

Richard D. Adams - Scientific Publications

1. R. D. Adams, F. A. Cotton, A New Type of Fluxional Molecule. Bis-(μ -dimethylgermyl)dicobalthexacarbonyl, *J. Am. Chem. Soc.*, **1970**, 92, 5003.
2. R. D. Adams, F. A. Cotton and G. A. Rusholme, Low-Valent Metal Isonitrile Complexes. I. The Structure of Di(methylisonitrile)di(η^5 -cyclopentadienyl)dinickel, *J. Coord. Chem.*, **1971**, 1, 275.
3. R. D. Adams, F. A. Cotton, Low-Valent Metal Isonitrile Complexes. II. Preparation and Characterization of Some Di(alkylisonitrile)di(η^5 -cyclopentadienyl)-dinickel Compounds, *Syn. Inorg. & Metal-Org. Chem.*, **1972**, 2, 277.
4. R. D. Adams, F. A. Cotton, New Evidence for Carbonyl- and Isonitrile-Bridged Transition States for Intramolecular Carbonyl Scrambling, *J. Am. Chem. Soc.*, **1972**, 94, 6193.
5. R. D. Adams, F. A. Cotton, Structural and Dynamic Properties of Dicyclopentadienylhexacarbonyldimolybdenum in Various Solvents, *Inorg. Chim. Acta.*, **1973**, 7, 153.
6. R. D. Adams, M. D. Brice and F. A. Cotton, Intramolecular Ligand Scrambling via Bridged Transition States or Intermediates in Di(pentahaptocyclopentadienyl)(methylisonitrile)(pentacarbonyl)(dimolybdenum), *J. Am. Chem. Soc.*, **1973**, 95, 6594.
7. R. D. Adams, F. A. Cotton, On the Pathway of Bridge/Terminal Ligand Exchange in Some Binuclear Metal Carbonyls, *J. Am. Chem. Soc.*, **1973**, 95, 6589.
8. R. D. Adams, F. A. Cotton, and J. T. Troup, Low-Valent Metal Isonitrile Complexes. V. The Structure and Dynamical Stereochemistry of Bispentahapto (cyclopentadienyl)tricarbonyl-*t*-butylisonitrilediiron (Fe-Fe), [η^5 -C₅H₅]₂Fe₂(CO)₃CNC(CH₃)₃, *Inorg. Chem.*, **1974**, 13, 257.
9. R. D. Adams, F. A. Cotton, Low-Valent Metal Isonitrile Complexes. III. Inversion at the Nitrogen Atoms of Bridging Isonitrile Ligands, *Inorg. Chem.*, **1974**, 13, 249.
10. R. D. Adams, D. M. Collins and F. A. Cotton, Unusual Structural and Magnetic Resonance Properties of Dicyclopentadienylhexacarbonyldichromium, *J. Am. Chem. Soc.*, **1974**, 96, 749.
11. R. D. Adams, D. M. Collins and F. A. Cotton, The Molecular Structures and Barriers to Internal Rotation in Bis(Cyclopentadienyl)-hexacarbonyl Tungsten and its Molybdenum Analog, *Inorg. Chem.* **1974**, 13, 1086.

12. R. D. Adams, M. D. Brice and F. A. Cotton, Structural and Dynamical Properties of (μ -Dimethylgermyl)(μ -carbonyl)dicyclopentadienyldicarbonyldiiron, *Inorg. Chem.* **1974**, *13*, 1080.
13. R. D. Adams, F. A. Cotton and B. A. Frenz, The Preparation, Properties and Crystal Structure of Bis[η^5 -cyclopentadienyldicarbonyliron]dimethylgermyl]oxide, *J. Organometal. Chem.* **1974**, *73*, 93.
14. R. D. Adams, Organometallic Anions Containing Isonitrile Ligand. I. The Synthesis of Cyclopentadienyliron(carbonyl)(methylisonitrile) Hydride and its Reactions with Group IV B Alkyl Halides, *J. Organometal. Chem.* **1974**, *82*, C7.
15. R. D. Adams, F. A. Cotton, W. R. Cullen, D. L. Hunter, and L. Mihichuk, Fluxional Behavior of Some Dinuclear Iron and Cobalt Hexacarbonyl Compounds with Alkylsulfur, and Dialkylphosphorus, -Arsenic, -germanium and tin, *Inorg. Chem.* **1975**, *14*, 1395.
16. R. D. Adams, F. A. Cotton, "Stereochemical Nonrigidity in Metal Carbonyl Compounds" in *Dynamic Nuclear Magnetic Resonance Spectroscopy*, L. M. Jackman, and F. A. Cotton, Eds., Academic Press, **1975**, Chapter 12, pp 489-522
17. R. D. Adams and F. A. Cotton, Low Valent Metal Isonitrile Complexes. VI. Syntheses and Mass Spectra of Methylisonitrile Substituted Derivatives of Tetracarbonyldicyclopentadienyldiiron, *Syn. React. Inorg. Metal-Org. Chem.* **1974**, *4*, 477.
18. R. D. Adams, Organometallic Anions Containing Isonitrile Ligands. II. The Synthesis and Reaction Chemistry for Cyclopentadienylmolybdenumdicarbonylmethylisonitrile Anions, *J. Organometal. Chem.* **1975**, *88*, C38.
