) interplanar spacing and (c) SAED pattern for $CoFe_2O_4$.

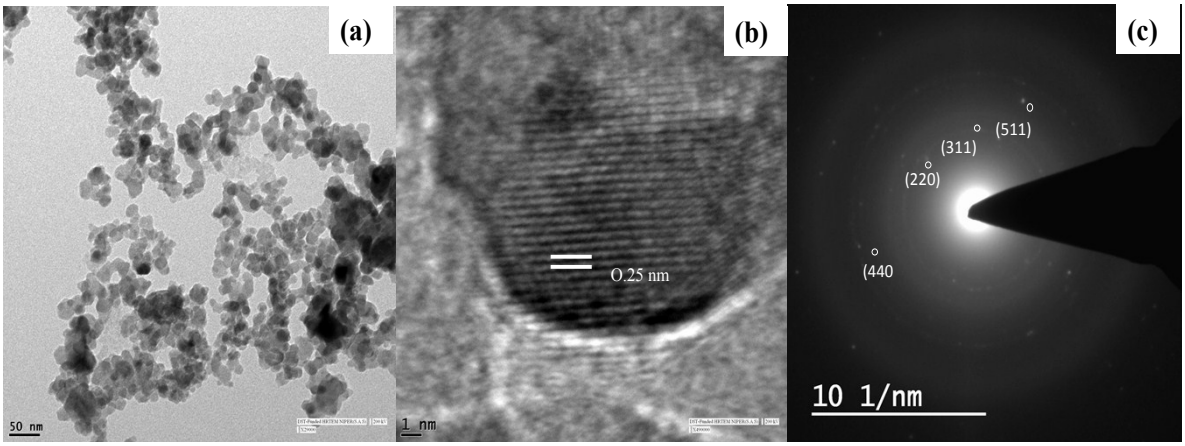


Fig. S4. HR-TEM images displaying (a) Quasi-spherical particles, (b) interplanar spacing and (c) SAED pattern for $NiFe_2O_4$.

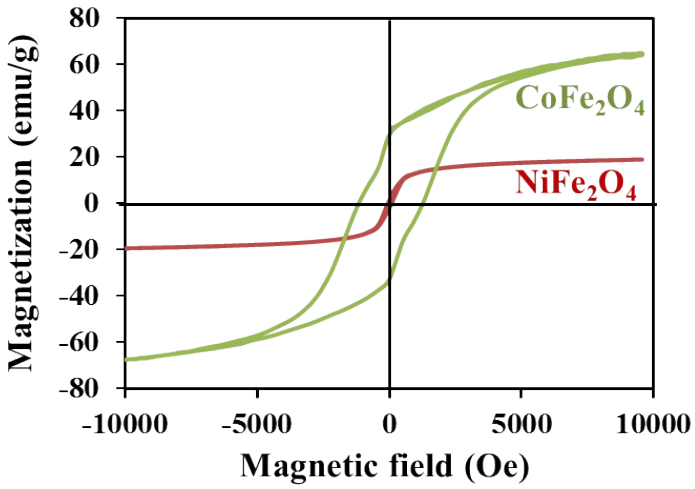


Fig. S5. Room temperature hysteresis loops for $CoFe_2O_4$ and $NiFe_2O_4$.

