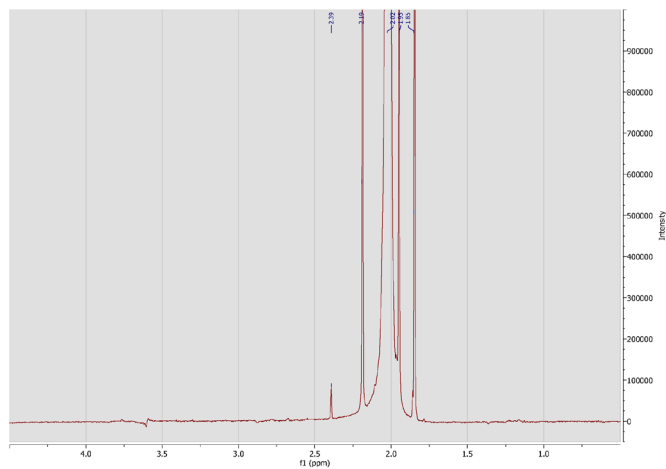
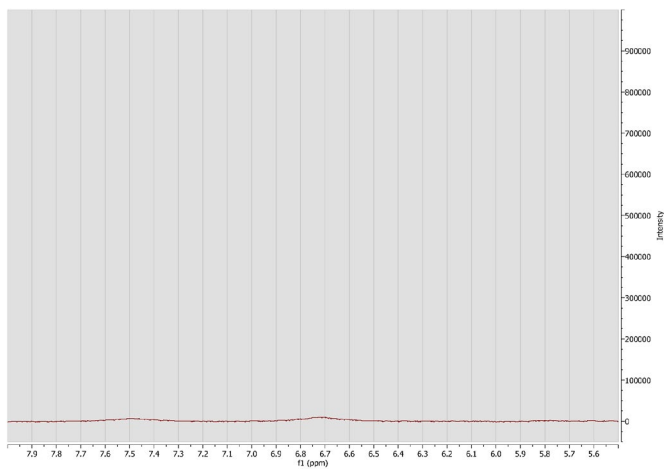
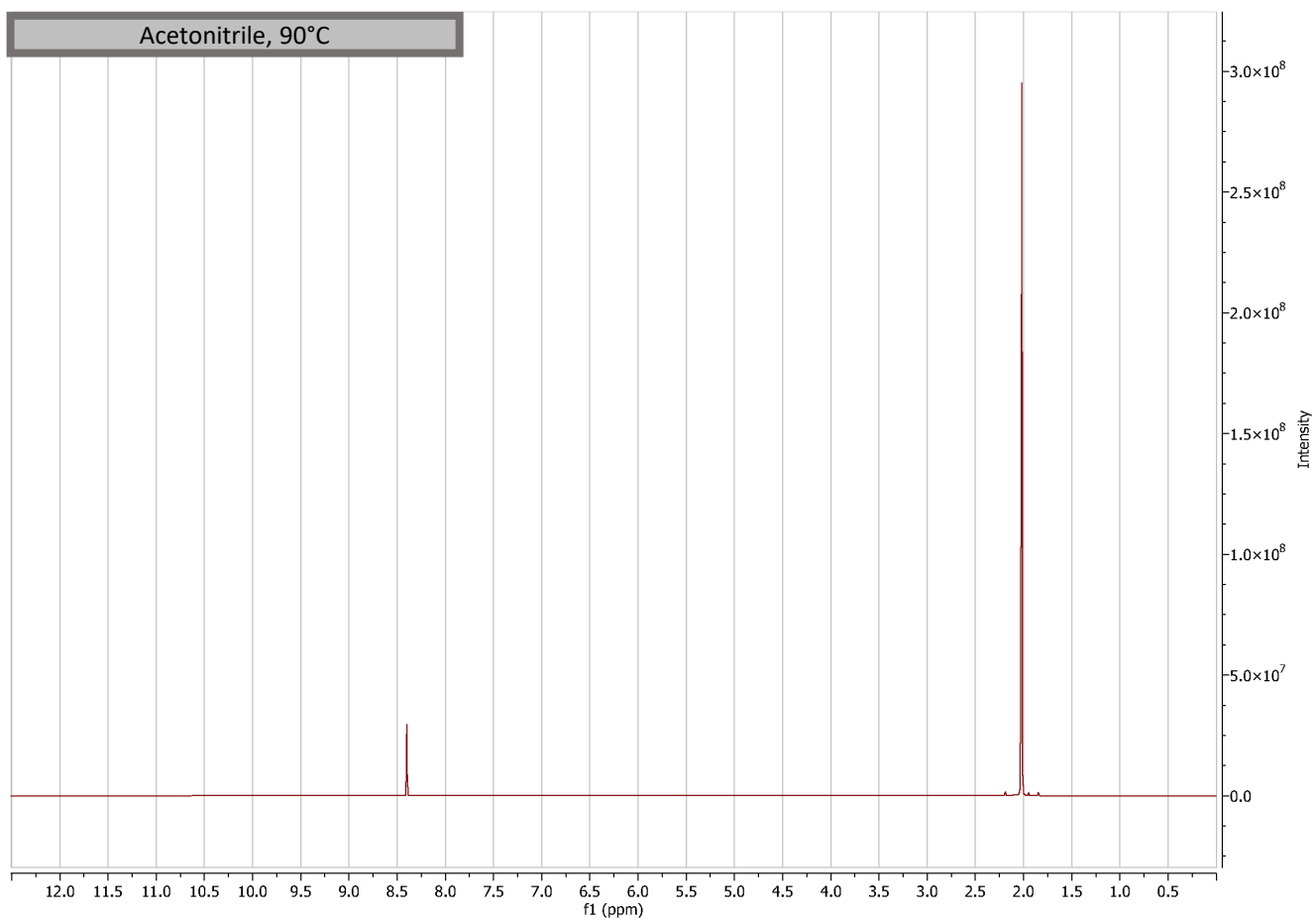


## Supplemental Figure 2:

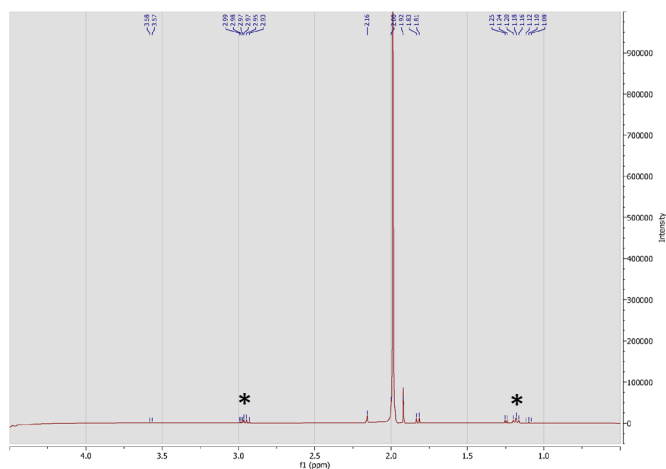
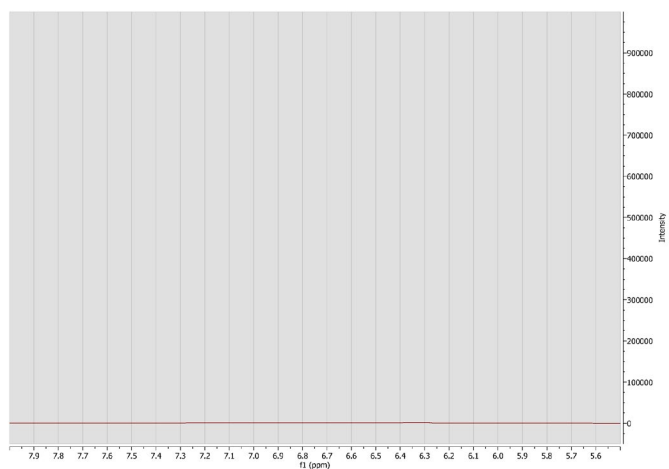
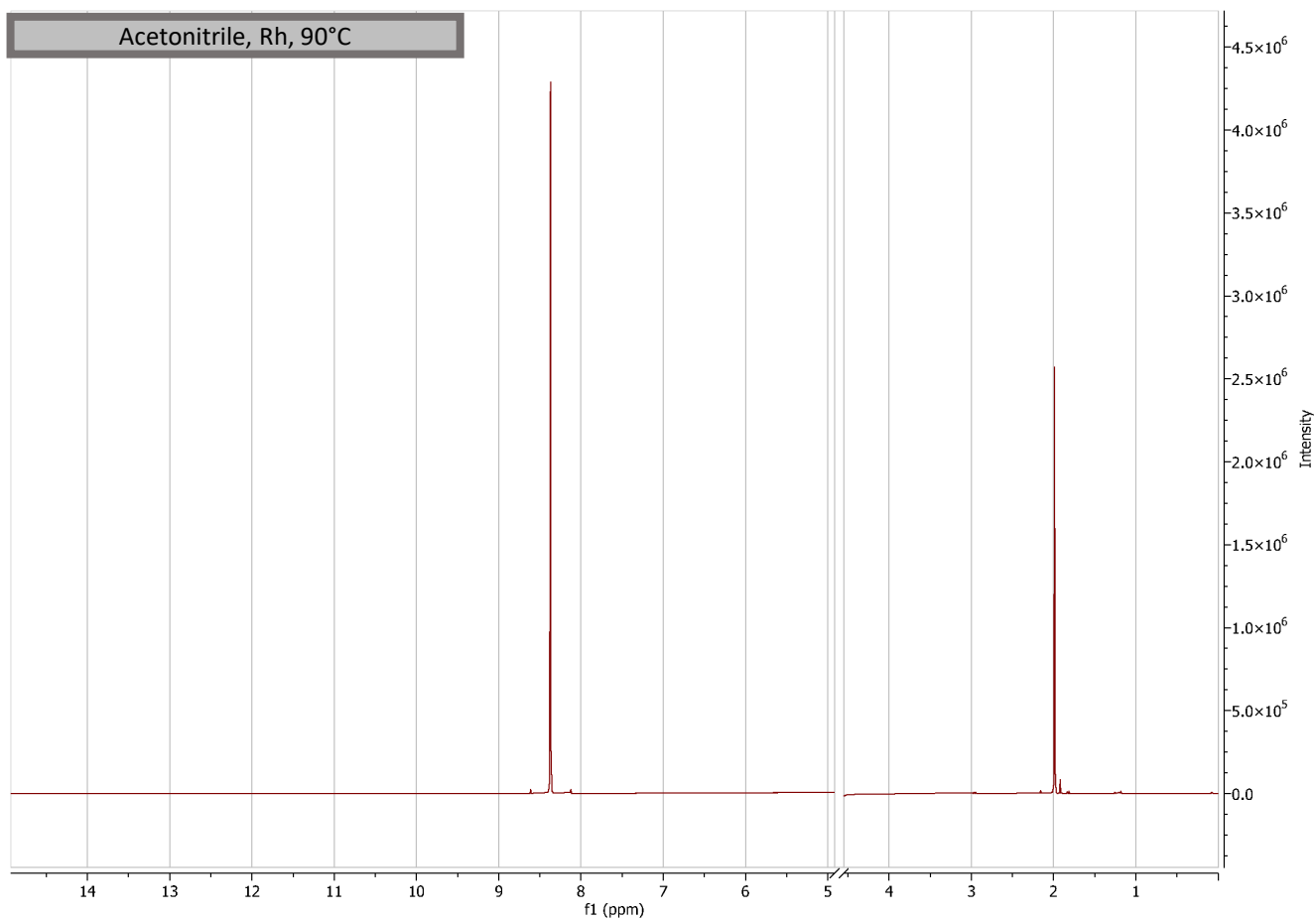
Proton nuclear magnetic resonance  $^1\text{H}$ -NMR analysis of acetonitrile experimental samples at 48 hours post  $90^\circ\text{C}$  incubation. All samples were acquired via  $^1\text{H}$ -NMR analysis at 400mHz with a  $\text{D}_2\text{O}$  solvent. Analysis was carried out at ambient room temperatures ( $20^\circ\text{C}$ ). Samples were run via  $^1\text{H}$ -NMR on Nano-400 instrumentation with a 5 mm iProbe cryoprobe with an X-nuclei inner coil and  $^1\text{H}$  outer coil. Data gathering was carried out using the program TopSpin® 4.0 pl6 running on CentOS® 5.0. Spectral data analysis and interpretation was carried out using MestRe Nova software 5.3.1.