19. R. D. Adams, D. F. Chodosh, Isonitrile Derivatives of Dimanganese Decacarbonyl. I. Evidence for Metal-Metal Ligand Exchange, *J. Organometal. Chem.* **1975**, *87*, C48.
20. R. D. Adams, Organometallic Anions Containing Isocyanide Ligands. III. The Synthesis and Reaction Chemistry of Methylisocyanide Derivatives of Cyclopentadienylmolybdenumtricarboxyl Anion, *Inorg. Chem.* **1976**, *15*, 169.
21. R. D. Adams, Organometallic Anions Containing Isocyanide Ligands. IV. The Synthesis and Reactivity of Methylisocyanide Derivatives of Manganesepentacarbonyl Anion, *Inorg. Chem.* **1976**, *15*, 174.
22. R. D. Adams, D. F. Chodosh, Isocyanide Insertion Rearrangements and Their Bonding to Transition Metal Atoms, *J. Am. Chem. Soc.* **1976**, *98*, 5391.
23. R. D. Adams and D. F. Chodosh, Positively Charged Ligands. The Coordination Behavior of Sulfonium Cations, *J. Organometal. Chem.* **1976**, *120*, C39.

24. R. D. Adams and D. F. Chodosh, Intermediates in Insertion Rearrangements: A π -Iminoacyl Metal Complex, *J. Organometal. Chem.* **1976**, 122, C11.
25. R. D. Adams, J. W. Faller, D. A. Haitko and D. F. Chodosh, Chirality Retention in Twist Rearrangements of Pseudooctahedral Molybdenum and Tungsten Complexes, *J. Am. Chem. Soc.* **1977**, 99, 1654.
26. R. D. Adams and D. F. Chodosh, Isocyanide Insertion Reactions. I. The Importance of η^2 -Iminoacyl Ligands as Intermediates, *J. Am. Chem. Soc.*, **1977**, 99, 6544.
27. R. D. Adams, D. F. Chodosh and N. M. Golembeski, Syntheses of Organometallic Compounds Containing Iminoacyl Ligands. Reactions of Metal Carbonyl Anions with Imidoyl Halides, *J. Organometal. Chem.* **1977**, 139, C39.
28. R. D. Adams, D. F. Chodosh and N. M. Golembeski, Studies of the Reactions of Amines with Carbonyl Functions in Some Cyclopentadienyl Tungsten Carbonyl Complexes, *Inorg. Chem.* **1978**, 17, 266.
29. R. D. Adams and D. F. Chodosh, Isocyanide Insertion Reactions. II. The Structural and Dynamical Stereochemistry of η^1 - and η^2 -Iminoacyl Ligands, *Inorg. Chem.* **1978**, 17, 41.
30. R. D. Adams and D. F. Chodosh, Positively Charged Ligands. The Coordination Behavior of Sulfonium Cations, *J. Am. Chem. Soc.* **1978**, 100, 812.
31. R. D. Adams, D. F. Chodosh and E. Faraci, Di- μ -(phenylthio)bis-{(dicarbonyl)(η -cyclopentadienyl)molybdenum(II)}, *Cryst. Struct. Comm.* **1978**, 7, 145.
32. R. D. Adams and N. M. Golembeski, The Unusual Coordination Behavior of Iminoacyl Ligands. The Crystal and Molecular Structure of $(\mu\text{-H})\text{Os}_3(\text{CO})_{10}(\mu\text{-}\eta^2\text{-C}_6\text{H}_5\text{CNCH}_3)$, *Inorg. Chem.* **1978**, 17, 1969.
33. R. D. Adams and N. M. Golembeski, Isocyanide Insertion Reactions. The Role of Isocyanide Insertions in the Metal Assisted Hydrogenation of Isocyanides, *J. Am. Chem. Soc.* **1978**, 100, 4622.
34. R. D. Adams, D. F. Chodosh, M. Saunders and R. B. Woodward, The Hydrolysis of Bromolactonic Acid, *J. Org. Chem.* **1980**, 45, 2109.
35. R. D. Adams, D. F. Chodosh, J. W. Faller and A. Rosan, Stereospecificity in Reactions of Activated η^3 -Allyl Complexes of Molybdenum, *J. Am. Chem. Soc.* **1979**, 101, 2570.
36. R. D. Adams, J. W. Faller, A. Haitko and D. F. Chodosh, Aspects of Chirality of Retention in Rearrangements of Pseudooctahedral Molybdenum and Tungsten Complexes, *J. Am. Chem. Soc.* **1979**, 101, 865.

37. R. D. Adams and N. M. Golembeski, Hydrogenation of Small Molecules by Transition Metal Cluster Hydrides. The Reaction of $\text{H}_2\text{Os}_3(\text{CO})_{10}$ with Carbon Disulfide, *J. Am. Chem. Soc.* **1979**, *101*, 1306 - 1307.
38. R. D. Adams and N. M. Golembeski, Isocyanide Insertion Reactions and Their Role in the Cluster Catalyzed Hydrogenation of Isocyanide Molecules, *J. Am. Chem. Soc.* **1979**, *101*, 2579.