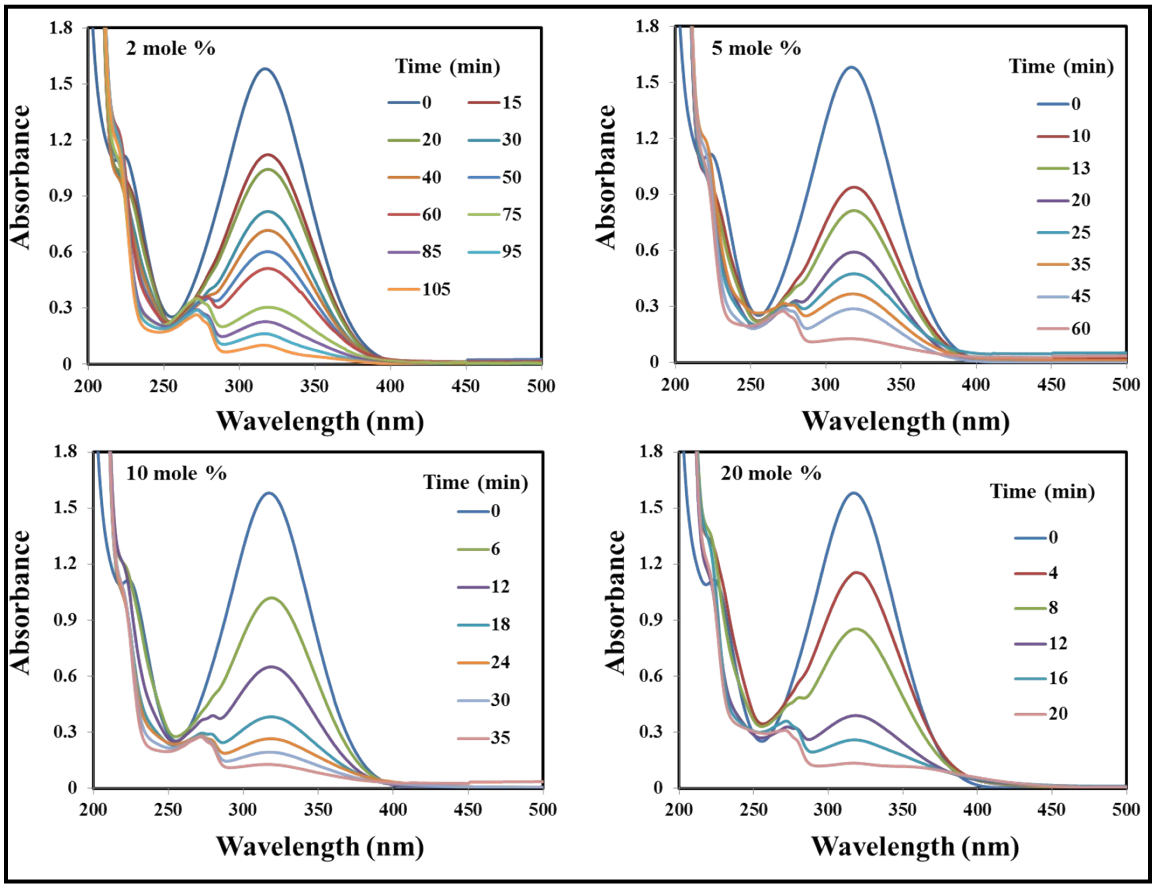


Fig. S6. Time dependent UV-visible spectra for the reduction of 4-NP in the presence of varying amounts of $CoAl_{0.6}Fe_{1.4}O_4$.