Spectra included in order are as follows: acetonitrile/sodium formate; acetonitrile/sodium formate/rhodium; acetonitrile/sodium formate/cobalt; acetonitrile/sodium formate/nickel; acetonitrile/sodium formate/iron-nickel alloy (FeNi); acetonitrile/sodium formate/iron (II) sulfide ( $\text{FeS}$ ); acetonitrile/sodium formate/aluminum oxide ( $\text{Al}_2\text{O}_3$ ); acetonitrile/sodium formate/titanium oxide ( $\text{TiO}_2$ ). Chemical shifts are listed above each peak. Certain spectra with polymerization and metallic based nanoparticles show broadening of peaks due to the magnetic properties of the metals that could not be removed. Some spectra have a cut at 4.5 to 5 ppm where a water peak could not be suppressed but does not affect the quality of spectra. Experimental spectra were compared to standard spectra for product identification. pH was not adjusted between the experimental samples and the standards.

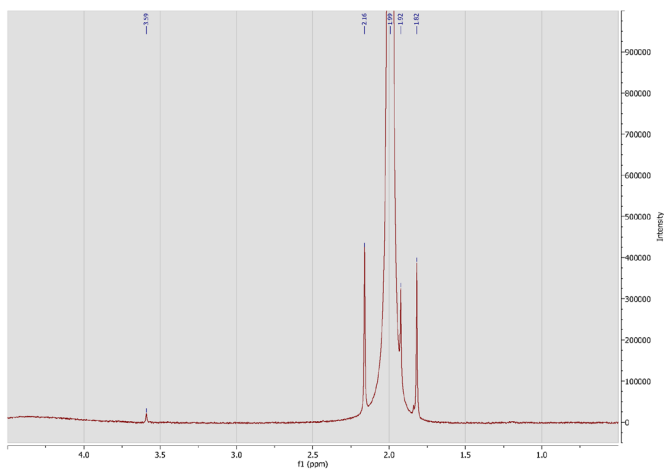
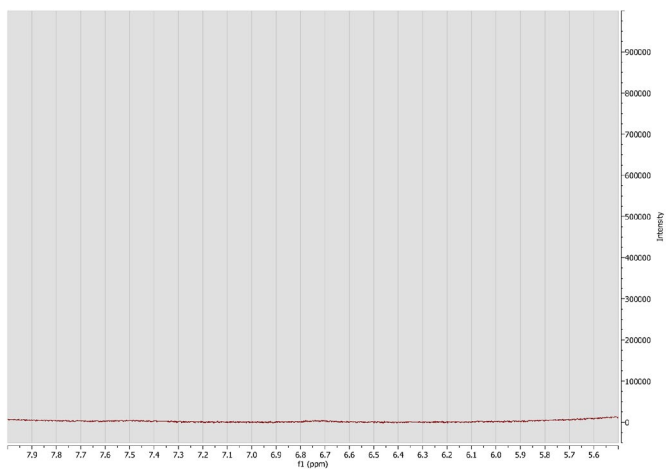
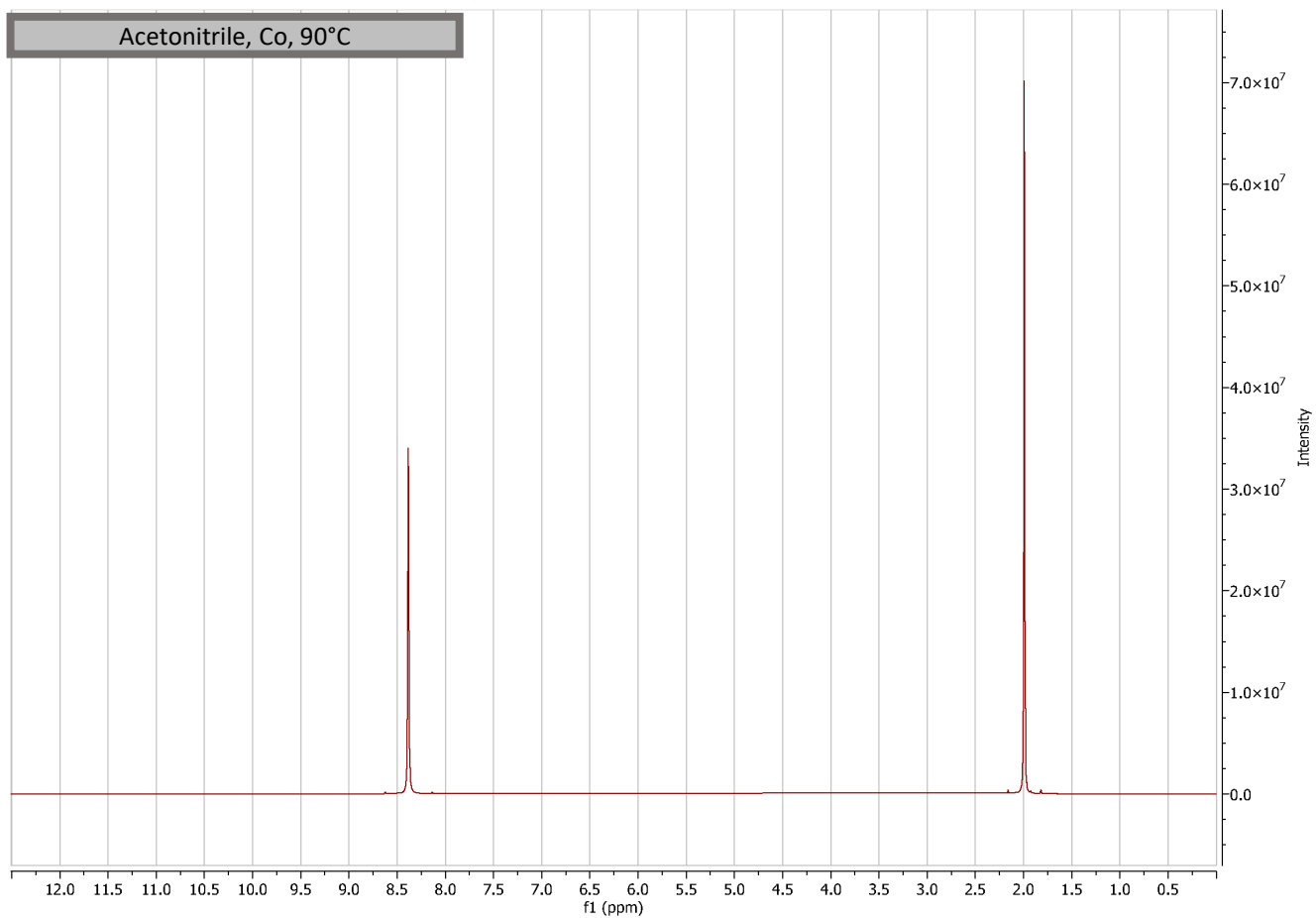
Acetonitrile, 90°C



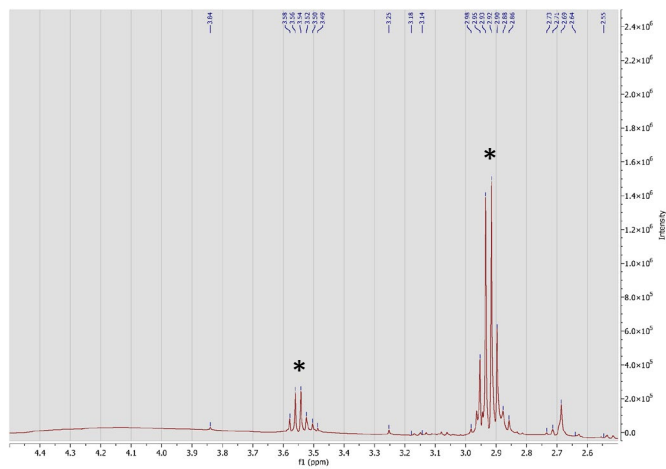
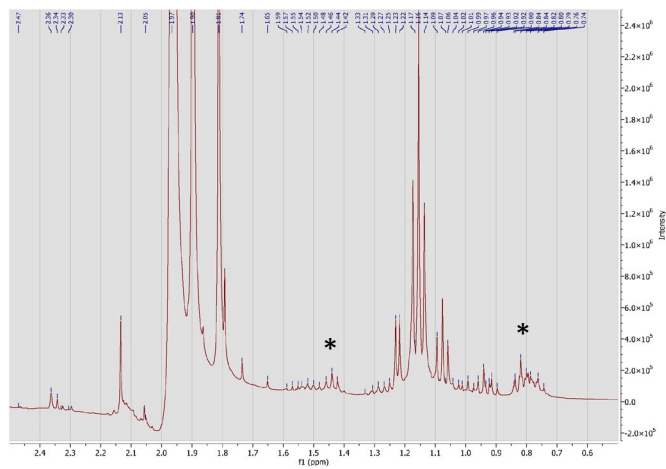
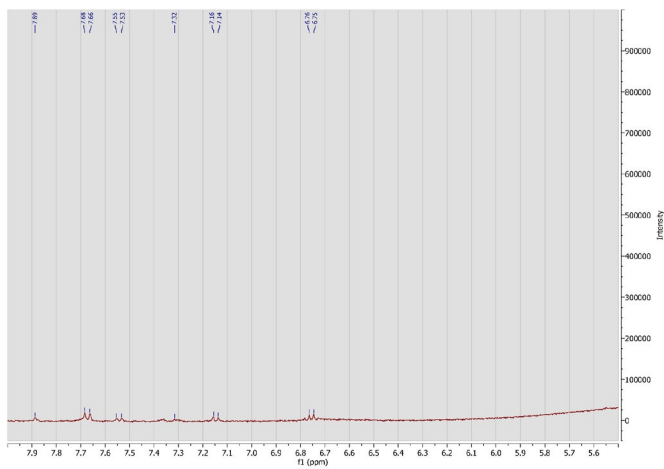
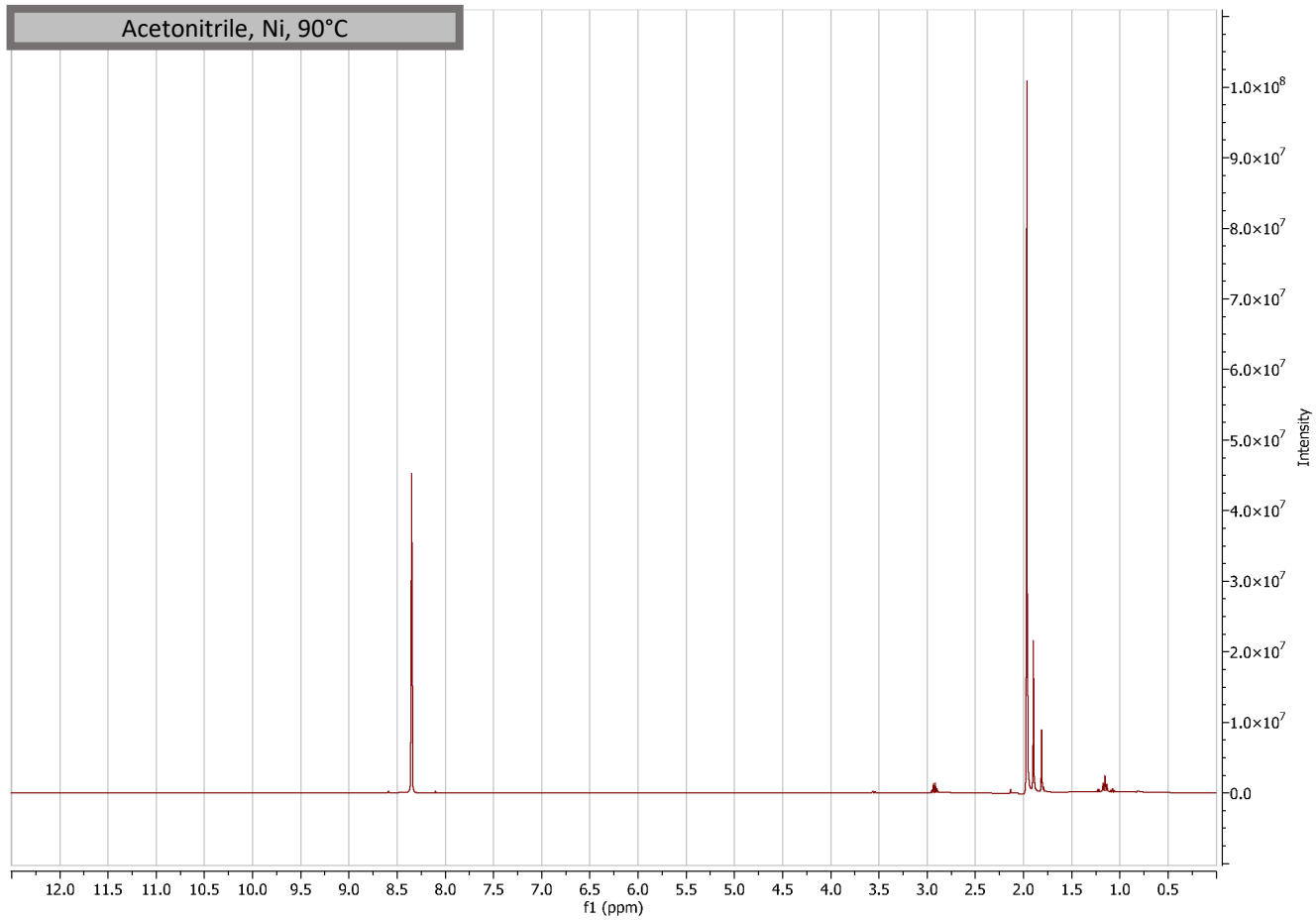
