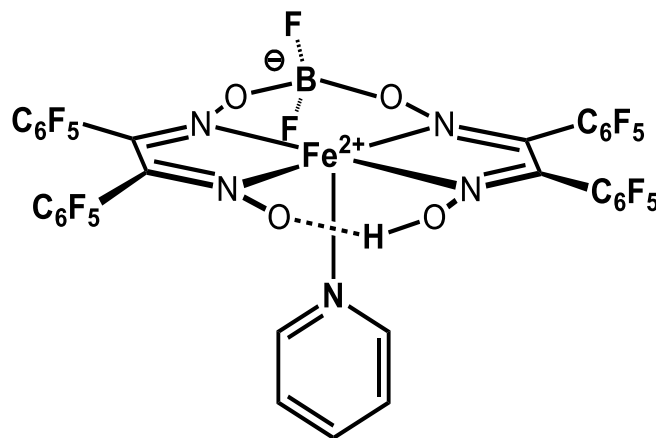
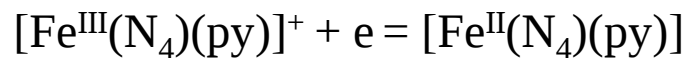
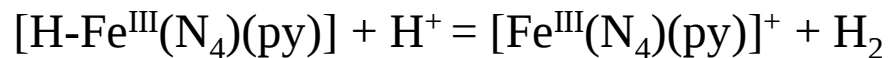
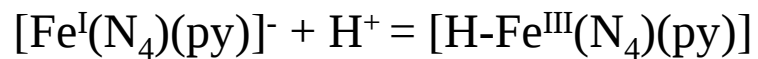
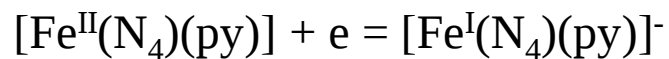


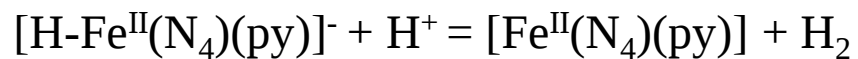
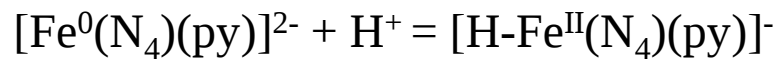
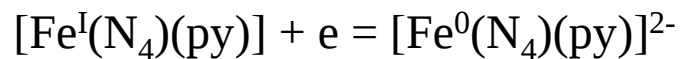
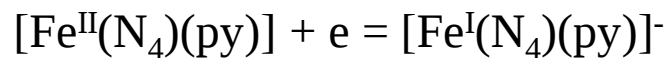
1. The following Fe complex is a molecular electrocatalyst for hydrogen evolution. Propose a catalytic cycle for this Fe-catalyzed hydrogen evolution. Specify the oxidation states of the Fe complexes. The initial iron complex before reduction is Fe(II). You don't need to draw the macrocyclic ligand; abbreviate it as "N4", e.g., [FeII(N4)(py)] would be sufficient for the complex in the graph.



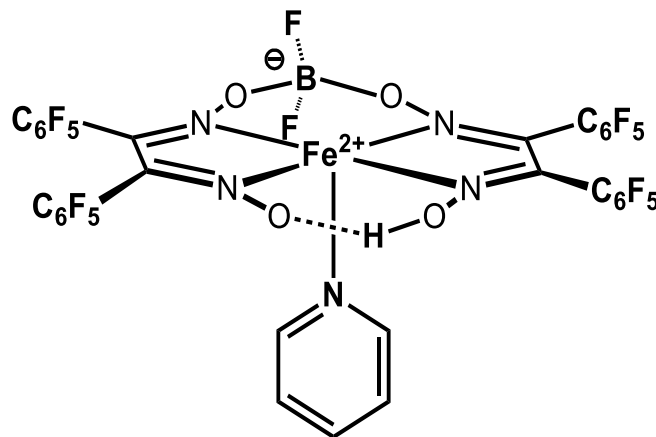
One possibility



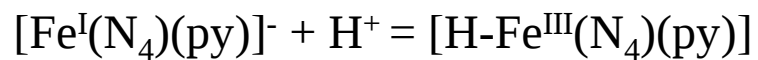
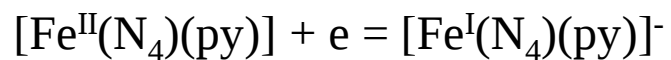
A second possibility:



1. The following Fe complex is a molecular electrocatalyst for hydrogen evolution. Propose a **bimetallic** catalytic cycle for this Fe-catalyzed hydrogen evolution. Specify the oxidation states of the Fe complexes. The initial iron complex before reduction is Fe(II). You don't need to draw the macrocyclic ligand; abbreviate it as "N4", e.g., [FeII(N4)(py)] would be sufficient for the complex in the graph.



One possibility



A second possibility:

