

Supplementary Material

Hans Charles Freeman 1929–2008

Trevor W. Hambley^{A,} and Ian D. Rae^B*

^ASchool of Chemistry, University of Sydney, NSW 2006, Australia

^BSchool of Chemistry, University of Melbourne, Vic. 3010, Australia

*Correspondence to: Email: trevor.hambley@sydney.edu.au

Bibliography

1. Freeman, H. C.; Lefevre, R. J. W., Some properties of the diphenyl-4-diazocyanides and their 4'-bromo-derivatives. *Journal of the Chemical Society* **1950**, 3128-3131.
2. Freeman, H. C.; Georgans, W. P., The polarographic reduction of Hantzsch isomeric diazosulphonates. *Chemistry & Industry* **1951**, 148-149.
3. Freeman, H. C.; Lefevre, R. J. W., Hantzsch isomeric diazosulphonates. *Journal of the Chemical Society* **1951**, 415-428.
4. Freeman, H. C.; Lefevre, R. J. W.; Wilson, I. R., The probable existence of geometrically isomeric diazocarboxyamides. *Journal of the Chemical Society* **1951**, 1977-1980.
5. Freeman, H. C.; Lefevre, R. J. W.; Maramba, F., The effect of dissolution in benzene on the apparent dipole moment of 1-8-cineole. *Journal of the Chemical Society* **1952**, 1649-1651.
6. Freeman, H. C.; Lefevre, R. J. W., The action of light on diazoaminobenzene dissolved in ethanol. *Journal of the Chemical Society* **1952**, 2932-2934.
7. Freeman, H. C.; Lefevre, R. J. W.; Northcott, J.; Youhotsky, I., The possible occurrence of geometrical isomerism among the diazosulphones. *Journal of the Chemical Society* **1952**, 3381-3384.
8. Freeman, H. C.; Lefevre, R. J. W.; Northcott, J.; Worth, C. V., The polarities and ultra-violet spectra of phenyl para-tolyl azoxysulphone and its dialkylamino-derivatives. *Journal of the Chemical Society* **1952**, 3384-3389.
9. Freeman, H. C.; Lefevre, R. J. W.; Rao, D.; Ross, I. G., The polarisation of azobenzene as a vapour. *Journal of the Chemical Society* **1955**, 3840-3843.
10. Buckingham, A. D.; Chau, J. Y. H.; Freeman, H. C.; Lefevre, R. J. W.; Rao, D.; Tardif, J., The dipole moments of pyridine, quinoline, and isoquinoline as vapours and as solutes. *Journal of the Chemical Society* **1956**, 1405-1411.
11. Freeman, H. C., Crystallographic calculations on the SILLIAC electronic digital computer .1. Fourier syntheses. *Australian Journal of Chemistry* **1957**, 10, 95-98.
12. Freeman, H. C.; Smith, J. E. W. L., A polynomial approximation to atomic scattering factor curves. *Acta Crystallographica* **1958**, 11, 819-822.
13. Freeman, H. C., Crystallographic calculations on the SILLIAC electronic digital computer .2. Structure factors. *Australian Journal of Chemistry* **1958**, 11, 99-103.
14. Freeman, H. C.; Smith, J. E. W. L.; Taylor, J. C., Crystallographic studies of the biuret reaction. *Nature* **1959**, 184, 707-710.
15. Hughes, E. W.; Freeman, H. C.; Yakel, H. L., Crystal structure of biuret hydrate. *Acta Crystallographica* **1961**, 14, 345.
16. Freeman, H. C.; Smith, J. E. W.; Taylor, J. C., Crystallographic studies of biuret reaction .1. Potassium bis-biureto cuprate(II) tetrahydrate, $K_2Cu(NHCONHCONH)_2 \cdot 4H_2O$. *Acta Crystallographica* **1961**, 14, 407.
17. Cooper, T.; Freeman, H. C.; Schoone, J. C.; Robinson, G., Model compounds for metal-protein interaction - crystal structures of 2 glycyglycylglycine-copper complexes. *Nature* **1962**, 194, 1237.
18. Freeman, H. C.; Schoone, J. C.; Robinson, G., Crystallographic studies of metal-peptide complexes .I. Glycyglycylglycinocopper(2) chloride sesquihydrate. *Acta Crystallographica* **1964**, 17, 719.
19. Freeman, H. C.; Nitta, I.; Snow, M. R.; Tomita, K., Refinement of structure of bisglycino-copper(2) monohydrate $Cu(NH_2CH_2COO)_2 \cdot H_2O$. *Acta Crystallographica* **1964**, 17, 1463.
20. Freeman, H. C.; Taylor, M. R., Model compounds for metal-protein interaction - crystal structure of disodium glycyglycylglycylglycinocuprate(2) decahydrate. *Proceedings of the Chemical Society of London* **1964**, 88.
21. Freeman, H. C.; Geldard, J. F.; Snow, M. R.; Lions, F., Crystal structure of bis-(2,2-dipyridyliminato)palladium $_2$). *Proceedings of the Chemical Society of London* **1964**, 258.
22. Freeman, H. C.; Schoone, J. C.; Sime, J. G., Crystallographic studies of metal-peptide complexes .2. Sodium glycyglycylglycino cuprate(2) monohydrate. *Acta Crystallographica* **1965**, 18, 381.

