Support Information

Urea decomposition mechanism by dinuclear nickel complexes

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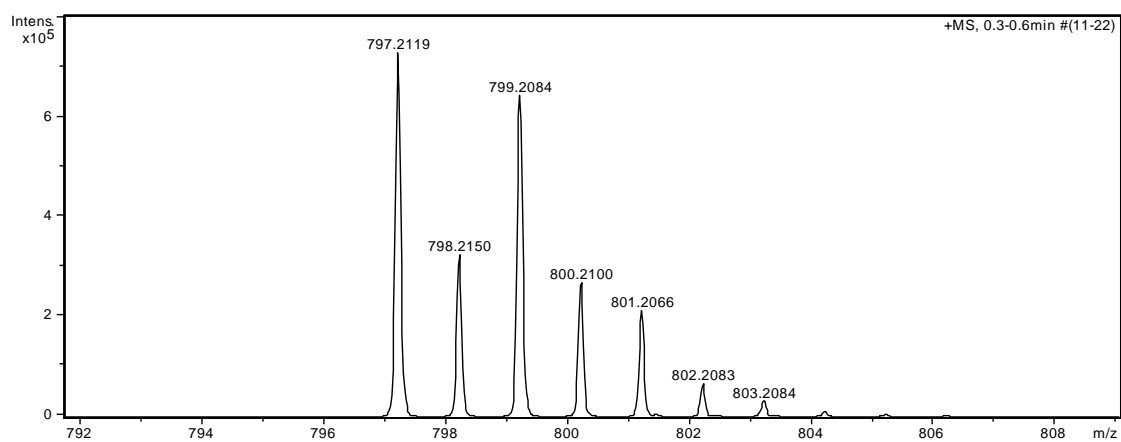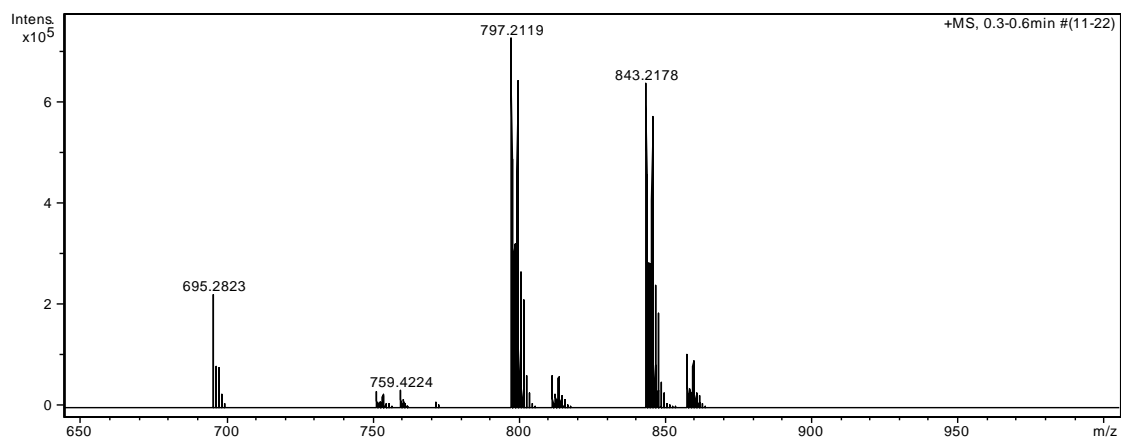