Acetonitrile, Rh, 90°C



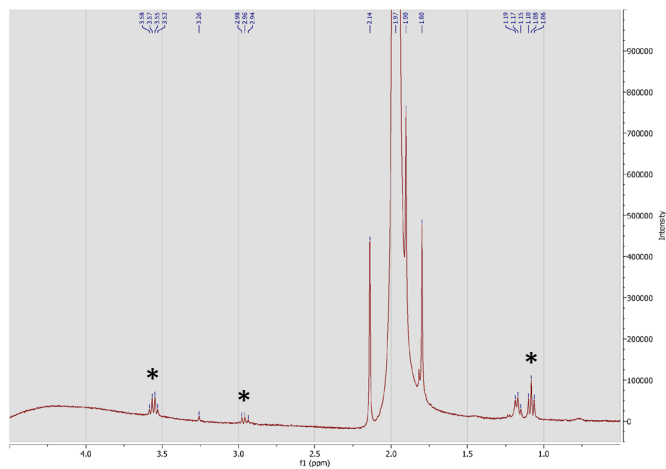
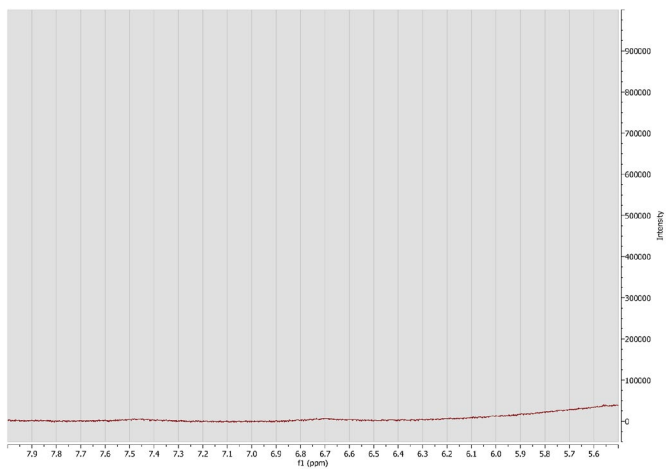
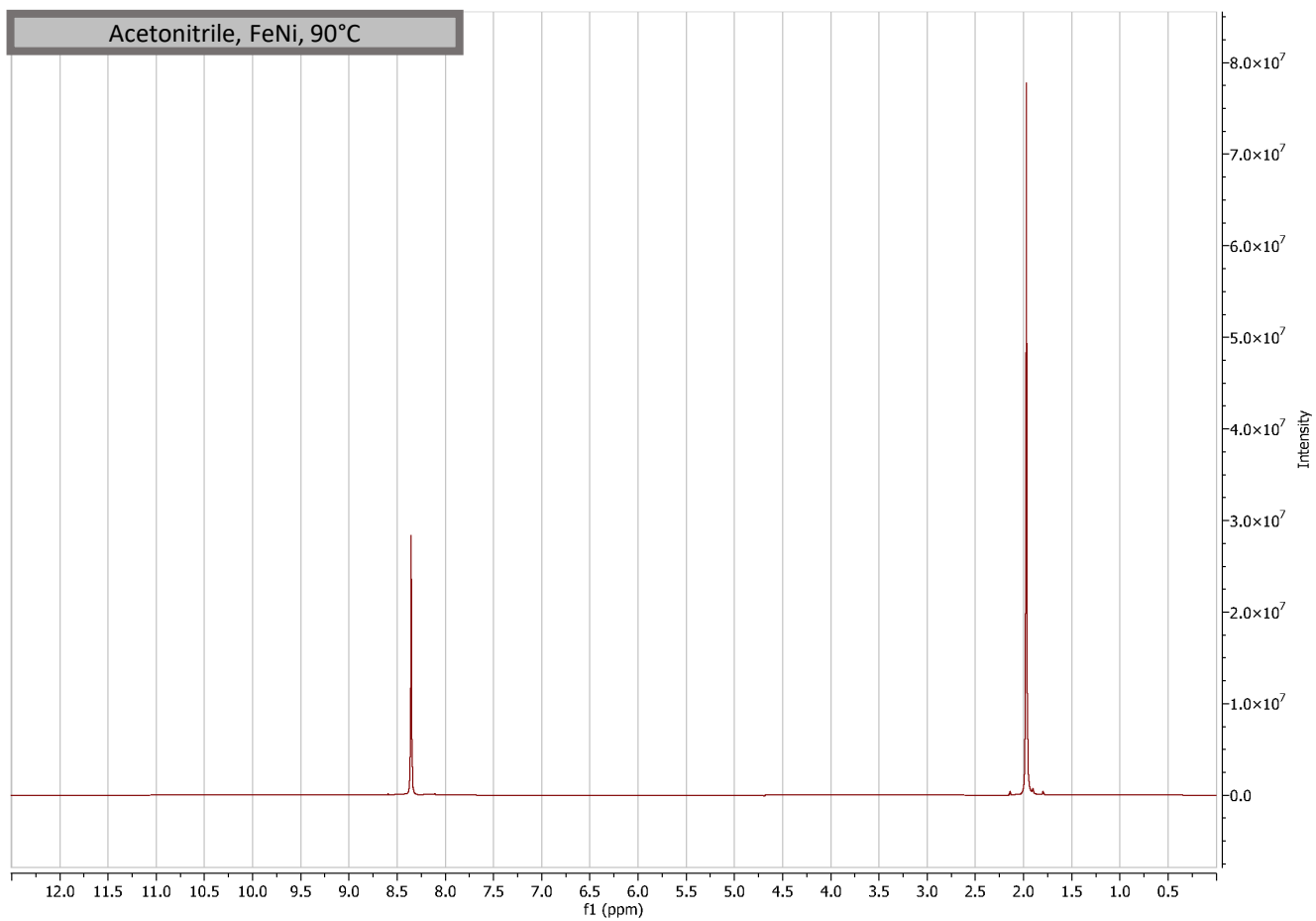
Acetonitrile, Co, 90°C



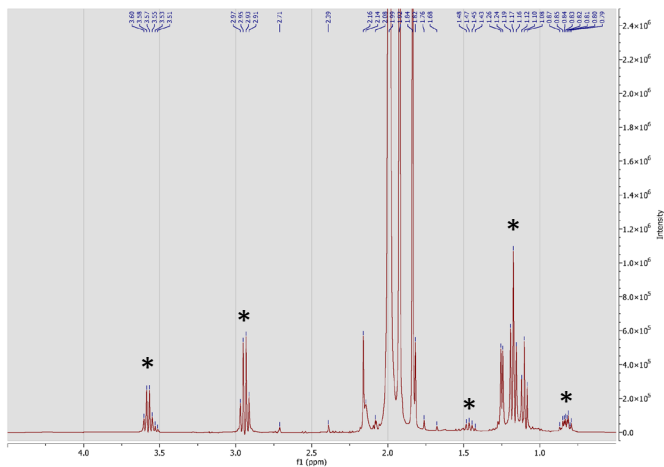
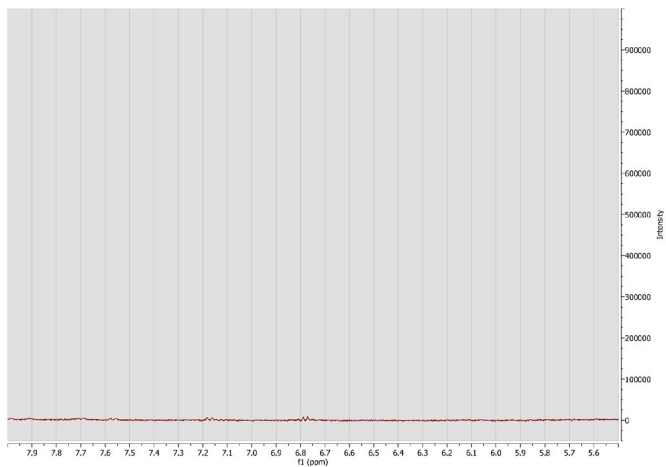
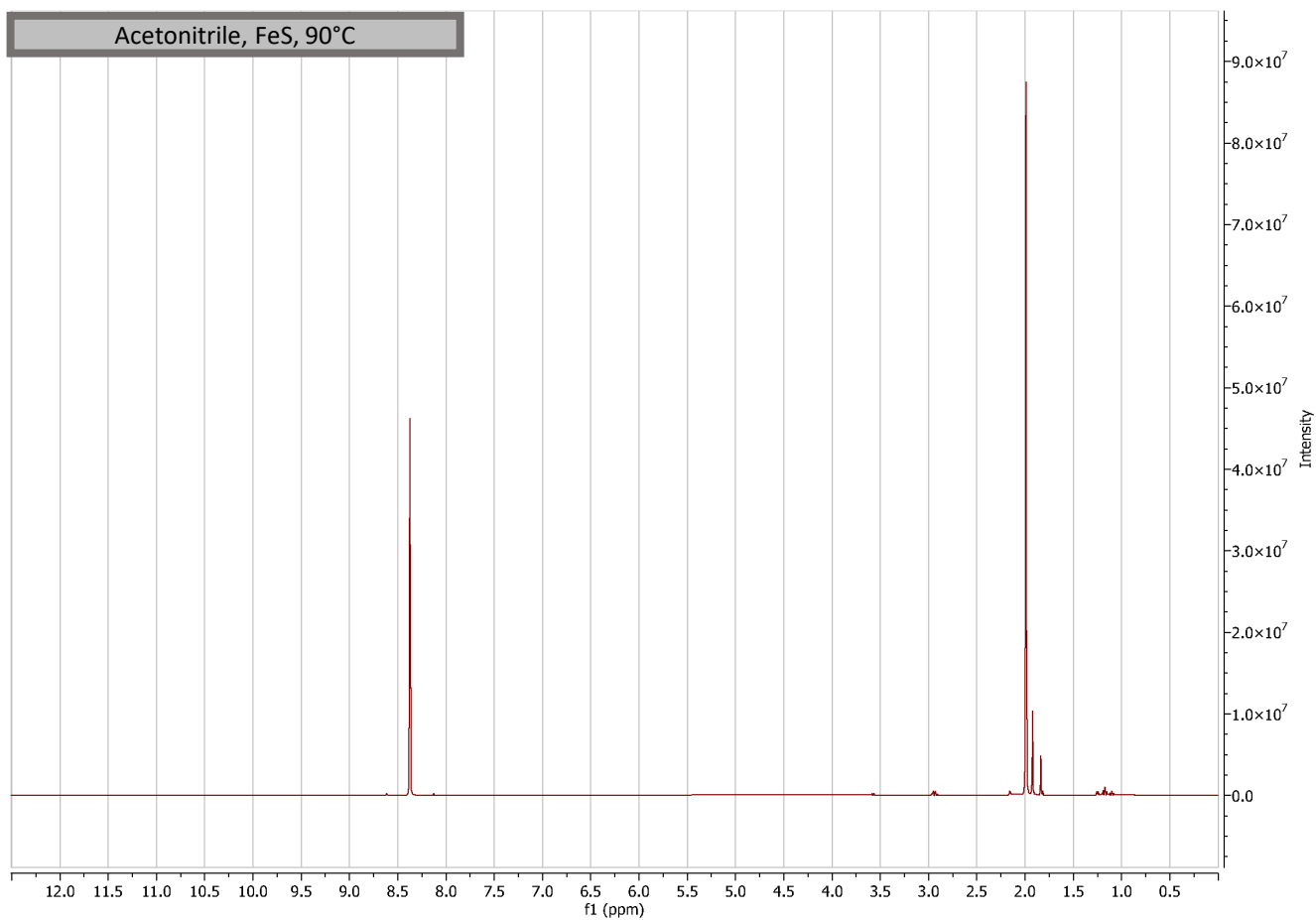