39. R. D. Adams, W. G. Klemperer and R. S. Liu, Synthesis and X-ray Structure of a Formylated Octamolybdate Cluster, *J. Chem. Soc., Chem. Commun.* **1979**, 2546.
40. R. D. Adams and N. M. Golembeski, Reactions of Small Molecules with Transition Metal Cluster Hydrides. The Reaction of $\text{H}_2\text{Os}_3(\text{CO})_{10}$ with Arylisocyanates, *J. Organometal. Chem.* **1979**, *171*, C21.
41. R. D. Adams and N. M. Golembeski, Triosmium Cluster compounds Containing and Hydride Ligands. The Crystal and Molecular Structure of $\text{Os}_3(\text{CO})_{10}(\text{CN}-t\text{-C}_4\text{H}_9)(\mu\text{-H})(\text{H})$ and $(\mu\text{-H})_2\text{Os}_3(\text{CO})_9(\text{CN}-t\text{-C}_4\text{H}_9)$, *Inorg. Chem.* **1979**, *18*, 1909 - 1912.
42. R. D. Adams and N. M. Golembeski, Triosmium Cluster Compounds Containing Isocyanide and Hydride Ligands. The Crystal and Molecular Structure of $(\mu\text{-H})(\mu\text{-}\eta^1\text{-C}=\text{N}(\text{H})(t\text{-C}_4\text{H}_9)\text{Os}_3(\text{CO})_{10}$, *Inorg. Chem.* **1979**, *18*, 2255.
43. R. D. Adams and N. M. Golembeski, The Synthesis and Crystal and Molecular Structure of $\text{H}_3(\mu\text{-}\eta^2\text{-C}_6\text{H}_4)(\mu\text{-}\eta^2\text{-HC}=\text{NC}_6\text{H}_5)\text{Os}_3(\text{CO})_8$, *J. Organometal. Chem.* **1979**, *172*, 2139.
44. R. D. Adams, D. F. Chodosh, N. M. Golembeski and E. C. Weissman, Syntheses and Reactivity of Organometallic Compounds Containing Iminoacyl Ligands. Reactions of Metal Carbonyl Anions with Imidoyl Halides, *J. Organometal. Chem.* **1979**, *172*, 251-267.
45. R. D. Adams, A. Davison and J. P. Selegue, Cationic Vinylidene Complexes. The Preparation and Structural Characterization of $(\eta^5\text{-cyclopentadienyl})(2\text{-methyl-4,5-bis(diphenylphosphino)-2-penten-3-yl})\text{iron(II)}$: A Base Induced Interligand Reaction in a Vinylidene Complex, *J. Am. Chem. Soc.* **1979**, *101*, 7232.
46. R. D. Adams, N. M. Golembeski and J. P. Selegue, The Hydrogenation and Degradation of Carbon Disulfide by Organometallic Cluster Hydride Complexes. The Reaction of Carbon Disulfide with $\text{Os}_3(\text{CO})_9\text{P}(\text{CH}_3)_2\text{C}_6\text{H}_5(\mu\text{-H})_2$, *J. Am. Chem. Soc.* **1979**, *101*, 5862.
47. R. D. Adams and J. P. Selegue, Reactions of Aliphatic Imines with $\text{Os}_3(\text{CO})_{10}(\mu\text{-H})_2$. The Competitive Addition and Abstraction of Hydrogen Atoms to and from Imine Groups, *Inorg. Chem.* **1980**, *19*, 1791.

48. R. D. Adams, J. Gerlt, R. Drews and D. F. Chodosh, Conformational Analysis of Phosphate Esters. The Crystal and Molecular Structure of 5-ethoxy-trimethylene Phosphoric Acid, *J. Org. Chem.* **1980**, *45*, 1282.
49. R. D. Adams and J. P. Selegue, Reactions of α , β -Unsaturated Imines with $\text{Os}_3(\text{CO})_{10}(\mu\text{-H})_2$ including the Dehydrogenation of an Isopropyl Group, *Inorg. Chem.* **1980**, *19*, 1795.
50. R. D. Adams, N. M. Golembeski and J. P. Selegue, Activation of Small Molecules by Transition Metal Cluster Compounds. Oxidative-Addition of a Metal-Metal Bond by HCl in an Osmium Cluster Compound, *J. Organometal. Chem.* **1980**, *192*, C7.
51. R. D. Adams and J. P. Selegue, On the Structural Effect of the Bridging Hydride Ligand on a Metal-Metal Bond in a Trinuclear Cluster. The Crystal and Molecular Structures of $\text{Os}_3(\text{CO})_{10}(\mu\text{-H})(\mu\text{-S}_2\text{CH})$ and $\text{Os}_3(\text{CO})_9[\text{P}(\text{CH}_3)_2\text{C}_6\text{H}_5](\mu\text{-H})(\mu\text{-S}_2\text{CH})$, *J. Organometal. Chem.* **1980**, *195*, 223.
52. R. D. Adams, K. B. Wiberg, L. K. Olli and N. M. Golembeski, Tricyclo [4.2.0.0^{1,4}]octane, *J. Am. Chem. Soc.* **1980**, *102*, 7467.
53. R. D. Adams, Isocyanide Insertions and Reactions. The Reaction of $\text{Mn}(\text{CO})_4(\text{CNCH}_3)$ Anion with Iodomethane and the Crystal and Molecular Structure of $[(\text{CH}_3)\text{N}=\text{C}(\text{CH}_3)(\text{CH}_3)\text{C}=\text{N}(\text{CH}_3)] \text{Mn}(\text{CO})_3\text{Mn}(\text{CO})_3$, *J. Am. Chem. Soc.* **1980**, *102*, 7476.
54. R. D. Adams, N. M. Golembeski and J. P. Selegue, Aspects of the Hydrogenation of Carbon Disulfide by Transition Metal Cluster Compounds. The Reactions of Carbon Disulfide with Hydrido Triosmium Carbonyl Clusters, *J. Am. Chem. Soc.*, **1981**, *103*, 546.
55. R. D. Adams, K. B. Wiberg and M. Matturro, Tricyclo[4.2.2.2^{2,5}]dodeca-1,5-diene, *J. Am. Chem. Soc.* **1981**, *103*, 1600.
56. R. D. Adams, N. M. Golembeski and J. P. Selegue, The Reactions of Arylisocyanates with Hydridotriosmiumcarbonyl Cluster Compounds, *Inorg. Chem.* **1981**, *20*, 1242.
57. R. D. Adams, D. A. Katahira and J. P. Selegue, The Partial Hydrogenation of Small Unsaturated Molecules by Osmium Cluster Compounds. The Reaction of Diisopropylcarbodiimide with $\text{H}_2\text{Os}_3(\text{CO})_{10}$, *J. Organometal. Chem.* **1981**, *213*, 259.
58. R. D. Adams, D. A. Katahira and Li-Wu Yang, Reactions Involving Hydrogen Transfer from Triosmium Clusters to an Activated Nitrile, *J. Organometal. Chem.* **1981**, *219*, 85.
59. R. D. Adams, D. A. Katahira and Li-Wu Yang, Synthesis, Crystal and Molecular Structure of syn- $\text{HOs}[\mu\text{-}\eta^1\text{-N}=\text{C}(\text{H})\text{CF}_3](\text{CO})_9\text{PMe}_2\text{Ph}$, *J. Organometal. Chem.* **1981**, *219*, 241.

60. R. D. Adams and J. P. Selegue, "Osmium", in *Comprehensive Organometallic Chemistry*, G. Wilkinson, F. G. A. Stone, and E. W. Abel, Eds., Pergamon Press, **1982**.
61. R. D. Adams, K. B. Wiberg and M. Matturro, 1,5-Dibromotetracyclo[4.2.2.2.2,5O²,6]dodecane, *J. Chem. Soc., Chem. Commun.* **1981**, 878.
62. R. D. Adams, D. A. Katahira, Oxidative Cleavage of Metal-Metal Bonds in Heteronuclear Clusters. The Reaction of SnCl₄ with Ru₃(CO)₉(μ-H)₂(μ₃-S) and the Crystal and Molecular Structures of Ru₃(CO)₉(μ-H)₂(μ₃-S) and Ru₃(CO)₈(SnCl₃)(μ-H)₂(μ₃-S)(μ-Cl), *Organometallics*, **1982**, *1*, 53.
63. R. D. Adams, D. A. Katahira and Li-Wu Yang, The Addition of Isocyanides to [CpMo(CO)₂]₂. The Crystal and Molecular Structure of Cp₂Mo₂(CO)₄(μ-η²-CNPh) which Contains a Bridging Dihapto Isocyanide Ligand, *Organometallics*, **1982**, *1*, 231.
64. R. D. Adams, D. A. Katahira and Li-Wu Yang, The Cleavage of Aryl Carbon-Sulfur Bonds by a Trinuclear Cluster. The Reaction of Alkylphenylsulfides with Os₃(CO)₁₂, *Organometallics*, **1982**, *1*, 235.
65. R. D. Adams, N. M. Golembeski and J. P. Selegue, Cleavage of Metal-Metal Bonds in Heteronuclear Clusters. The Reactions of Os₃(μ₃-S)(μ₃-η²-SCH₂)(CO)₈(PMe₂Ph) with HCl and P(OMe)₃, *Organometallics*, **1982**, *1*, 240.
66. R. D. Adams and Z. Dawoodi, The Importance of Trinuclear Coordination in the Activation and Desulfurization of a Thioformamido Ligand by a Triosmium Cluster, *J. Am. Chem. Soc.*, **1981**, *103*, 6510.
67. R. D. Adams and D. A. Katahira, The Cleavage of Metal-Metal Bonds in Heteronuclear Clusters. The Reaction of Os₃(μ₃-S)(μ₃-η²-SCH₂)(CO)₈(PMe₂Ph) with Me₃SnH and the Crystal and Molecular Structures of HOs₃(μ₃-S)(μ₃-η²-SCH₂)(CO)₇(PMe₂Ph)(SnMe₃) and H₂Os₃(μ₃-S)(μ₃-η²-SCH)₂(CO)₇(PMe₂Ph), *Organometallics*, **1982**, *1*, 460.