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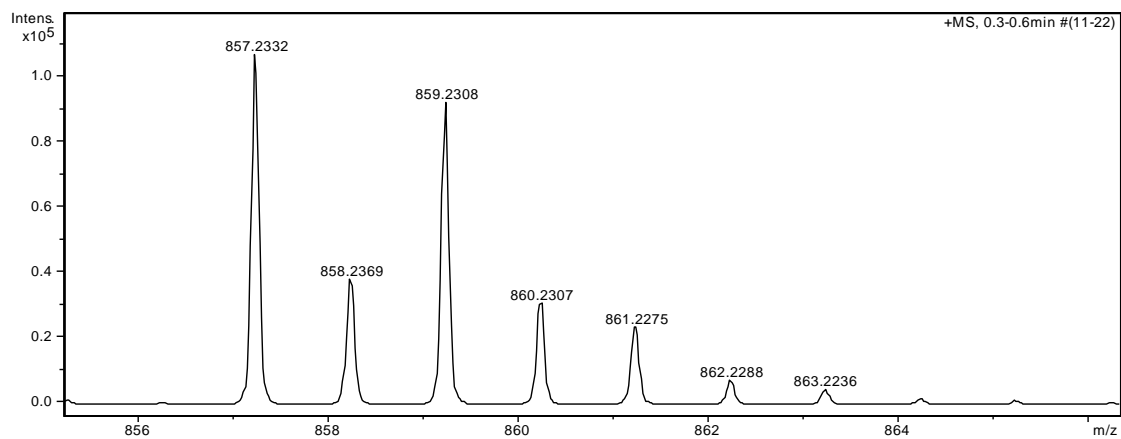
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Characterization of [Ni$_2$L(OAc)] and [Ni$_2$L(Cl)(Et$_3$N)$_2$] complexes
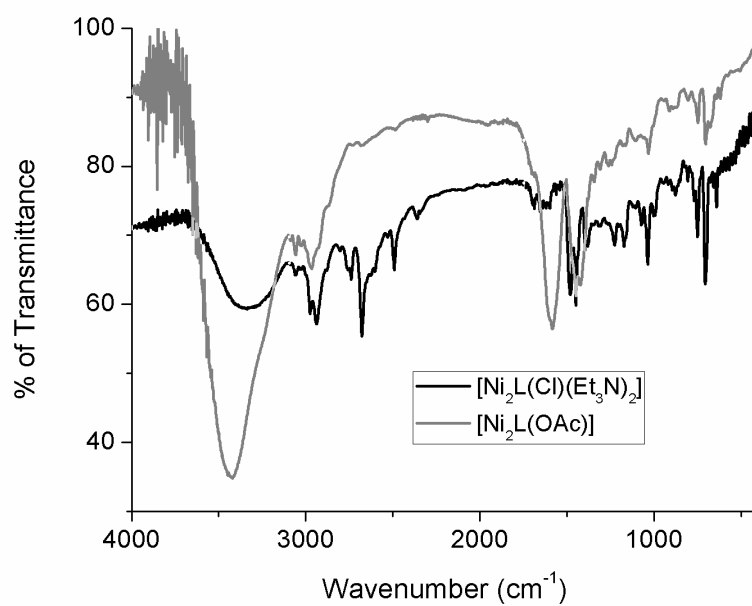