

High- and low-valent tris-N-heterocyclic carbene iron complexes : a study of molecular and electronic structure

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Abstrak

Carola Vogel's PhD thesis focuses on the synthesis, and structural and spectroscopic characterization of the first high valent iron nitride complexes. In her interdisciplinary and collaborative research Carola also describes the reactivity studies of a unique iron (V) nitride complex with water. These studies show that quantitative yields of ammonia are given at ambient conditions. High valent iron nitride and oxo species have been proposed as key intermediates in many bio-catalytic transformations, but until now these species have proven exceedingly challenging to isolate and study. Iron complexes in high oxidation states can thus serve as models for iron-containing enzymes to help us understand biological systems or aid our development of more efficient industrial catalysts.