23. Freeman, H. C.; Snow, M. R., crystal structure of bis(2,2'-dipyridyliminato)palladium (2), $\text{Pd}(\text{C}_{10}\text{H}_8\text{N}_3)_2$. *Acta Crystallographica* **1965**, *18*, 843.
24. Freeman, H. C.; Taylor, M. R., Crystallographic studies of metal-peptide complexes .3. Disodium glycylglycylglycylglycino cuprate(2) decahydrate. *Acta Crystallographica* **1965**, *18*, 939.
25. Freeman, H. C.; Szymanski, J. T., Model compounds for metal-protein interaction - crystal structure of copper(2) complex of beta-alanyl-L-histidine (carnosine). *Chemical Communications* **1965**, 598-+.
26. Dance, I. G.; Freeman, H. C., Crystal structure of dichlorotetraaquo chromium(3) chloride dihydrate - primary and secondary metal ion hydration. *Inorganic Chemistry* **1965**, *4*, 1555-+.
27. Freeman, H. C.; Robinson, G., Crystal structure of carbonatopenta-ammine-cobalt(3) bromide hydrate. *Journal of the Chemical Society* **1965**, 3194.
28. Freeman, H. C.; Smith, J. E. W., Crystallographic studies of biuret reaction .2. Structure of bis-biuret-copper(2) dichloride $\text{Cu}(\text{NH}_2\text{CONHCONH}_2)_2\text{Cl}_2$. *Acta Crystallographica* **1966**, *20*, 153.
29. Blount, J. F.; Fraser, K. A.; Freeman, H. C.; Szymanski, J. T.; Wang, C. H., Model compounds for metal-protein interaction . Crystal structure of copper(2) complex of glycyl-L-histidine. *Chemical Communications* **1966**, 23-+.
30. Barnett, M. T.; Craven, B. M.; Freeman, H. C., Co-N bond lengths in Co_2 and Co_3 hexammines. *Chemical Communications* **1966**, 307.
31. Blount, J. F.; Fraser, K. A.; Freeman, H. C.; Szymanski, J. T.; Wang, C. H., Crystallographic studies of metal-peptide complexes .4. (glycyl-L-histidinato)copper(2) sesquihydrate. *Acta Crystallographica* **1967**, *22*, 396-+.
32. Freeman, H. C.; Szymanski, J. T., Crystallographic studies of metal-peptide complexes .V. (beta-alanyl-L-histidinato)copper(2) dihydrate. *Acta Crystallographica* **1967**, *22*, 406-+.
33. Andreatta, R. H.; Freeman, H. C.; Robertso, A.; Sinclair, R. L., Selective cleavage of peptides by alkali in presence of transition-metal ions. *Chemical Communications* **1967**, 203-+.
34. Blount, J. F.; Freeman, H. C., Absolute configuration and stereospecificity of (-)-589-sarcosinatobis(ethylenediamine)cobalt(3) ion. *Chemical Communications* **1967**, 324.
35. Falk, K. E.; Freeman, H. C.; Jansson, T.; Malmstrom, B. G.; Vanngard, T., Magnetic resonance studies of copper(2)-triglycylglycine complexes. *Journal of the American Chemical Society* **1967**, *89*, 6071-+.
36. Freeman, H. C.; Guss, J. M., Refinement of structure of diaquobisglycinatonickel(2), $\text{Ni}(\text{NH}_2\text{CH}_2\text{COO})_2(\text{OH}_2)_2$. *Acta Crystallographica Section B-Structural Crystallography and Crystal Chemistry* **1968**, *B 24*, 1133.
37. Freeman, H. C.; Guss, J. M.; Sinclair, R. L., Crystal structures of 4 nickel complexes of glycine and glycine peptides. *Chemical Communications* **1968**, 485.
38. Bell, J. D.; Blount, J. F.; Briscoe, O. V.; Freeman, H. C., Crystal structure of phenothiazine. *Chemical Communications* **1968**, 1656.
39. Dance, I. G.; Freeman, H. C., Refinement of crystal structure of beryllium sulphate tetrahydrate. *Acta Crystallographica Section B-Structural Crystallography and Crystal Chemistry* **1969**, *B 25*, 304-+.
40. Freeman, H. C.; Golomb, M. L., Crystal structure of trans-bisglycinatoplatinum(2) $\text{Pt}(\text{NH}_2\text{CH}_2\text{COO})_2$. *Acta Crystallographica Section B-Structural Crystallography and Crystal Chemistry* **1969**, *B 25*, 1203.
41. Blount, J. F.; Freeman, H. C.; Hemmeric, P.; Sigwart, C., Crystal structure of bis(succinodinitrile)copper(I) perchlorate. *Acta Crystallographica Section B-Structural Crystallography and Crystal Chemistry* **1969**, *B 25*, 1518.
42. Freeman, H. C.; Maxwell, I. E., Crystal and molecular structure of racemic cis-beta-(chloroaquotriethylenetetramine)cobalt(3) perchlorate. *Inorganic Chemistry* **1969**, *8*, 1293.
43. Freeman, H. C.; Martin, R. P., Potentiometric study of equilibria in aqueous solution between copper(2) ions, L (or D)-histidine and L-threonine and their mixtures. *Journal of Biological Chemistry* **1969**, *244*, 4823.