68. R. D. Adams, Z. Dawoodi and D. F. Foust, The Role of Heteroatoms in the Formation of Higher Nuclearity Transition Metal Carbonyl Cluster Compounds. The Condensation of Small Clusters, *Organometallics*, **1982**, *1*, 411.
69. R. D. Adams, 1-Allyl-3,3-Dimethyl-8-methylbicyclo-[3.3.0]octane-2,7-dione, C₁₄H₂₂O₂, *Cryst. Struct. Commun.*, **1982**, *11*, 547.
70. R. D. Adams and Li-Wu Yang, Weak Metal-Metal Bonds in an "Electron Rich" Cluster. The Synthesis and X-ray Crystallographic Characterization of Os₄(CO)₁₂(μ₃-S)₂ and Os₆(CO)₁₆(μ₄-S)(μ₃-S), *J. Am. Chem. Soc.*, **1982**, *104*, 4115.

71. R. D. Adams, H. Lim and F. E. Zeigler, 1R*, 2R*, -1-Methyl-2-methylene-5-[2'-]1'-methylene-6'-methoxy-1',2',3',4'tetrahydronaphthyl]-1-cyclopentane-acetaldehyde, C₂₁H₂₆O₂, *Cryst. Struc. Commun.*, **1982**, *11*, 575.
72. R. D. Adams, The Chemistry of Triosmium Carbonyl Cluster Compounds and Its Implications for Catalysis, *Acc. Chem. Res.*, **1983**, *16*, 67 - 72.
73. R. D. Adams and Li-Wu Yang, Clusters in Catalysis. High Reactivity in an Electron-Rich Cluster with Weak Metal-Metal Bonds. Facile, Reversible Addition of Carbon Monoxide to Os₄(CO)₁₂(μ₃-S)₂, *J. Am. Chem. Soc.*, **1983**, *105*, 235 - 240.
74. R. D. Adams and M. Shiralian, Positively Charged Ligands. The Structure and Bonding of Coordinated Sulfonium Cations. The Synthesis and Crystal and Molecular Structure of [Mo(CO)₄{PPh₂(CH₂)₂SMe₂}]BF₄, *Organometallics*, **1982**, *1*, 883.
75. R. D. Adams, I. T. Horvath and B. E. Segmüller, Cluster Synthesis via Inorganic Diazo Compounds. The Synthesis and Crystal and Molecular Structure of H₂IrOs₃(μ-Cl)(μ-CO)(CO)₉PPh₃, *Organometallics*, **1982**, *1*, 1537.
76. R. D. Adams and B. E. Segmüller, Nonacarbonyl-Di-μ-Hydrido(dimethylphenylphosphine)triosmium, C₁₇H₁₃O₉Os₃P, *Cryst. Struc. Commun.*, **1982**, *11*, 1971.
77. R. D. Adams, I. T. Horvath and L.-W. Yang, Cluster Synthesis. 1. The Use of Sulfido Ligands in the Synthesis of High Nuclearity Transition Metal Cluster Compounds. The Synthesis and Crystal and Molecular Structures of Os₆(CO)₁₇(μ₄-S)₂ and Os₆(CO)₁₆(μ₄-S)(μ₃-S), *J. Am. Chem. Soc.*, **1983**, *105*, 1533 - 1538.
78. R. D. Adams, Z. Dawoodi, D. F. Foust and B. Segmüller, Polynuclear Coordination and Ligand Activation. The Structure, Bonding, and Desulfurization of Thioformamido Ligands about a Trinuclear Site, *Organometallics*, **1983**, *2*, 315 - 323.
79. R. D. Adams, Z. Dawoodi, D. F. Foust and B. Segmüller, Cluster Syntheses. 2. The Role of Heteroatoms in the Formation of High Nuclearity Transition Metal Carbonyl Cluster Compounds. The Condensation of Small Clusters, *J. Am. Chem. Soc.*, **1983**, *105*, 831 - 838.
80. R. D. Adams, D. Männig and B. E. Segmüller, The Oligomerization of Clusters. The Synthesis and Crystal and Molecular Structure of [μ-H]₂(μ₄-S)Ru₃(CO)₈]₃, *Organometallics*, **1983**, *2*, 149 - 153.
81. R. D. Adams, I. T. Horvath, B. E. Segmüller and L. Yang, The Effects of Ligand Substitution of the Metal-Metal Bonding on Triosmium Carbonyl Clusters. The Crystal and Molecular Structures of Os₃(μ₃-S)₂(CO)₉ and Os₃(μ₃-S)₂(CO)₈PMe₂Ph, *Organometallics*, **1983**, *2*, 144 - 148.

82. R. D. Adams, D. F. Foust and B. E. Segmüller, Cluster Condensation Reactions. The Synthesis and Crystal and Molecular Structures of Three Hydride-Rich Hexaosmium Clusters Formed by the Decarbonylation of $\text{HOs}_3(\text{CO})_9(\mu_3\text{-S})(\mu\text{-HC=NPh})$ under Hydrogen, *Organometallics*, **1983**, 2, 308 - 314.