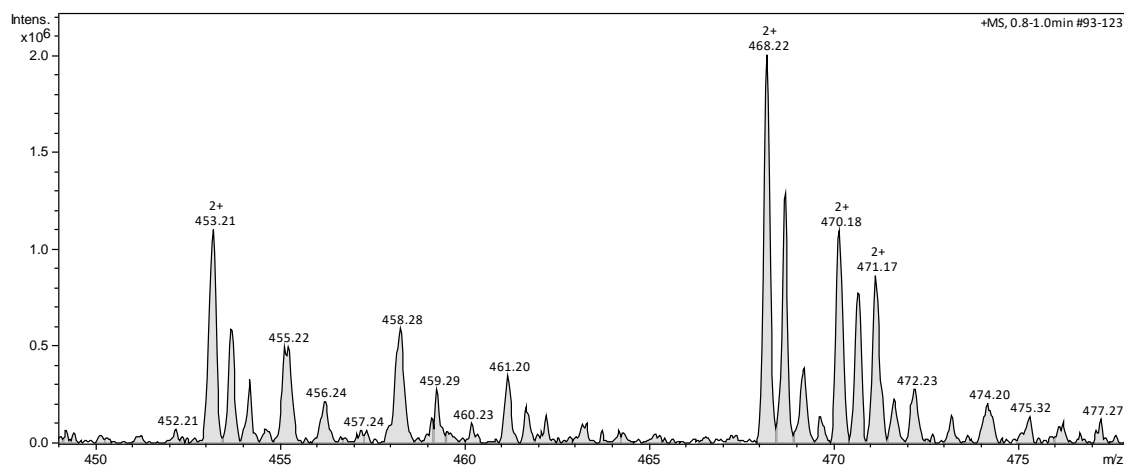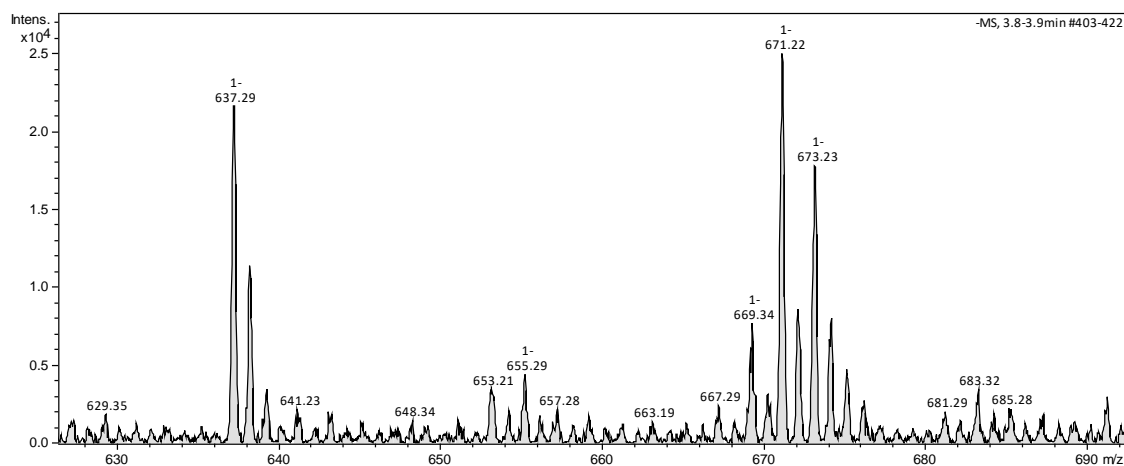
SI1. Solid infrared spectra of [Ni$_2$L(OAc)](gray line) and [Ni$_2$L(Cl)(Et$_3$N)$_2$] (black line) complexes.
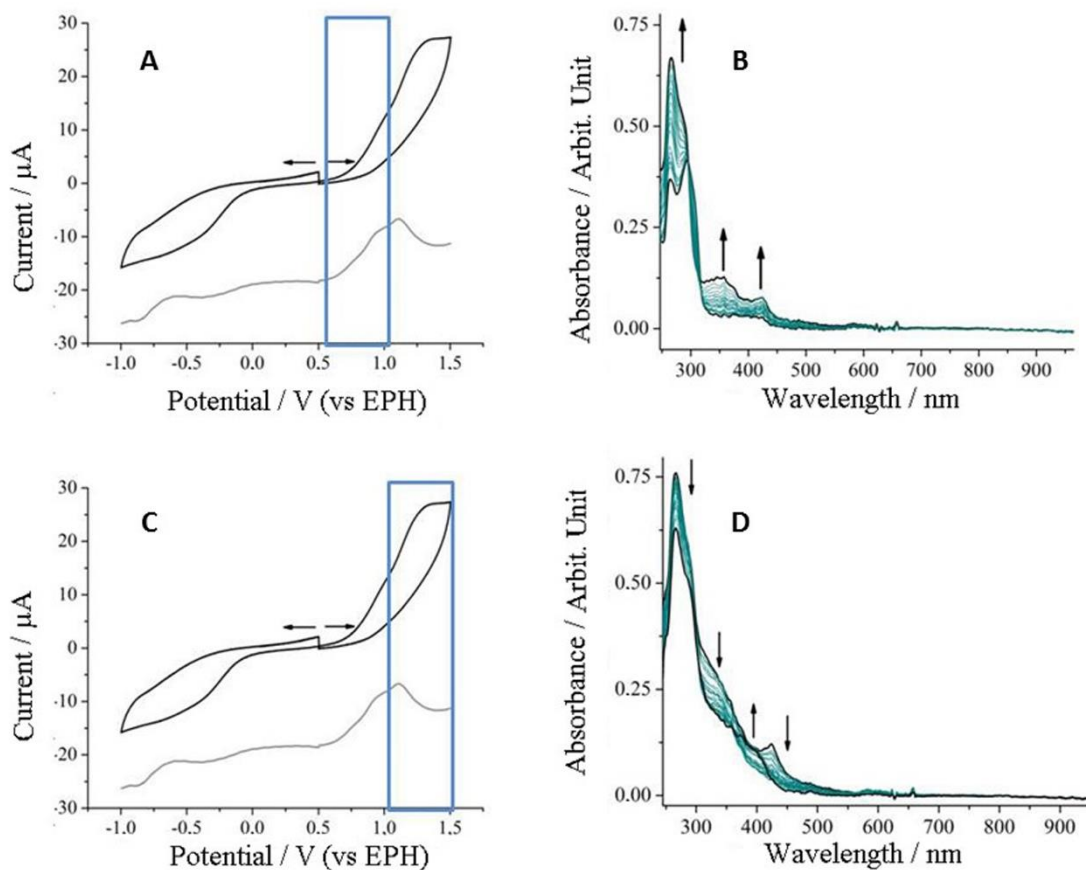
SI2. HRMS of [Ni$_2$L(OAc)].