44. Freeman, H. C.; Milburn, G. H. W.; Nockolds, C. E., Crystal structure of bis(dithioacetone) tetrachloroferrate(2) bis(3,5-dimethyl-1,2-dithiolium) tetrachloroferrate(2). *Journal of the Chemical Society D-Chemical Communications* **1969**, 55.
45. Freeman, H. C.; Guss, J. M.; Healy, M. J.; Martin, R. P.; Nockolds, C. E.; Sarkar, B., Structure of a mixed amino-acid complex - L-histidinato-L-threoninatoaquocopper(2) hydrate. *Journal of the Chemical Society D-Chemical Communications* **1969**, 225.
46. Buckingham, D. A.; Marzilli, L. G.; Maxwell, I. E.; Sargeson, A. M.; Freeman, H. C., Crystal structure of 2 diastereoisomeric beta2-cobalt(3)-triethylenetetramine-S-proline complexes. *Journal of the Chemical Society D-Chemical Communications* **1969**, 583-+.
47. Bell, J. D.; Freeman, H. C.; Wood, A. M., Crystal structures of 3 complexes of copper(2) with mixed imidazole and glycine peptide ligands. *Journal of the Chemical Society D-Chemical Communications* **1969**, 1441.
48. Freeman, H. C.; Maxwell, I. E., The Crystal Structure and Absolute Configuration of L(-)(589)beta(2)-(RRS)-(triethylenetetramine-(S)-prolinato)cobalt(III) Diiodide Dihydrate. *Inorganic Chemistry* **1970**, 9, 649-655.
49. Freeman, H. C.; Guss, J. M.; Nockolds, C. E.; Page, R.; Webster, A., Operation of a computer equi-inclination X-ray diffractometer. *Acta Crystallographica Section A-Crystal Physics Diffraction Theoretical and General Crystallography* **1970**, A 26, 149.
50. Freeman, H. C.; Paul, G. L.; Sabine, T. M., A neutron diffraction study of perdeutero-alpha-glycylglycine. *Acta Crystallographica Section B-Structural Crystallography and Crystal Chemistry* **1970**, B 26, 925.
51. Buckingham, D. A.; Maxwell, I. E.; Sargeson, A. M.; Freeman, H. C., Chelate ring conformations of beta-triethylenetetramine configuration in cobalt(III) complexes. *Inorganic Chemistry* **1970**, 9, 1921.
52. Freeman, H. C.; Marzilli, L. G.; Maxwell, I. E., Crystal structure and absolute configuration of D-beta2-(SSS)-(triethylenetetramine-(S)-prolinato)cobalt(III) tetrachlorozincate. *Inorganic Chemistry* **1970**, 9, 2408.
53. Blount, J. F.; Freeman, H. C.; Holland, R. V.; Milburn, G. H., Crystallographic studies of metal-peptide complexes .6. Disodium tetraglycylglycinatocuprate(II) 4.5-hydrate. *Journal of Biological Chemistry* **1970**, 245, 5177.
54. Baraniak, E.; Freeman, H. C.; James, J. M.; Nockolds, C. E., Structural and spectroscopic study of carbonatodiaquobisimidazole-cobalt(II), a bidentate carbonato-complex of cobalt(II). *Journal of the Chemical Society A-Inorganic Physical Theoretical* **1970**, 2558.
55. Freeman, H. C.; Golomb, M. L., Model compounds for metal-protein interaction - crystal structure of 3 platinum(II) complexes of L-methionine and DL-methionine and glycyl-L-methionine. *Journal of the Chemical Society D-Chemical Communications* **1970**, 1523.
56. Acland, C. B.; Freeman, H. C., Model compounds for metal-protein interaction - crystal structures of 4 silver(II) complexes with glycine, glycylglycine, and imidazole. *Journal of the Chemical Society D-Chemical Communications* **1971**, 1016.
57. Freeman, H. C.; Guss, J. M., Crystal and molecular structure of bis(glycinato)bis(imidazole)nickel(II). *Acta Crystallographica Section B-Structural Crystallography and Crystal Chemistry* **1972**, B 28, 2090.
58. Flook, R. J.; Freeman, H. C.; Huq, F.; Rosalky, J. M., Crystal and molecular-structure of catena-mu-dichlorobisimidazolecadmium(II). *Acta Crystallographica Section B-Structural Science Crystal Engineering and Materials* **1973**, 29, 903-906.
59. Flook, R. J.; Freeman, H. C.; Moore, C. J.; Scudder, M. L., Model compounds for metal-protein interaction - crystal-structures of seven cadmium(II) complexes of amino-acids and peptides. *Journal of the Chemical Society-Chemical Communications* **1973**, 753-754.
60. Freeman, H. C.; Milburn, G. H. W.; Nockolds, C. E.; Mason, R.; Robertso, Gb; Rusholme, G. A., Structure of bis-(3,5-dimethyl-1,2-dithiolium) tetrachloroferrate(II) - comparison of structural details

derived from 2 independent diffractometer analyses. *Acta Crystallographica Section B-Structural Science* **1974**, *30*, 886-894.

61. Bruce, R. S. L.; Cooper, M. K.; Freeman, H. C.; McGrath, B. G., Evidence for an intramolecular C-H - N hydrogen-bond in (E)-5-methylpyridine-2-carboxaldehyde-2'-pyridylhydrazone tetracarbonylmolybdenum(0) from its crystal-structure and proton magnetic-resonance spectrum. *Inorganic Chemistry* **1974**, *13*, 1032-1037.

62. Freeman, H. C.; Stevens, G. N.; Taylor, I. F., Metal binding in chelation therapy - crystal-structure of D-penicillaminatolead(II). *Journal of the Chemical Society-Chemical Communications* **1974**, 366-367.

63. Bear, C. A.; Duggan, K. A.; Freeman, H. C., Tetraimidazolezinc(II) perchlorate. *Acta Crystallographica Section B-Structural Science* **1975**, *31*, 2713-2715.

64. Freeman, H. C.; Huq, F.; Rosalky, J. M.; Taylor, I. F., Crystal and molecular-structure of imidazolium sulfate dihydrate. *Acta Crystallographica Section B-Structural Science* **1975**, *31*, 2833-2837.

65. Beattie, J. K.; Fensom, D. J.; Freeman, H. C.; Woodcock, E.; Hill, H. A. O.; Stokes, A. M., NMR investigation of electron-transfer in copper-protein, plastocyanin. *Biochimica Et Biophysica Acta* **1975**, *405*, 109-114.

66. Bear, C. A.; Freeman, H. C., Crystallographic studies of metal-peptide complexes .8. Glycyl-L-methioninatocopper(II). *Acta Crystallographica Section B-Structural Science* **1976**, *32*, 2534-2536.