83. R. D. Adams and B. E. Segmüller, (3S,5R,6R)-[(S)-1(2R,3S)3,4-Dihydro-3,5-Dimethyl-4-Oxo-2H-Pyran-2-yl][Ethyl]Tetrahydro-3,5-Dimethyl-2H-Pyran-2-one, $\text{C}_{16}\text{H}_{24}\text{O}$, *Acta Crystallogr.*, **1983**, C39, 780 - 782.
84. R. D. Adams and D. F. Foust, Quadruply Bridging Sulfido Ligands. The Crystal Molecular Structure of $\text{Os}_6(\text{CO})_{18}(\mu_4\text{-S})_2(\mu\text{-HC=NPh})_2$, *Organometallics*, **1983**, 2, 323 - 327.
85. R. D. Adams, D. F. Foust and P. Mathur, Cluster Synthesis. 3. The Role of Sulfido Ligands in the Synthesis of High Nuclearity Metal Carbonyl Cluster Compounds. The Crystal and Molecular Structures of $\text{Os}_4(\text{CO})_{12}(\mu_3\text{-S})$ and $\text{Os}_7(\text{CO})_{19}(\mu_4\text{-S})$, *Organometallics*, **1983**, 2, 990 - 996.
86. R. D. Adams, I. T. Horvath, P. Mathur and B. E. Segmüller, Cleavage of Carbon-Sulfur Bonds in Thiolate Ligands in Osmium Carbonyl Cluster Compounds. The Synthesis and Structural Characterization of $\text{H}_2\text{Os}_6(\text{CO})_{18}(\mu_4\text{-S})(\mu_3\text{-S})$ and Two Isomers of $\text{H}_2\text{Os}_6(\text{CO})_{18}(\mu_4\text{-S})(\mu_3\text{-S})$, *Organometallics*, **1983**, 2, 996 - 1005.
87. R. D. Adams, C. Blankenship, B. E. Segmüller and M. Shiralian, Positively Charged Ligands. The Synthesis, Structure and Bonding of Sulfonium Ion Complexes of Transition Metals and Evidence for a Metal-Induced Acceleration of Their Dealkylation, *J. Am. Chem. Soc.*, **1983**, 104, 4319 - 4326.
88. R. D. Adams, I. T. Horvath, B. E. Segmüller and L.-W. Yang, Metal-Induced Cleavage of Carbon-Sulfur Bonds in Thiolato Ligands. Thermolysis of $\text{Os}_3(\text{CO})_{10}(\mu\text{-SC}_6\text{H}_5)\text{H}$ under CO Pressure. The Synthesis and Crystal Molecular Structures of $\text{Os}_4(\text{CO})_{13}(\mu_3\text{-S})$ and $\text{Os}_5(\text{CO})_{15}(\mu_4\text{-S})$, *Organometallics*, **1983**, 2, 1301 - 1308.
89. R. D. Adams, I. T. Horvath, P. Mathur, B. E. Segmüller and L.-W. Yang, Cluster Synthesis. 4. The Role of Sulfido Ligands in the Synthesis of High Nuclearity Metal Carbonyl Cluster Compounds. The Synthesis of $\text{Os}_4(\text{CO})_{13}(\mu_3\text{-S})_2$ and $\text{Os}_7(\text{CO})_{20}(\mu_4\text{-S})_2$, *Organometallics*, **1983**, 2, 1078.
90. R. D. Adams and I. T. Horvath, The Synthesis of Open Metal Carbonyl Cluster Compounds. The Reactions of Closo-Sulfido Metal Carbonyl Cluster Compounds with H_2S . The Synthesis and Crystal and Molecular Structure of $\text{H}_2\text{Os}_5(\text{CO})_{14}(\mu_3\text{-S})_2$, *Organometallics*, **1983**, 2, 1257 - 1258.

91. R. D. Adams, P. Mathur and B. E. Segmüller, Activation of Heteronuclear Triple Bonds by Cluster Compounds. The Cleavage of the C-N Triple Bond of an Isocyanide Ligand by a Ruthenium Cluster, *Organometallics*, **1983**, 2, 1258 - 1259.
92. R. D. Adams, Z. Dawoodi, D. F. Foust and L.-W. Yang, Ligand Desulfurization in Osmium Carbonyl Cluster Compounds, *Annals NY Acad. Sciences*, **1984**, 415, 47 - 55.
93. R. D. Adams, D. Touchard, P. H. Dixneuf and B. E. Segmüller, Fragmentation and Carbonylation of Coordinated dithioformate via Addition of Electrophilic Alkynes. X-ray Crystal Structure of $\text{FeCH(SMe)COC(CO}_2\text{Me)=C(CO}_2\text{Me)S(CO)(PMe}_3\text{)}_2$, *Organometallics*, **1984**, 3, 640.
94. R. D. Adams, I. T. Horvath and B. E. Segmüller, Cluster Condensation Reactions. The Synthesis and Crystal Molecular Structure of $\text{Os}_6(\text{CO})_{14}(\mu_2\text{-PPh}_2)_2(\mu_3\text{-S})_3(\mu_4\text{-S})$, *J. Organomet. Chem.*, **1984**, 262, 243.