# Acetonitrile, Ni, 90°C



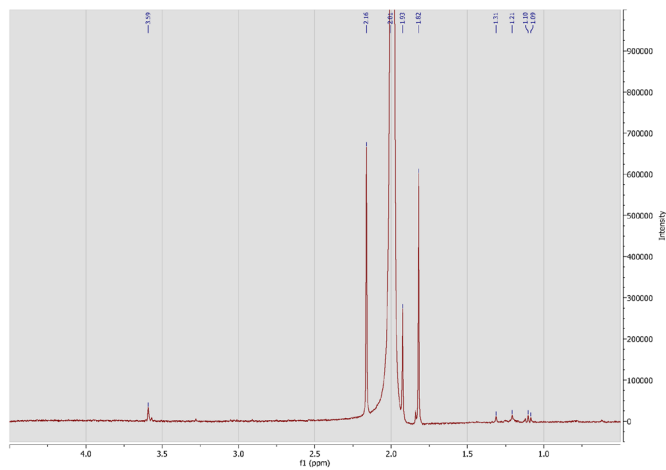
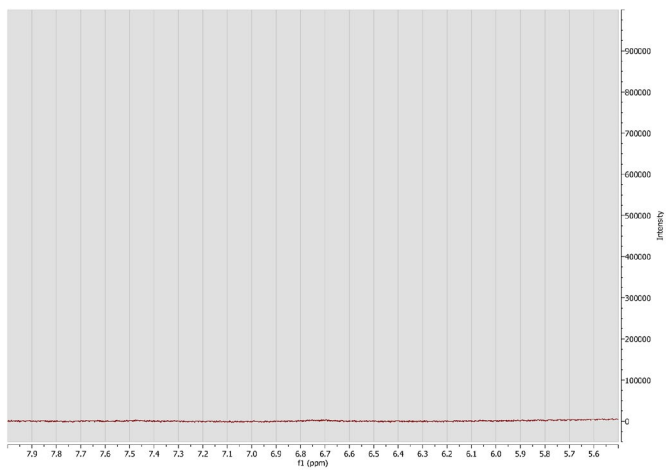
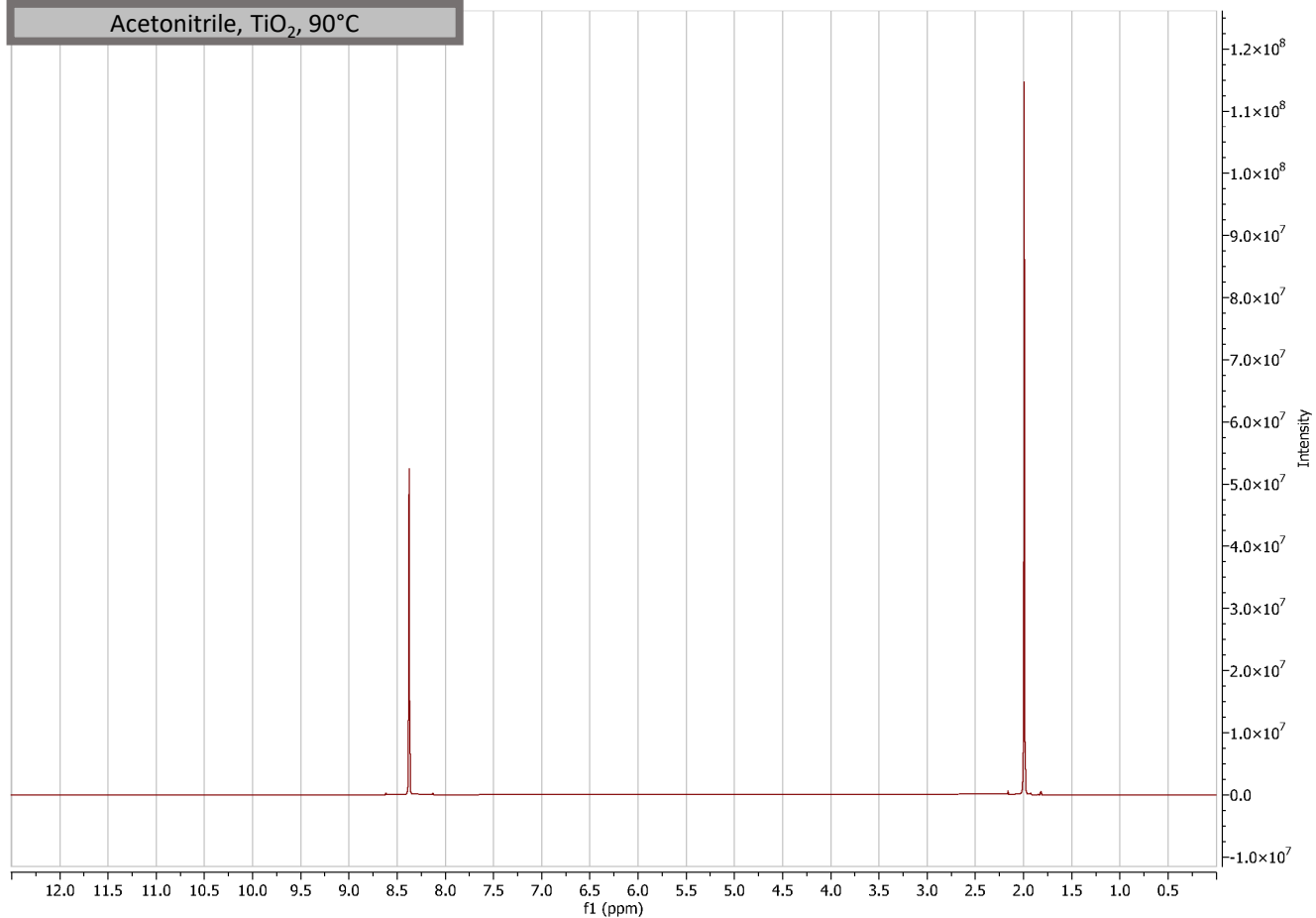
Acetonitrile, FeNi, 90°C



Acetonitrile, FeS, 90°C



Acetonitrile, TiO<sub>2</sub>, 90°C





Acetonitrile, Al<sub>2</sub>O<sub>3</sub>, 90°C