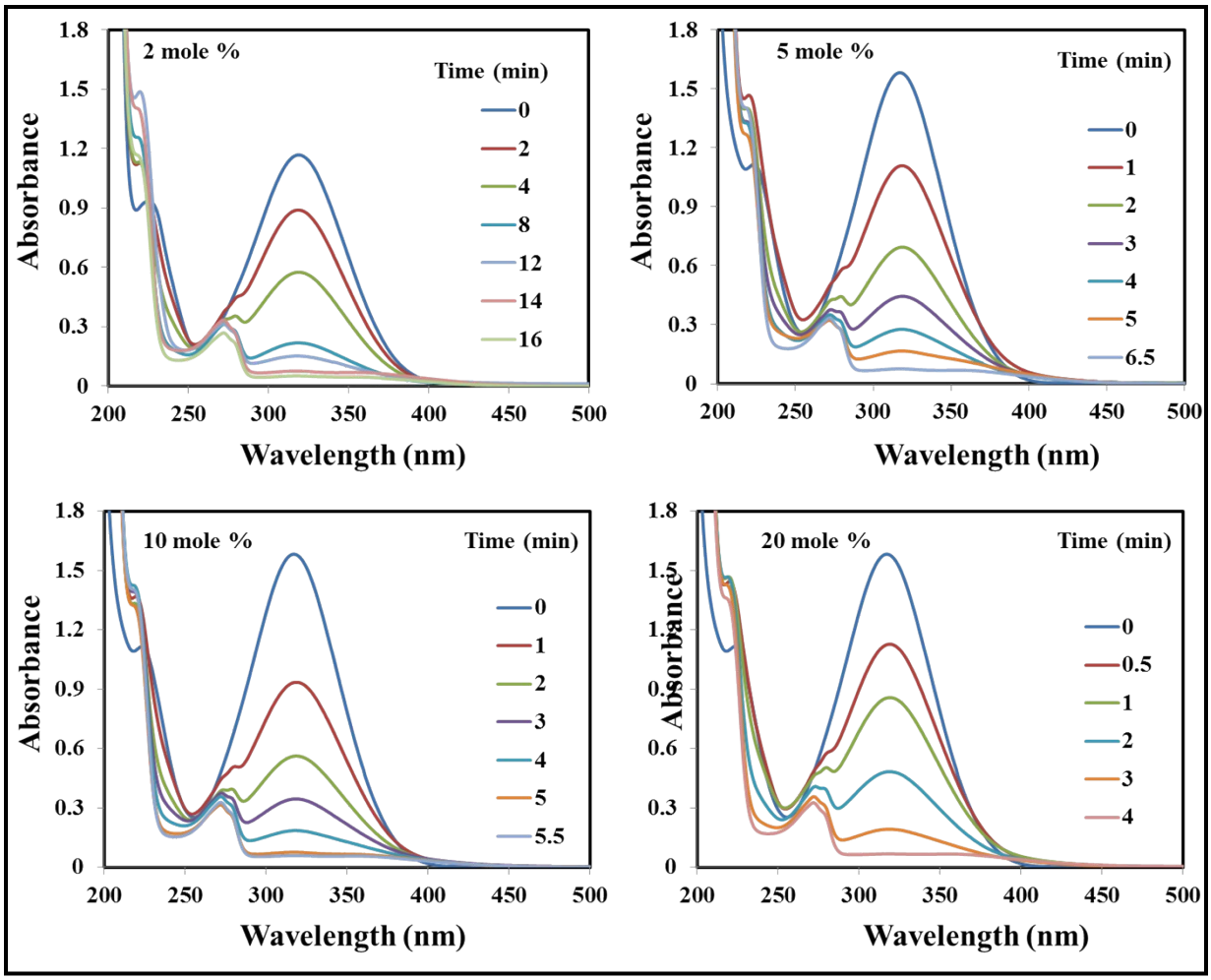


Fig. S7. Time dependent UV-visible spectra for the reduction of 4-NP in the presence of varying amounts of $NiAl_{0.6}Fe_{1.4}O_4$.