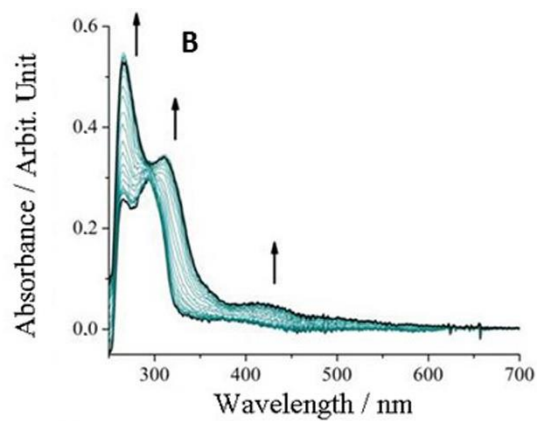

SI3. LRMS of [Ni$_2$L(Cl)(Et$_3$N)$_2$]. Negative mode (top panel) and positive mode (bottom panel).

SI4. Anodic cyclic voltammetry and corresponding DPV plot for the complex [Ni$_2$L(OAc)] in DMF and 0.1 M^{-1} TBAClO$_4$ as electrolyte (A and C) and spectrolectrochemistry of the oxidation processes at 0.63V (B) and 1.24V (D).
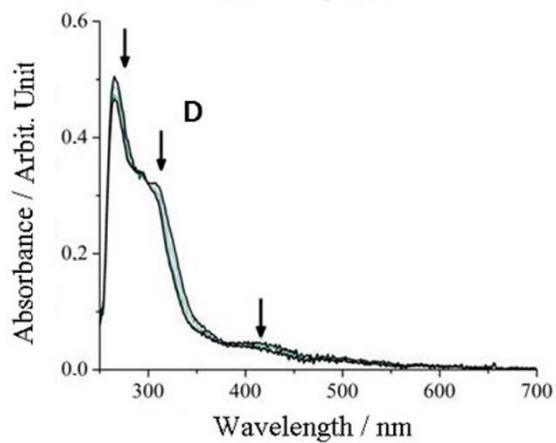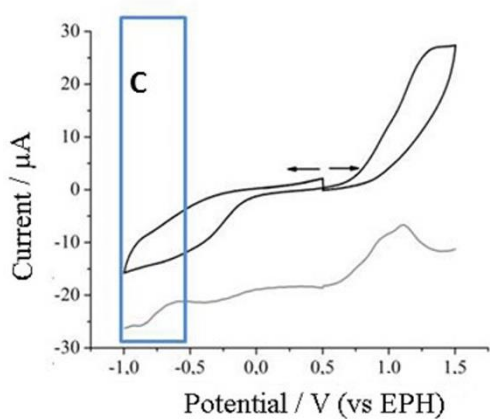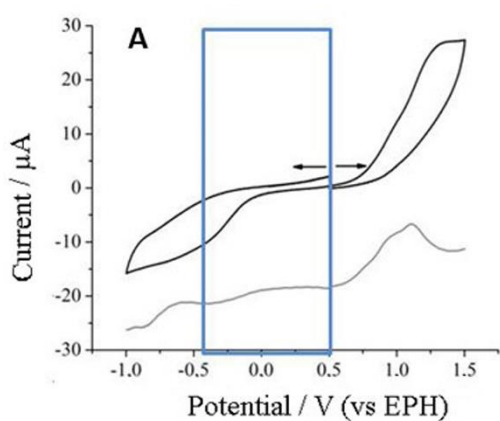
SI5. Cathodic cyclic voltammetry and corresponding DPV plot for the complex [Ni₂L(OAc)]in DMF and 0.1 mol L⁻¹ TBAClO₄ as electrolyte (A and C) and spectrolectrochemistry of the reduction processes at -0,36 (B) and -0,88V (D).