67. Baraniak, E.; Bruce, R. S. L.; Freeman, H. C.; Hair, N. J.; James, J., Structure and properties of a dimeric hydroxo-bridged ytterbium(III) complex, di-mu-hydroxo-bis triaquo(pyridine-2-carboxaldehyde "2'-pyridylhydrazone)ytterbium(III) tetrachloride tetrahydrate. *Inorganic Chemistry* **1976**, *15*, 2226-2230.

68. Beattie, J. K.; Fensom, D. J.; Freeman, H. C., Reinterpretation of paramagnetic line broadening in nuclear magnetic-resonance spectra of amino-acids and peptides .1. Copper(II)-glycine system. *Journal of the American Chemical Society* **1976**, *98*, 500-507.

69. Freeman, H. C.; Huq, F.; Stevens, G. N., Metal binding by D-penicillamine - crystal-structure of D-penicillaminatocadmium(II) hydrate. *Journal of the Chemical Society-Chemical Communications* **1976**, 90-91.

70. Birker, P.; Freeman, H. C., Metal-binding in chelation therapy - x-ray crystal-structure of a copper(I)-copper(II) complex of D-penicillamine. *Journal of the Chemical Society-Chemical Communications* **1976**, 312-313.

71. Bowden, B. F.; Freeman, H. C.; Jones, R. D. G., Molecular and crystal-structure of eupolauramine, a novel type of alkaloid from eupomatia-laurina. *Journal of the Chemical Society-Perkin Transactions 2* **1976**, 658-662.

72. Birker, P.; Freeman, H. C.; Guss, J. M.; Watson, A. D., Bis(biuret)mercury(II) dichloride. *Acta Crystallographica Section B-Structural Science* **1977**, *33*, 182-184.

73. Flook, R. J.; Freeman, H. C.; Scudder, M. L., X-ray and neutron-diffraction study of aqua(L-glutamato)cadmium(II) hydrate. *Acta Crystallographica Section B-Structural Science* **1977**, *33*, 801-809.

74. Craven, B. M.; McMullan, R. K.; Bell, J. D.; Freeman, H. C., Crystal-structure of imidazole by neutron-diffraction at 20-degrees-C and 150-degrees-C. *Acta Crystallographica Section B-Structural Science* **1977**, *33*, 2585-2589.

75. Freeman, H. C.; Moore, C. J., DL-Cysteinatothallium(I). *Acta Crystallographica Section B-Structural Science* **1977**, *33*, 2690-2692.

76. Meester, P. D.; Hodgson, D. J.; Freeman, H. C.; Moore, C. J., Tridentate coordination by L-cysteine dianion - crystal and molecular-structure of sodium bis(L-cysteinato)chromate(III) dihydrate. *Inorganic Chemistry* **1977**, *16*, 1494-1498.

77. Freeman, H. C.; Healy, M. J.; Scudder, M. L., Crystallographic study of structure of glycyl-L-alaninatocopper(II) hydrate and conformations of copper(II) dipeptide complexes. *Journal of Biological Chemistry* **1977**, *252*, 8840-8847.

78. Colman, P. M.; Freeman, H. C.; Guss, J. M.; Murata, M.; Norris, V. A.; Ramshaw, J. A. M.; Venkatappa, M. P.; Vickery, L. E., Preliminary crystallographic data for a basic copper-containing protein from cucumber seedlings. *Journal of Molecular Biology* **1977**, *112*, 649-650.
79. Chapman, G. V.; Colman, P. M.; Freeman, H. C.; Guss, J. M.; Murata, M.; Norris, V. A.; Ramshaw, J. A. M.; Venkatappa, M. P., Preliminary crystallographic data for a copper-containing protein, plastocyanin. *Journal of Molecular Biology* **1977**, *110*, 187-189.
80. Birker, P.; Freeman, H. C., Structure, properties, and function of a copper(I)-copper(II) complex of d-penicillamine - pentathallium(I) mu-8-chloro-dodeca(d-penicillaminato)-octacuprate(I)hexacuprate(II) normal-hydrate. *Journal of the American Chemical Society* **1977**, *99*, 6890-6899.
81. Freeman, H. C.; Guss, J. M., Crystallographic studies of metal-peptide complexes .9. Disodium bis(glycylglycinato)nickelate(II) octahydrate and disodium bis(glycylglycinato)nickelate(II) nonahydrate. *Acta Crystallographica Section B-Structural Science* **1978**, *34*, 2451-2458.
82. Freeman, H. C.; Guss, J. M.; Sinclair, R. L., Crystallographic studies of metal-peptide complexes .10. Disodium triglycylglycinatonickelate(II) octahydrate and disodium triglycylglycinatonickelate(II) decahydrate. *Acta Crystallographica Section B-Structural Science* **1978**, *34*, 2459-2466.
83. Freeman, H. C.; Norris, V. A.; Ramshaw, J. A. M.; Wright, P. E., High-resolution proton magnetic-resonance studies of plastocyanin. *Febs Letters* **1978**, *86*, 131-135.
84. Freeman, H. C.; Moore, C. J.; Jackson, W. G.; Sargeson, A. M., Synthesis, structure, and stereochemistry of some cysteine-cobalt(III) and penicillaminecobalt(III) complexes. *Inorganic Chemistry* **1978**, *17*, 3513-3521.
85. Colman, P. M.; Freeman, H. C.; Guss, J. M.; Murata, M.; Norris, V. A.; Ramshaw, J. A. M.; Venkatappa, M. P., X-ray crystal-structure analysis of plastocyanin at 2.7Å resolution. *Nature* **1978**, *272*, 319-324.
86. Colman, P. M.; Freeman, H. C.; Guss, J. M.; Murata, M.; Norris, V. A.; Ramshaw, J. A. M.; Venkatappa, M. P. In *The Structure of Plastocyanin Determined by X-Ray Diffraction at 2.7Å Resolution*, Photosynthesis 77: The Fourth International Congress on Photosynthesis, London, Hall, D. O.; Coombs, J.; Goodwin, T. W., Eds. London, 1978.
87. Freeman, H. C.; Hutchinson, N. D., Crystal-structures of 2 copper(II) complexes of the anti-tumor agent 5-(3,3-dimethyl-1-triazenyl)imidazole-4-carboxamide. *Acta Crystallographica Section B-Structural Science* **1979**, *35*, 2045-2050.
88. Freeman, H. C.; Hutchinson, N. D., Crystal-structure of the anti-tumor agent 5-(3,3-dimethyl-1-triazenyl)imidazole-4-carboxamide (NSC-45388). *Acta Crystallographica Section B-Structural Science* **1979**, *35*, 2051-2054.
89. Penfield, K. W.; Gay, R. R.; Himmelwright, R. S.; Eickman, N. C.; Norris, V. A.; Freeman, H. C.; Solomon, E. I., Spectroscopic studies on plastocyanin single-crystals - a detailed electronic-structure determination of the blue copper active-site. *Journal of the American Chemical Society* **1981**, *103*, 4382-4388.
90. Scott, R. A.; Hahn, J. E.; Doniach, S.; Freeman, H. C.; Hodgson, K. O., Polarized x-ray absorption-spectra of oriented plastocyanin single-crystals - investigation of methionine copper coordination. *Journal of the American Chemical Society* **1982**, *104*, 5364-5369.
91. Murata, M.; Begg, G. S.; Lambrou, F.; Leslie, B.; Simpson, R. J.; Freeman, H. C.; Morgan, F. J., Amino-acid-sequence of a basic blue protein from cucumber seedlings. *Proceedings of the National Academy of Sciences of the United States of America-Biological Sciences* **1982**, *79*, 6434-6437.
92. Garrett, T. P. J.; Guss, J. M.; Freeman, H. C., Hexakis(imidazole)manganese(II) dichloride tetrahydrate, $Mn(C_3H_4N_2)_6Cl_2 \cdot 4H_2O$, and hexakis(imidazole)zinc(II) dichloride tetrahydrate, $Zn(C_3H_4N_2)_6Cl_2 \cdot 4H_2O$. *Acta Crystallographica Section C-Crystal Structure Communications* **1983**, *39*, 1027-1031.

