Design and synthesis of paramagnetic probes for structural biololgy

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1. The ninth coordinate ligand, water, of CLaNP-7 forms hydrogen bond with an imidazole side-chain of nearby histidine, resulting in the pH-dependent magnetic susceptibility tensor. (this thesis, Chapter II)
2. The study of biomolecules with paramagnetic probes under reducing conditions is achievable by using thioether attached probe. (this thesis, Chapter III)
3. The amino acid side-chains surrounding the attachment site of a lanthanoid probe can readily interact with the probe and influence its behavior. (this thesis, Chapter II & IV)
4. DOTA-like probes contain an enantiomeric pair in solution that becomes a diastereoisomeric pair after attachment to a protein. (this thesis, Chapter IV)
5. Substrate/inhibitor-based paramagnetic probes provide an attractive approach to study protein-ligand interactions. (this thesis, Chapter V)
6. The next generation paramagnetic probes must be rigidly and site-specifically attached to the protein surface with inert linkers. (this thesis, Chapter I & III)
7. The unpaired electrons of lanthanides, which are in 4f orbitals, are hardly affected by the subtle changes in the ligands, and therefore similar magnetic susceptibility tensors will be obtained utilizing similar coordination systems. (this thesis Chapter IV)
8. Paramagnetic NMR is expected to become increasingly popular in the future. (this thesis Chapter I)
9. Appropriate exercise and leisure are essential for a successful research.
10. Whether your research is interesting or boring depends on the depth of your study.
11. Knowledge, like a sea, is boundless; only through hard study can one reach the destination. (學海無涯，惟勤是岸)

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