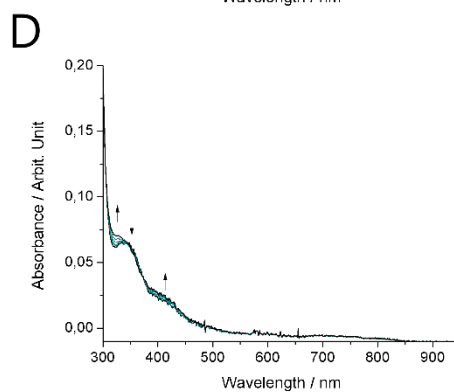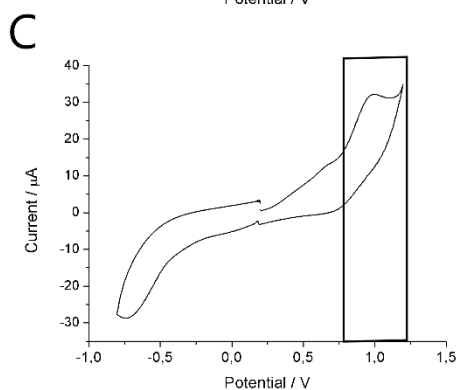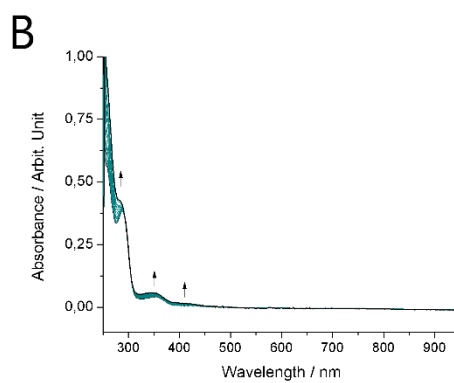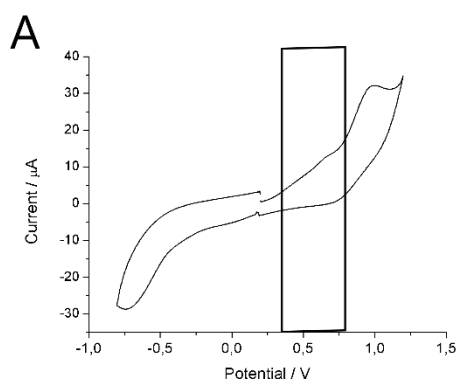
SI6. Anodic cyclic voltammetry and corresponding DPV plot for the complex [Ni$_2$L(Cl)(Et$_3$N)$_2$] in DMF and 0.1 M^{-1} TBAClO$_4$ as electrolyte (A and C) and spectrolectrochemistry of the oxidation processes at 0.5V (B) and 0.8 V(D).