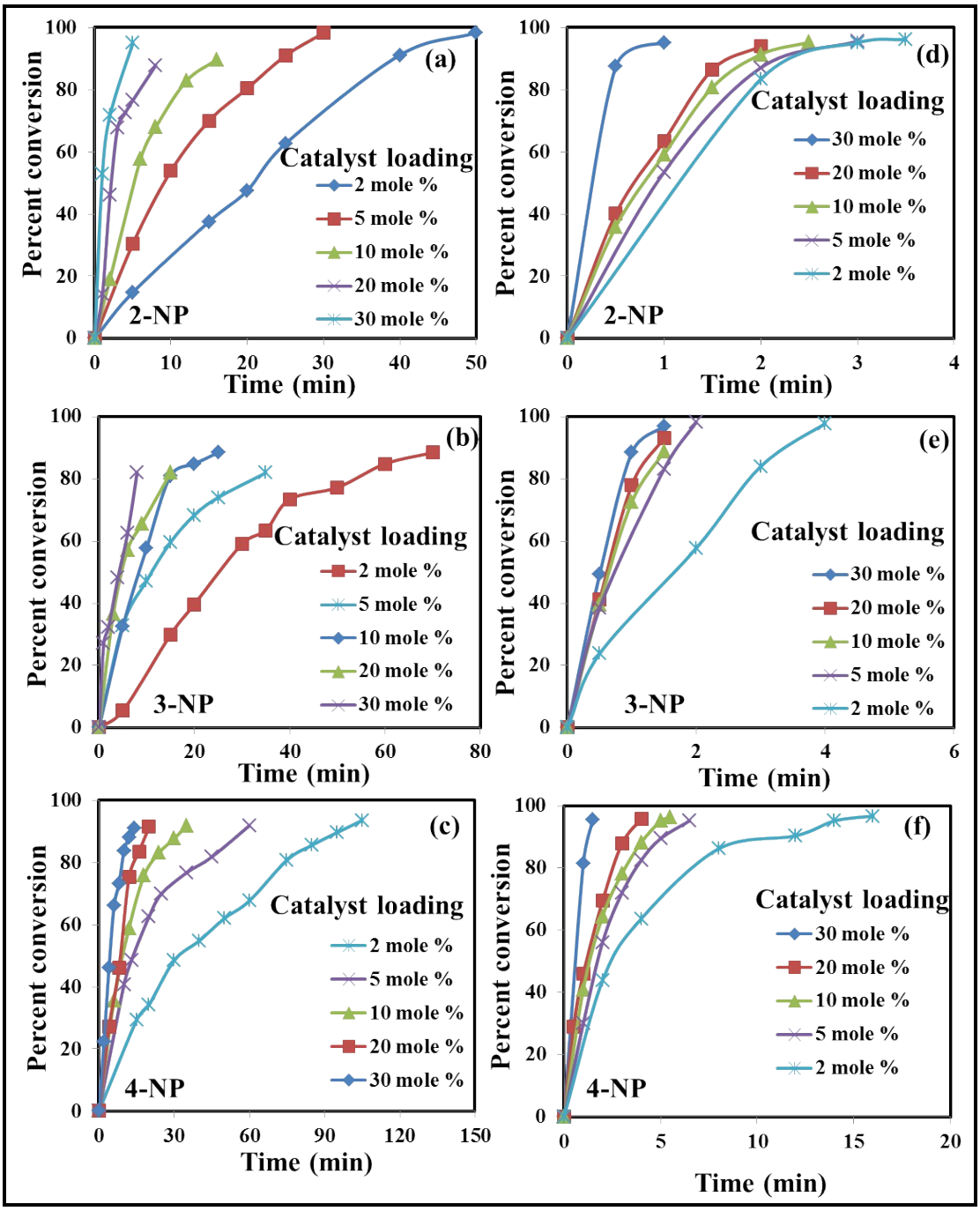


Fig. S8. Typical % Conversion *vs.* Time curves for the reduction of (a) 2-NP, (b) 3-NP and (c) 4-NP in the presence of varying amounts of $CoAl_{0.6}Fe_{1.4}O_4$ and (d) 2-NP, (e) 3-NP and (f) 4-NP in the presence of varying amounts of $NiAl_{0.6}Fe_{1.4}O_4$ as catalysts respectively.

