The enzyme nitrogenase consists of two metalloproteins: the Fe protein and the MoFe protein. The discovery of the all-ferrous Fe protein through use of strong reductants has posed a challenge to the current understanding of the nitrogen fixation mechanism. However, the stabilization of a protein \([\text{Fe}_4\text{S}_4]^0\) analogue has proven to be difficult due to the extreme air-sensitivity of the \([\text{Fe}_4\text{S}_4]^0\) cluster outside of the polypeptide environment. In as early as 1974, an all-ferrous cluster \([\text{Fe}_4\text{S}_4(\text{SR})_4]^{4-}\) was detected electrochemically in solution, but the all-ferrous species has never been isolated or fully characterized despite substantial efforts toward the goal. Most recently, we have synthesized an \([\text{Fe}_4\text{S}_4(\text{CN})_4]^{3-}\) cluster, whose \([\text{Fe}_4\text{S}_4]^{0/1+}\) redox potential (-1.16 versus NHE) implies a feasible reduction to the all-ferrous state. In this presentation we wish to report the synthesis, crystal structure, and spectroscopic studies of the first protein analogue for the active site of the all-ferrous Fe protein of nitrogenase.