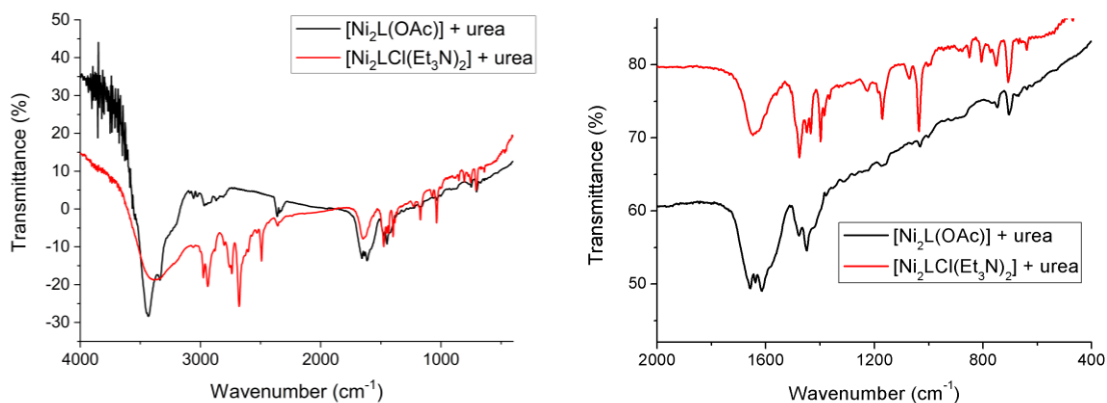
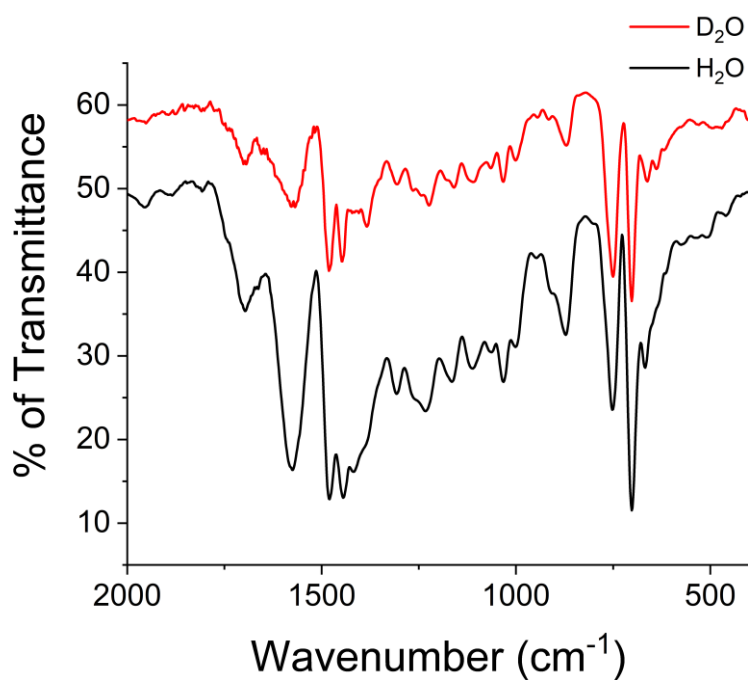**SI7.** Infrared of coordinated urea to [Ni$_2$L(OAc)] and [Ni$_2$L(Cl)(Et$_3$N)$_2$] complexes. Left: spectra from 4000 to 400cm^{-1} and Right: Spectra from 2000 and 400 cm^{-1}.

SI8. Infrared of the soluble fraction of the reaction between [Ni$_2$L(OAc)] and water. Black line represents the product obtained after titration with H$_2$O and red line represents the product obtained after titration with D$_2$O.
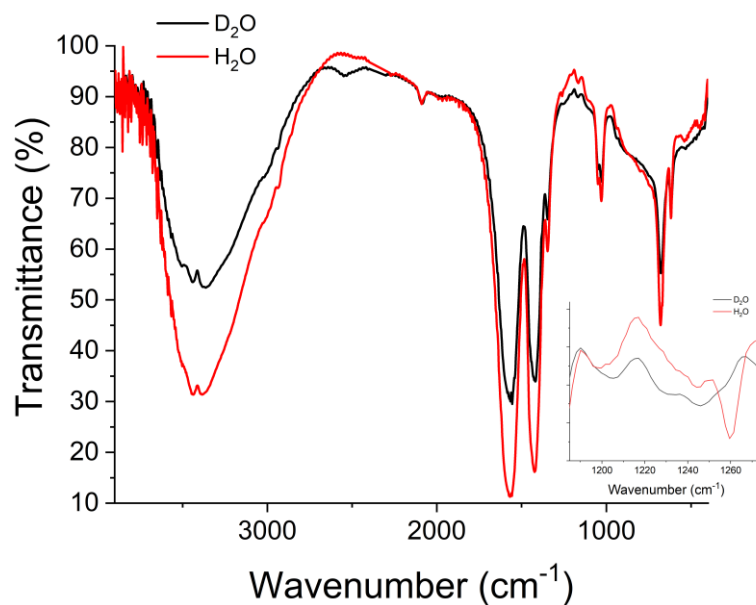
SI9. Infrared of the insoluble fraction of the reaction between [Ni$_2$L(OAc)] and water. Black line represents the product obtained after titration with D$_2$O and red line represents the product obtained after titration with H$_2$O. Inset: FTIR spectra between 1185 cm^{-1} and 1275 cm^{-1} .