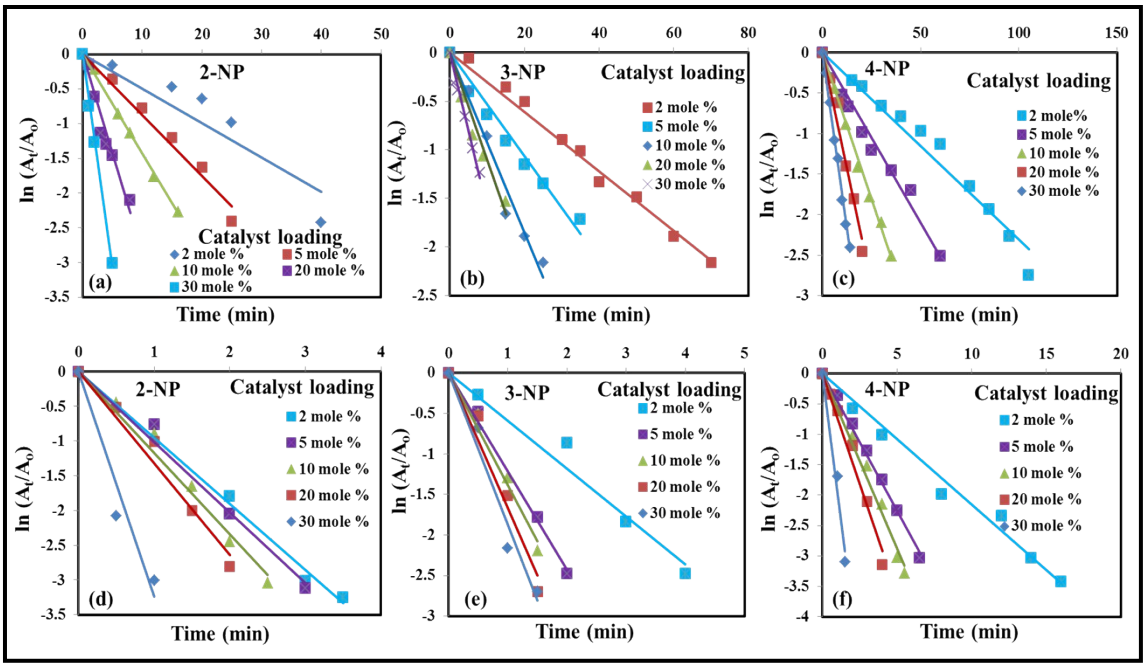


Fig. S9. Typical $\ln(A_t/A_0)$ *vs.* Time curves for the reduction of (a) 2-NP, (b) 3-NP and (c) 4-NP in the presence of varying amounts of $CoAl_{0.6}Fe_{1.4}O_4$ and (d) 2-NP, (e) 3-NP and (f) 4-NP in the presence of varying amounts of $NiAl_{0.6}Fe_{1.4}O_4$ as catalysts respectively.