93. Garrett, T. P. J.; Guss, J. M.; Freeman, H. C., Trans-diaquatetrakis(imidazole)manganese(II) dichloride, $\text{Mn}(\text{C}_3\text{H}_4\text{N}_2)_4(\text{H}_2\text{O})_2\text{Cl}_2$. *Acta Crystallographica Section C-Crystal Structure Communications* **1983**, 39, 1031-1034.
94. Ollis, D. L.; Appleby, C. A.; Colman, P. M.; Cutten, A. E.; Guss, J. M.; Venkatappa, M. P.; Freeman, H. C., Crystal-structure of soybean ferric leghemoglobin-a nicotinate at a resolution of 3.3 Å. *Australian Journal of Chemistry* **1983**, 36, 451-468.
95. Guss, J. M.; Freeman, H. C., Structure of oxidized poplar plastocyanin at 1.6 Å resolution. *Journal of Molecular Biology* **1983**, 169, 521-563.
96. Freeman, H. C.; Garrett, T. P. J.; Guss, J. M.; Murata, M.; Yoshizaki, F.; Sugimura, Y.; Shimokoriyama, M., Preliminary crystallographic data for plastocyanins from an alga (enteromorpha-prolifera) and from cucumber (cucumis-sativus). *Journal of Molecular Biology* **1983**, 164, 351-353.
97. King, G.; Andary, T. A.; Freeman, H. C.; Gavrilovic, L.; Wright, P. E., An examination of the basic blue copper protein from cucumber peelings by H-1-NMR. *Febs Letters* **1984**, 166, 288-292.
98. Garrett, T. P. J.; Clingeffer, D. J.; Guss, J. M.; Rogers, S. J.; Freeman, H. C., The crystal-structure of poplar apoplastocyanin at 1.8-Å resolution - the geometry of the copper-binding site is created by the polypeptide. *Journal of Biological Chemistry* **1984**, 259, 2822-2825.
99. Roberts, J. E.; Cline, J. F.; Lum, V.; Freeman, H.; Gray, H. B.; Peisach, J.; Reinhammar, B.; Hoffman, B. M., Comparative ENDOR study of 6 blue copper proteins. *Journal of the American Chemical Society* **1984**, 106, 5324-5330.
100. Guss, J. M.; Harrowell, P. R.; Murata, M.; Norris, V. A.; Freeman, H. C., Crystal-structure analyses of reduced (CuI) poplar plastocyanin at 6 pH values. *Journal of Molecular Biology* **1986**, 192, 361-387.
101. Murdoch, C. M.; Cooper, M. K.; Hambley, T. W.; Hunter, W. N.; Freeman, H. C., 3 chromium(III) complexes with dipeptide ligands. *Journal of the Chemical Society-Chemical Communications* **1986**, 1329-1331.
102. Simpson, R. J.; Moritz, R. L.; Nice, E. C.; Grego, B.; Yoshizaki, F.; Sugimura, Y.; Freeman, H. C.; Murata, M., Complete amino-acid-sequence of plastocyanin from a green-alga, enteromorpha-prolifera. *European Journal of Biochemistry* **1986**, 157, 497-506.
103. Church, W. B.; Guss, J. M.; Potter, J. J.; Freeman, H. C., The crystal-structure of mercury-substituted poplar plastocyanin at 1.9-Å resolution. *Journal of Biological Chemistry* **1986**, 261, 234-237.
104. Jackman, M. P.; McGinnis, J.; Sykes, A. G.; Collyer, C. A.; Murata, M.; Freeman, H. C., Kinetic-studies on 1-1 electron-transfer reactions involving blue copper proteins .14. Reactions of poplar plastocyanin with inorganic complexes. *Journal of the Chemical Society-Dalton Transactions* **1987**, 2573-2577.
105. Guss, J. M.; Merritt, E. A.; Phizackerley, R. P.; Hedman, B.; Murata, M.; Hodgson, K. O.; Freeman, H. C., Phase determination by multiple-wavelength X-ray-diffraction - crystal-structure of a basic blue copper protein from cucumbers. *Science* **1988**, 241, 806-811.
106. Pennerhahn, J. E.; Murata, M.; Hodgson, K. O.; Freeman, H. C., Low-temperature X-ray absorption-spectroscopy of plastocyanin - evidence for copper-site photoreduction at cryogenic temperatures. *Inorganic Chemistry* **1989**, 28, 1826-1832.
107. Madafiglio, K.; Manning, T. M.; Murdoch, C. M.; Tulip, W. R.; Cooper, M. K.; Hambley, T. W.; Freeman, H. C., 3 chromium(III) complexes with mixed amino-acid ligands - (L-cysteinato)-(L-histidinato)chromium(III) 3.5-hydrate, (L-aspartato)(L-histidinato)chromium(III) 1.5-hydrate and bis(DL-histidinato)chromium(III) chloride 4.2-hydrate. *Acta Crystallographica Section C-Crystal Structure Communications* **1990**, 46, 554-561.
108. Collyer, C. A.; Guss, J. M.; Sugimura, Y.; Yoshizaki, F.; Freeman, H. C., Crystal-structure of plastocyanin from a green-alga, enteromorpha-prolifera. *Journal of Molecular Biology* **1990**, 211, 617-632.

