The STRONG Weak Interaction in Protein

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**ABSTRACT**

Noncovalent weak interactions play important roles in biological systems [1]. In particular, such interactions in the second-coordination shell of metal ions in proteins modulate the structure and reactivity of the metal ion site in functionally significant ways.

Recently, we have demonstrated the perturbation of weak non-covalent interaction on the structure and properties of copper site in a blue copper protein, pseudoazurin (PAz) [2]. PAz is well known to work as an electron transfer protein to NO2- reductase and N2O reductase in denitrifying bacteria [3]. The weak interaction at Met16 with a copper coordinated histidine (His81) imidazole ring in the *second coordination sphere* provides significant effect not only for the PAz properties and local structure but also the whole protein stability [4].

In this lecture, I also would like to introduce the utilization of modern quantum beams involving Synchrotron X-ray, Neutron Beam, and Muon in bioinorganic chemistry.

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