Supporting Information for

Nickel-Antimony Nanoparticles Confined in SBA-15 as a Highly Efficient Catalyst for the Hydrogenation of Nitroarenes

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Main properties of aminopropyl-functionalized SBA-15

The anchoring of nanoparticles on the solid supports such as SBA-15 is carried out by using organic molecules grafted on the solid surface, whose terminal functional groups are selected for their electrostatic or chemical interactions with the nanoparticles. The molecules commonly used for the functionalization are organosilane with up to three hydrolysable groups (either −OR or −Cl) that would react with the silanols groups of the SBA-15 surface and a nonhydrolysable group bearing the terminal function responsible for the interaction with the nanoparticles. Among the large variety of organosilanes, aminopropyltriethoxysilane (APTES) is the most studied surface modifier. APTES is relatively easy to handle due to its moderate reactivity. The three hydrolysable ethoxy groups ensure a robust anchoring of the silane to the surface of support, whereas the amine function of the aminopropyl group remains available for further reaction. Terminal amine functions are extensively used for surface functionalization because they easily react electrostatically with metal ions or metal nanoparticles.
Figure S1. The comparison of PXRD pattern of Ni$_{0.3}$Sb$_{0.7}$/SBA-15 and Ni$_{0.52}$Sb$_{0.48}$/SBA-15 with Ni$_{0.15}$Sb$_{0.85}$ and NiSb simulated patterns.
Figure S2. The comparison of PXRD of Ni$_{0.7}$Sb$_{0.3}$/SBA-15 with simulated Ni XRD pattern.
Figure S3. The comparison of XRD pattern of monometallic Ni and Sb supported SBA-15 with Ni and Sb simulated patterns.
Figure S4. TEM images of SBA-15 showing a) well ordered hexagonal planes and b) Pore openings.

Figure S5. TEM-EDAX of Ni$_{0.52}$Sb$_{0.48}$/SBA-15 catalyst.
Figure S6. UV-Vis absorption spectra for the reduction of p-NP to p-AP by Sb/SBA-15 catalyst.
Figure S7. Powder XRD comparison of the main peak corresponding to (101) plane of NiSb/SBA-15 catalyst with the corresponding simulated bulk material.
**Figure S8.** UV-Vis absorption spectra (a) and plot of ln A of 4-NA at 400 nm vs. reduction time (b) for the reduction of p-NA to PPD by Ni_{0.52}Sb_{0.48}/SBA-15.
Figure S9. UV-Vis absorption spectra and plot of ln A of p-nitro aniline at 400 nm vs. reduction time for the reduction of p-nitroaniline to p-phenylenediamine by Ni$_{0.35}$Sb$_{0.65}$/SBA-15 (and d), Ni$_{0.52}$Sb$_{0.48}$/SBA-15 (band e) and Ni$_{0.70}$Sb$_{0.30}$/SBA-15 (c and f).
Figure S10. UV-Vis absorption spectra (a) and plot of ln A of p-nitro aniline at 400 nm vs. reduction time (b) for the reduction of p-nitroaniline to p-phenylenediamine by Ni/SBA-15.
Figure S11. UV-Vis absorption spectra and plot of ln A of p-chloronitrobenzene at 235 nm vs. reduction time for the reduction of p-chloronitrobenzene (4CNB) to p-chloroaniline (4CA) by Ni$_{0.35}$Sb$_{0.65}$/SBA-15 (a and d), Ni$_{0.52}$Sb$_{0.48}$/SBA-15 (b and e) and Ni$_{0.70}$Sb$_{0.30}$/SBA-15 (c and f).
**Figure S12.** UV-Vis absorption spectra (a) and plot of ln A of p-chloronitrobenzene at 235 nm vs. reduction time (b) for the reduction of p-chloronitrobenzene (4-CNB) to p-chloroaniline (4CA) by Ni/SBA-15.
FigureS13. UV-Vis absorption spectra and plot of ln A of nitrobenzene at 230 nm vs. reduction time for the reduction of nitrobenzene to aniline by a Ni$_{0.35}$Sb$_{0.65}$/SBA-15, Ni$_{0.52}$Sb$_{0.48}$/SBA-15 (band c) and Ni$_{0.70}$Sb$_{0.30}$/SBA-15 (c and f).
Figure S14. UV-Vis absorption spectra (a) and plot of ln A of nitrobenzene at 230 nm vs. reduction time (b) for the reduction of nitrobenzene to aniline by Ni/SBA-15.