109. Newman, J. M.; Bear, C. A.; Hambley, T. W.; Freeman, H. C., Structure of bis(glycinato)zinc(II) monohydrate, a 5-coordinate zinc(II) complex. *Acta Crystallographica Section C-Crystal Structure Communications* **1990**, *46*, 44-48.
110. Fields, B. A.; Guss, J. M.; Freeman, H. C., 3-dimensional model for stellacyanin, a blue copper-protein. *Journal of Molecular Biology* **1991**, *222*, 1053-1065.
111. Han, J.; Adman, E. T.; Beppu, T.; Codd, R.; Freeman, H. C.; Huq, L.; Loehr, T. M.; Sandersloehr, J., Resonance raman-spectra of plastocyanin and pseudoazurin - evidence for conserved cysteine ligand conformations in cupredoxins (blue copper proteins). *Biochemistry* **1991**, *30*, 10904-10913.
112. Newman, J. M.; Binns, M.; Hambley, T. W.; Freeman, H. C., Redetermination of the crystal-structure of hexaamminecobalt(II) chloride. *Inorganic Chemistry* **1991**, *30*, 3499-3502.
113. Roberts, V. A.; Freeman, H. C.; Olson, A. J.; Tainer, J. A.; Getzoff, E. D., Electrostatic orientation of the electron-transfer complex between plastocyanin and cytochrome-c. *Journal of Biological Chemistry* **1991**, *266*, 13431-13441.
114. Guss, J. M.; Bartunik, H. D.; Freeman, H. C., Accuracy and precision in protein-structure analysis - restrained least-squares refinement of the structure of poplar plastocyanin at 1.33 angstrom resolution. *Acta Crystallographica Section B-Structural Science* **1992**, *48*, 790-811.
115. Buchi, F. N.; Bond, A. M.; Codd, R.; Huq, L. N.; Freeman, H. C., Electrochemical investigations of poplar, spinach, cucumber, and parsley plastocyanins at conventional and micro-sized carbon electrodes. *Inorganic Chemistry* **1992**, *31*, 5007-5014.
116. Wilson, C.; Scudder, M. L.; Hambley, T. W.; Freeman, H. C., Structures of dichloro (S)-methionine-N,S platinum(II) and chloro glycyI-(S)-methioninato-N,N',S platinum(II) monohydrate. *Acta Crystallographica Section C-Crystal Structure Communications* **1992**, *48*, 1012-1015.
117. Vigneich, V.; Dooley, D. M.; Guss, J. M.; Harvey, I.; McGuirl, M. A.; Freeman, H. C., Crystallization and preliminary crystallographic characterization of the copper-containing amine oxidase from pea-seedlings. *Journal of Molecular Biology* **1993**, *229*, 243-245.
118. Fields, B. A.; Bartsch, H. H.; Bartunik, H. D.; Cordes, F.; Guss, J. M.; Freeman, H. C., Accuracy and precision in protein crystal-structure analysis - 2 independent refinements of the structure of poplar plastocyanin at 1.73-Å. *Acta Crystallographica Section D-Structural Biology* **1994**, *50*, 709-730.
119. Tong, H.; Berghuis, A. M.; Chen, J.; Luo, Y. G.; Guss, J. M.; Freeman, H. C.; Brayer, G. D., ASIR - an automatic procedure for determining solvent structure in protein crystallography. *Journal of Applied Crystallography* **1994**, *27*, 421-426.
120. Ellis, P. J.; Freeman, H. C.; Hitchman, M. A.; Reinen, D.; Wagner, B., Exafs evidence that the $\text{CuCl}_6(4-)$ ion in $(3\text{-chloroanilinium})_8(\text{CuCl}_6)\text{Cl}_4$ has an elongated rather than compressed tetragonal geometry. *Inorganic Chemistry* **1994**, *33*, 1249-1250.
121. Ellis, P. J.; Freeman, H. C., XFIT - an interactive exafs analysis program. *Journal of Synchrotron Radiation* **1995**, *2*, 190-195.
122. Astley, T.; Ellis, P. J.; Freeman, H. C.; Hitchman, M. A.; Keene, F. R.; Tiekink, E. R. T., Extended X-ray-absorption fine-structure, crystal-structures at 2.95-Å and 1.73-Å, and electron-paramagnetic-resonance and electronic-spectra of bis tris(2-pyridyl)methane copper(II) dinitrate. *Journal of the Chemical Society-Dalton Transactions* **1995**, 595-601.
123. McLeod, D. D. N.; Freeman, H. C.; Harvey, I.; Lay, P. A.; Bond, A. M., Voltammetry of plastocyanin at a graphite electrode: Effects of structure, charge, and electrolyte. *Inorganic Chemistry* **1996**, *35*, 7156-7165.
124. Guss, J. M.; Merritt, E. A.; Phizackerley, R. P.; Freeman, H. C., The structure of a phytocyanin, the basic blue protein from cucumber, refined at 1.8 angstrom resolution. *Journal of Molecular Biology* **1996**, *262*, 686-705.
125. Kumar, V.; Dooley, D. M.; Freeman, H. C.; Guss, J. M.; Harvey, I.; McGuirl, M. A.; Wilce, M. C. J.; Zubak, V. M., Crystal structure of a eukaryotic (pea seedling) copper-containing amine oxidase at 2.2 angstrom resolution. *Structure* **1996**, *4*, 943-955.