95. R. D. Adams, I. T. Horvath and P. Mathur, Cluster Compounds with Unusual Reactivity. The Syntheses and Crystal and Molecular Structures of the Electron-Rich Cluster $\text{Os}_3\text{W(CO)}_{12}(\text{PMe}_2\text{Ph})(\mu_3\text{-S})_2$ and its Dimethylphenylphosphine Adduct, *J. Am. Chem. Soc.*, **1983**, 105, 7202 - 7203.
96. R. D. Adams, K. B. Wiberg, P. J. Okarma, M. Matturro and B. E. Segmüller, Structure, Bonding and Intramolecular Interactions in Tricyclo[4.2.2.2^{2,5}]dodeca-1,5-diene and Related Compounds, *J. Am. Chem. Soc.*, **1984**, 106, 2200.
97. R. D. Adams, I. T. Horvath and H. S. Kim, The Synthesis of Sulfido Osmium Cluster Compounds by the Photochemical Decomposition of $\text{HOs}_3(\text{CO})_{10}(\mu\text{-SPh})$ and Its Subsequent Reaction with Selected Small Molecules. The Synthesis and Crystal and Molecular Structure of $\text{Os}_3(\text{CO})_9(\mu_3\text{-CO})(\mu_3\text{-S})$, *Organometallics*, **1984**, 3, 548.
98. R. D. Adams, I. T. Horvath and P. Mathur, Cluster Synthesis. 5. The Synthesis and Crystal and Molecular Structures of $\text{Os}_6(\text{CO})_{19}(\mu_3\text{-S})$ and $\text{Os}_6(\text{CO})_{17}(\mu_4\text{-S})$, *Organometallics*, **1984**, 3, 623.
99. R. D. Adams and I. T. Horvath, Unusual Metal-Metal Bonding in Transition Metal Carbonyl Cluster Compounds. The Synthesis, Reactivity and Crystal and Molecular Structure of $[\text{Os}_3(\text{CO})_8(\mu_3\text{-S})_2]_2$, *J. Am. Chem. Soc.*, **1984**, 106, 1868-1871.
100. R. D. Adams, T. S. A. Hor and P. Mathur, Tetrahedral Mixed-Metal Clusters Containing Bridging Sulfido Ligands. The Synthesis and Crystal and Molecular Structures of $\text{PtOs}_3(\text{CO})_8(\text{PMe}_2\text{Ph})_3(\mu_3\text{-S})$ and $\text{Os}_3\text{W(CO)}_{11}(\text{PMe}_2\text{Ph})_2(\mu_3\text{-S})$, *Organometallics*, **1984**, 3, 634.

101. R. D. Adams, I. T. Horvath and P. Mathur, Cluster Synthesis. 6. The Unusual Structures, Bonding and Reactivity of Some Sulfido-Bridged Tungsten-Osmium Carbonyl Cluster Compounds, *J. Am. Chem. Soc.*, **1984**, *106*, 6292.
102. R. D. Adams, and I. T. Horvath, Selenido Osmium Carbonyl Cluster Compounds. The Structure, Bonding and Reactivity of the Electron-Rich Cluster $\text{Os}_4(\text{CO})_{12}(\mu_3\text{-Se})_2$, *Inorg. Chem.*, **1984**, *23*, 4718.
103. R. D. Adams, I. T. Horvath and K. Natarajan. Ligand Substitution Reactions in Electron-Rich Clusters. The Synthesis, Structures and Bonding of $\text{Os}_4(\text{CO})_{12}\text{L}(\mu_3\text{-S})_2$ and $\text{Os}_4(\text{CO})_{11}\text{L}(\mu_3\text{-S})_2$, $\text{L}=\text{PMe}_2\text{Ph}$, and CNBu^t , *Organometallics*, **1984**, *3*, 1540 – 1549.
104. R. D. Adams and T. S. A. Hor, Cluster Synthesis. 7. The Role of Bridging Sulfido Ligands in the Synthesis of Platinum-Osmium Carbonyl Cluster Compounds, *Inorg. Chem.*, **1984**, *23*, 4723.
105. R. D. Adams, T. S. A. Hor and I. T. Horvath, Cluster Synthesis. 8. The Synthesis and Crystal and Molecular Structures of the Sulfido-Bridged Platinum-Osmium Carbonyl Cluster Compounds $\text{PtOs}_3(\text{CO})_9\text{L}(\text{PPh}_3)(\mu_3\text{-S})_2$, $\text{L}=\text{CO}$, PPh_3 , *Inorg. Chem.*, **1984**, *23*, 4733.
106. R. D. Adams and T. S. A. Hor, An Example of an "Inverted" Tetrahedral Geometry at Sulfur. The Synthesis and Crystal and Molecular Structure of $[\text{HPtOs}_3(\text{CO})_8(\mu_4\text{-S})(\mu_3\text{-S})(\text{PPh}_2\text{C}_6\text{H}_4)_2]$, *Organometallics*, **1984**, *3*, 1915.
107. R. D. Adams and I. T. Horvath, Novel Reactions of Metal Carbonyl Cluster Compounds, *Prog. Inorg. Chem.*, **1985**, *33*, 127.