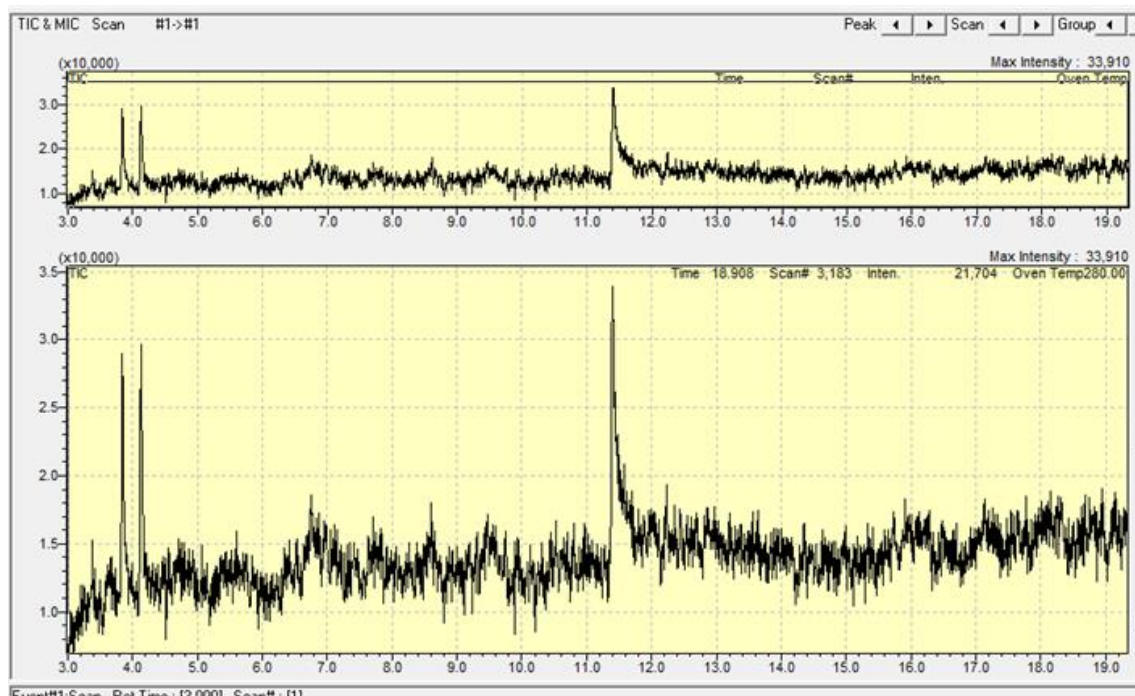
SI10. GC-MS chromatogram of N-phenylurea decomposition using [Ni$_2$L(OAc)] as a catalyst. Phenylisocyanate has a retention time of 3.8 min, aniline has a retention time of 4.1 min and N-phenylurea has a retention time of 11.5 min.
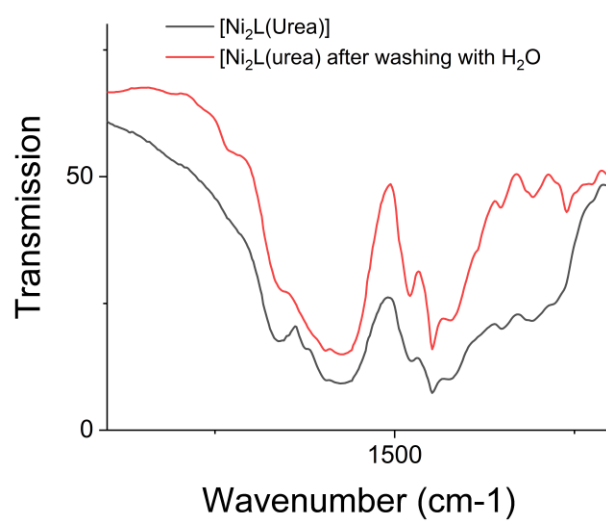
SI11. Infrared of [Ni$_2$L(Urea)] before (black line) and after (red line) washing the complex with water.