126. Freeman, H. C.; Guss, J. M.; Kumar, V.; McIntire, W. S.; Zubak, V. M., Purification, crystallization and preliminary X-ray crystal structure analysis of copper amine oxidase from *Arthrobacter globiformis*. *Acta Crystallographica Section D-Structural Biology* **1996**, *52*, 197-198.
127. Freeman, H. C.; Langs, D. A.; Nockolds, C. E.; Oh, Y. L., The crystal structure of cis-inositol monohydrate - Un objet retrouve. *Australian Journal of Chemistry* **1996**, *49*, 413-424.
128. Wilce, M. C. J.; Dooley, D. M.; Freeman, H. C.; Guss, J. M.; Matsunami, H.; McIntire, W. S.; Ruggiero, C. E.; Tanizawa, K.; Yamaguchi, H., Crystal structures of the copper-containing amine oxidase from *Arthrobacter globiformis* in the holo and apo forms: Implications for the biogenesis of topaquinone. *Biochemistry* **1997**, *36*, 16116-16133.
129. Ellis, P. J.; Appleby, C. A.; Guss, J. M.; Hunter, W. N.; Ollis, D. L.; Freeman, H. C., Structure of ferric soybean leghemoglobin a nicotinate at 2.3 angstrom resolution. *Acta Crystallographica Section D-Biological Crystallography* **1997**, *53*, 302-310.
130. Rich, A. M.; Armstrong, R. S.; Ellis, P. J.; Freeman, H. C.; Lay, P. A., Determination of iron-ligand bond lengths in horse heart met- and deoxymyoglobin using multiple-scattering XAFS analyses. *Inorganic Chemistry* **1998**, *37*, 5743-5753.
131. Zhang, L. B.; Crossley, M. J.; Dixon, N. E.; Ellis, P. J.; Fisher, M. L.; King, G. F.; Lilley, P. E.; MacLachlan, D.; Pace, R. J.; Freeman, H. C., Spectroscopic identification of a dinuclear metal centre in manganese(II)-activated aminopeptidase P from *Escherichia coli*: implications for human prolidase. *Journal of Biological Inorganic Chemistry* **1998**, *3*, 470-483.
132. Wilce, M. C. J.; Bond, C. S.; Dixon, N. E.; Freeman, H. C.; Guss, J. M.; Lilley, P. E.; Wilce, J. A., Structure and mechanism of a proline-specific aminopeptidase from *Escherichia coli*. *Proceedings of the National Academy of Sciences of the United States of America* **1998**, *95*, 3472-3477.
133. Shi, D. H.; Hambley, T. W.; Freeman, H. C., Three new platinum(II)-dipeptide complexes. *Journal of Inorganic Biochemistry* **1999**, *73*, 173-186.
134. Bond, C. S.; Bendall, D. S.; Freeman, H. C.; Guss, J. M.; Howe, C. J.; Wagner, M. J.; Wilce, M. C. J., The structure of plastocyanin from the cyanobacterium *Phormidium laminosum*. *Acta Crystallographica Section D-Structural Biology* **1999**, *55*, 414-421.
135. Willingham, K.; Maher, M. J.; Grunden, A. M.; Ghosh, M.; Adams, M. W. W.; Freeman, H. C.; Guss, J. M., Crystallization and characterization of the prolidase from *Pyrococcus furiosus*. *Acta Crystallographica Section D-Biological Crystallography* **2001**, *57*, 428-430.
136. Bond, C. S.; Blankenship, R. E.; Freeman, H. C.; Guss, J. M.; Maher, M. J.; Selvaraj, F. M.; Wilce, M. C. J.; Willingham, K. M., Crystal structure of auracyanin, a "blue" copper protein from the green thermophilic photosynthetic bacterium *Chloroflexus aurantiacus*. *Journal of Molecular Biology* **2001**, *306*, 47-67.
137. Lee, M.; Willingham, K.; Langley, D.; Maher, M. J.; Cohen, A. E.; Ellis, P. J.; Kuchar, J. A.; Dooley, D. M.; Freeman, H. C.; Guss, J. M., Crystallization of *Pichia pastoris* lysyl oxidase. *Acta Crystallographica Section D-Structural Biology* **2002**, *58*, 2177-2179.
138. Duff, A. P.; Cohen, A. E.; Ellis, P. J.; Kuchar, J. A.; Langley, D. B.; Shepard, E. M.; Dooley, D. M.; Freeman, H. C.; Guss, J. M., The crystal structure of *Pichia pastoris* lysyl oxidase. *Biochemistry* **2003**, *42*, 15148-15157.
139. Lee, M.; Maher, M. J.; Freeman, H. C.; Guss, J. M., Auracyanin B structure in space group P6(5). *Acta Crystallographica Section D-Structural Biology* **2003**, *59*, 1545-1550.
140. Graham, S. C.; Lee, M.; Freeman, H. C.; Guss, J. M., An orthorhombic form of *Escherichia coli* aminopeptidase P at 2.4 angstrom resolution. *Acta Crystallographica Section D-Structural Biology* **2003**, *59*, 897-902.
141. Rooney, M. B.; Honeychurch, M. J.; Selvaraj, F. M.; Blankenship, R. E.; Bond, A. M.; Freeman, H. C., A thin-film electrochemical study of the "blue" copper proteins, auracyanin A and auracyanin B, from the photosynthetic bacterium *Chloroflexus aurantiacus*: the reduction potential as a function of pH. *Journal of Biological Inorganic Chemistry* **2003**, *8*, 306-317.