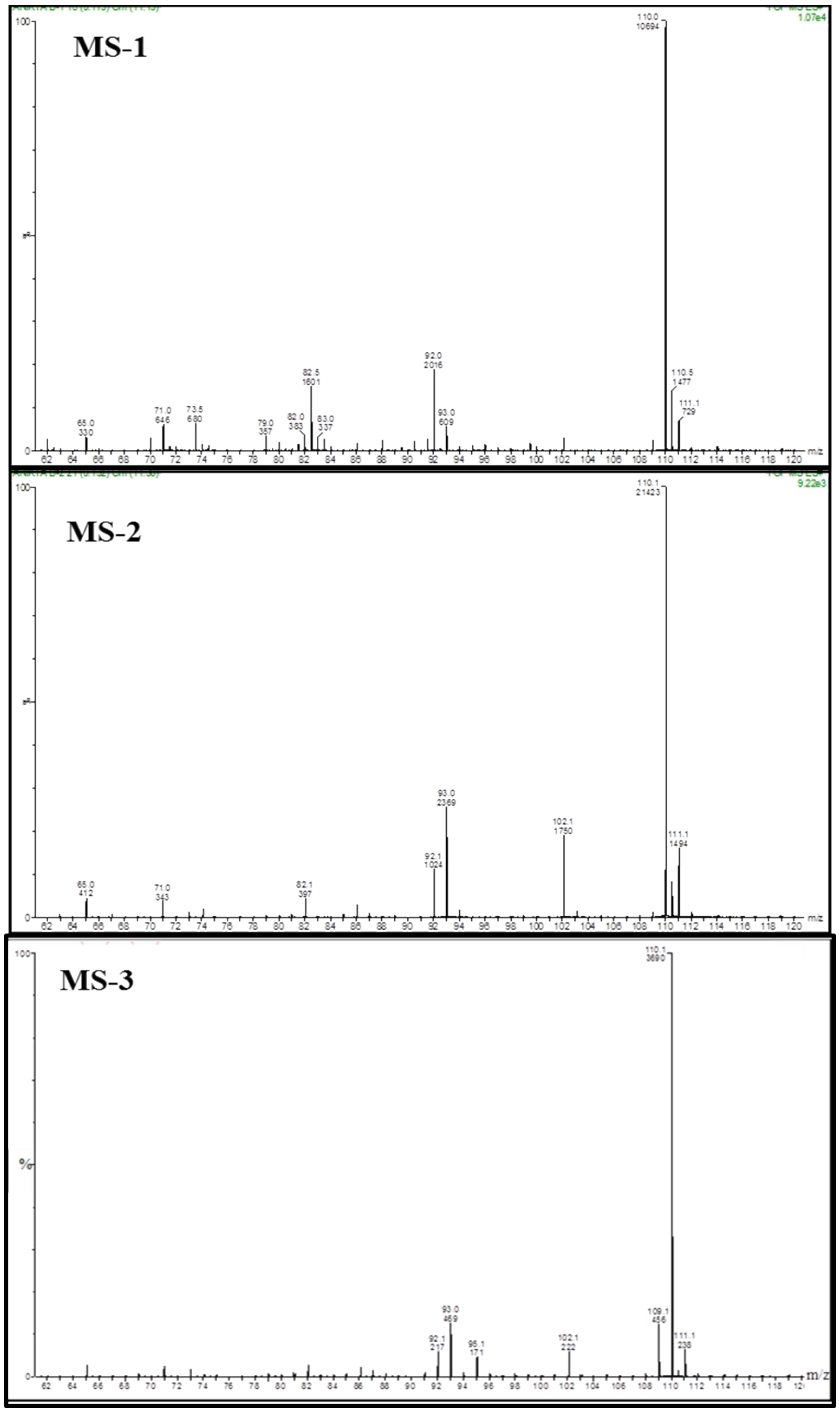
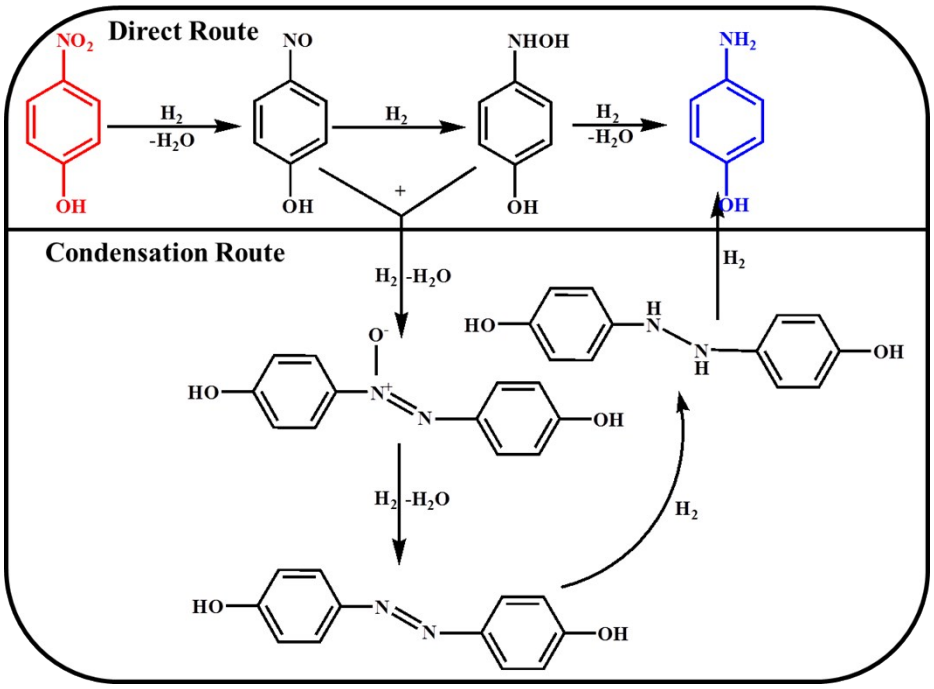


Fig. S10. Mass spectra for the reduction product of 2-NP (MS-1), 3-NP (MS-2) and 4-NP (MS-3).



Scheme. S1. Representation of the direct route and the condensation route for the reduction of nitrophenols.