

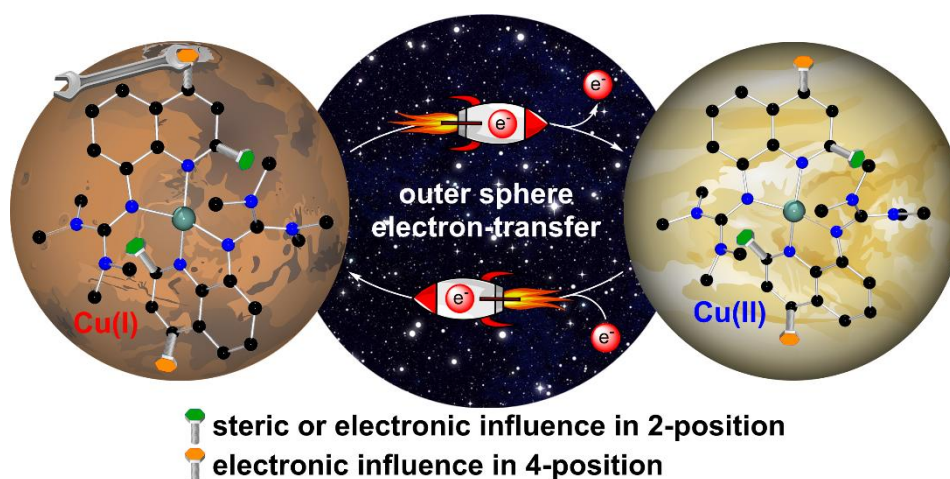
Manipulating the Electron Transfer in Entatic State Models– The Influence of Substituents on Novel Copper Guanidine Quinoline Complexes

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Copper proteins exhibit very high electron self-exchange rates k_{11} which are a scale for the speed of the electron transfer. For these proteins the electron self-exchange rates range from 10^3 to 10^8 $M^{-1} s^{-1}$. [1] This is explained by the entatic state concept which is adaptable for different transition metal enzymes. [2] One type of guanidine ligands are the guanidine quinoline ligands that were used in copper guanidine quinoline complexes as entatic state models for fast electron transfer [3] and as charge transfer complexes. [4] By now, these complexes exhibit the highest self-exchange rates k_{11} in the electron transfer of all pure N donor ligands. [3a] But all used guanidine quinoline ligands are similar in their structure. Hence, the influence of the structure of different guanidine ligands in the electron transfer is of interest.

Herein, we report the properties of four novel copper guanidine complex couples as entatic state models in the electron transfer. The self-electron exchange rates k_{11} of the copper complexes were determined using the Marcus cross relation. Moreover, we were able to dissect the internal and external reorganisation energy of the electron transfer processes.



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