142. Duff, A. P.; Trambaiolo, D. M.; Cohen, A. E.; Ellis, P. J.; Juda, G. A.; Shepard, E. M.; Langley, D. B.; Dooley, D. M.; Freeman, H. C.; Guss, J. M., Using xenon as a probe for dioxygen-binding sites in copper amine oxidases. *Journal of Molecular Biology* **2004**, *344*, 599-607.
143. Graham, S. C.; Maher, M. J.; Simmons, W. H.; Freeman, H. C.; Guss, J. M., Structure of *Escherichia coli* aminopeptidase P in complex with the inhibitor apstatin. *Acta Crystallographica Section D-Structural Biology* **2004**, *60*, 1770-1779.
144. O'Connell, K. M.; Langley, D. B.; Shepard, E. M.; Duff, A. P.; Jeon, H. B.; Sun, G.; Freeman, H. C.; Guss, J. M.; Sayre, L. M.; Dooley, D. M., Differential inhibition of six copper amine oxidases by a family of 4-(aryloxy)-2-butylnamines: Evidence for a new mode of inactivation. *Biochemistry* **2004**, *43*, 10965-10978.
145. Maher, M. J.; Ghosh, M.; Grunden, A. M.; Menon, A. L.; Adams, M. W. W.; Freeman, H. C.; Guss, J. M., Structure of the prolidase from *Pyrococcus furiosus*. *Biochemistry* **2004**, *43*, 2771-2783.
146. Graham, S. C.; Bond, C. S.; Freeman, H. C.; Guss, J. M., Structural and functional implications of metal ion selection in aminopeptidase P, a metalloprotease with a dinuclear metal center. *Biochemistry* **2005**, *44*, 13820-13836.
147. Contakes, S. M.; Juda, G. A.; Langley, D. B.; Halpern-Manners, N. W.; Duff, A. P.; Dunn, A. R.; Gray, H. B.; Dooley, D. M.; Guss, J. M.; Freeman, H. C., Reversible inhibition of copper amine oxidase activity by channel-blocking ruthenium(II) and rhenium(I) molecular wires. *Proceedings of the National Academy of Sciences of the United States of America* **2005**, *102*, 13451-13456.
148. Strater, N.; Jasper, B.; Scholte, M.; Krebs, B.; Duff, A. P.; Langley, D. B.; Han, R. L.; Averill, B. A.; Freeman, H. C.; Guss, J. M., Crystal structures of recombinant human purple acid phosphatase with and without an inhibitory conformation of the repression loop. *Journal of Molecular Biology* **2005**, *351*, 233-246.
149. Duff, A. P.; Shepard, E. M.; Langley, D. B.; Dooley, D. M.; Freeman, H. C.; Guss, J. M., A C-terminal disulfide bond in the copper-containing amine oxidase from pea seedlings violates the twofold symmetry of the molecular dimer. *Acta Crystallographica Section F-Structural Biology Communications* **2006**, *62*, 1168-1173.
150. Langley, D. B.; Duff, A. P.; Freeman, H. C.; Guss, J. M., The copper-containing amine oxidase from *Arthrobacter globiformis*: refinement at 1.55 and 2.20 angstrom resolution in two crystal forms. *Acta Crystallographica Section F-Structural Biology Communications* **2006**, *62*, 1052-1057.
151. Duff, A. P.; Cohen, A. E.; Ellis, P. J.; Hilmer, K.; Langley, D. B.; Dooley, D. M.; Freeman, H. C.; Guss, J. M., The 1.23 angstrom structure of *Pichia pastoris* lysyl oxidase reveals a lysine-lysine cross-link. *Acta Crystallographica Section D-Biological Crystallography* **2006**, *62*, 1073-1084.
152. Langley, D. B.; Trambaiolo, D. M.; Duff, A. P.; Dooley, D. M.; Freeman, H. C.; Guss, J. M., Complexes of the copper-containing amine oxidase from *Arthrobacter globiformis* with the inhibitors benzylhydrazine and tranylcypromine. *Acta Crystallographica Section F-Structural Biology Communications* **2008**, *64*, 577-583.
153. Langley, D. B.; Brown, D. E.; Cheruzel, L. E.; Contakes, S. M.; Duff, A. P.; Hilmer, K. M.; Dooley, D. M.; Gray, H. B.; Guss, J. M.; Freeman, H. C., Enantiomer-specific binding of ruthenium(II) molecular wires by the amine oxidase of *Arthrobacter globiformis*. *Journal of the American Chemical Society* **2008**, *130*, 8069-8078.
154. Lee, M.; del Rosario, M. C.; Harris, H. H.; Blankenship, R. E.; Guss, J. M.; Freeman, H. C., The crystal structure of auracyanin A at 1.85 Å resolution: the structures and functions of auracyanins A and B, two almost identical "blue" copper proteins, in the photosynthetic bacterium *Chloroflexus aurantiacus*. *Journal of Biological Inorganic Chemistry* **2009**, *14*, 329-345.