108. R. D. Adams, I. T. Horvath and S. Wang, Cluster Synthesis. 9. The Importance of Triply Bridging Sulfido Ligands in the Synthesis of Mixed-Metal Clusters. The Synthesis and Crystal and Molecular Structure of $\text{Os}_3(\text{CO})_9(\mu_3\text{-S})(\mu_4\text{-S})[\text{W}(\text{CO})_5]$, *Inorg. Chem.*, **1985**, *22*, 1728.
109. R. D. Adams, H. Le Bozec and P. H. Dixneuf, Stabilization of a Metal-Carbene Intermediate by Formation of a Metal-Mercury(II) Bond. Synthesis and X-ray Structure of $\text{Cl}_2\text{HgFe}(=\text{CSC}(\text{CO}_2\text{Me})=\text{C}(\text{CO}_2\text{Me})=\text{C}(\text{CO}_2\text{Me})\text{S})-(\text{CO})_2(\text{PMe}_2\text{Ph})_2$, *Organometallics*, **1984**, *3*, 1919.
110. R. D. Adams and S. Wang, Two-Site Reactivity in a Ligand Bridged Cluster. The Reaction of $\text{Os}_4(\text{CO})_{12}(\mu_3\text{-S})$ with Terminal Acetylenes, *Organometallics*, **1985**, *4*, 1902-1903.
111. R. D. Adams, The Synthesis, Structures, Bonding and Unusual Reactivity of Sulfido Osmium Carbonyl Cluster Compounds, *Polyhedron*, **1985**, *4*, 2003-2025.

112. R. D. Adams, H. S. Kim and S. Wang, A New Type of Carbene Catalyst. Direct Evidence for the Involvement of Coordinated Carbenes in a Cluster-Catalyzed Transalkylation Reaction Between Tertiary Amines, *J. Am. Chem. Soc.*, **1985**, *107*, 6107-6108.
113. R. D. Adams and S. Wang, Dynamical Skeletal Rearrangements in Transition Metal Clusters. Evidence for Unusually Facile Metal-Metal Bond Reorganization in the Compound $\text{PtOs}_3(\text{CO})_9(\text{PMe}_2\text{Ph})_2(\mu_3\text{-S})_2$, *Inorg. Chem.*, **1985**, *24*, 4447-4449.
114. R. D. Adams, J. E. Babin, R. Mahtab and S. Wang, The Synthesis of Square-Pyramidal Platinum-Osmium Clusters of Metal-Metal Exchange. The Isolation and Structural Characterization of a Hexanuclear Intermediate, *Inorg. Chem.* **1986**, *25*, 4.
115. R. D. Adams, J. E. Babin and H. S. Kim, Cluster Synthesis. 10. The Reaction of $\text{Os}_3(\text{CO})_{10}(\mu_3\text{-S})$ with Trimethylamine N-oxide Dihydrate. The Syntheses and Structural Characterizations of $\text{Os}_3(\text{CO})_8(\text{NMe}_3)(\mu\text{-OH})(\mu_3\text{-S})(\mu\text{-H})$, *Inorg. Chem.*, **1986**, *25*, 1122.
116. R. D. Adams, I. T. Horvath and S. Wang, Cluster Synthesis. 11. The Role of Sulfido Ligands in the Synthesis of Heteronuclear Clusters. The Synthesis and Crystal Molecular Structures of $\text{PtOs}_4(\text{CO})_{11}(\text{PMe}_2\text{ph})_2(\mu_3\text{-S})_2$ and $\text{PtOs}_3(\text{CO})_9(\text{PMe}_2\text{Ph})_2(\mu_3\text{-S})_2$, *Inorg. Chem.*, **1986**, *25*, 1617.
117. R. D. Adams, J. E. Babin, R. Mahtab and S. Wang, Cluster Synthesis. 12. Metal-Metal Exchange Reactions. Systematics of the Synthesis of Platinum-Osmium Carbonyl Clusters Containing Quadruply Bridging Sulfido Ligands, *Inorg. Chem.*, **1986**, *25*, 1623-1631.
118. R. D. Adams and S. Wang, Facile Addition of Small Molecules to $\text{Os}_4(\text{CO})_{12}(\text{NHMe}_2)(\mu_3\text{-S})$ and $\text{Os}_4(\text{CO})_{12}(\mu\text{-H})_2(\mu_3\text{-S})$, *Inorg. Chem.*, **1986**, *25*, 2534.
119. R. D. Adams and S. Wang, Facile Activation of Hydrogen by an Unsaturated Metal Carbonyl Cluster. The Addition of H_2 to $\text{Os}_4(\text{CO})_{11}(\mu_4\text{-S})(\mu_4\text{-HC}_2\text{CO}_2\text{Me})$, *Organometallics*, **1986**, *5*, 1272-1274.
120. D. V. Khasnis, H. Le Bozec, P. H. Dixneuf, R. D. Adams, Formation Donor-Acceptor $\text{Fe}(\text{O})\text{ÆHg}(\text{II})$ Bond for the Stabilization of Carbene-Iron(O) Complexes. Synthesis, Characterization, Reactivity Toward Sulfur Donor Molecules and X-ray Structure of $\text{Cl}_2\text{HgFe}(\text{CO})_2(\text{PMe}_2\text{Ph})_2(\text{CS}_2\text{C}_2(\text{CO}_2\text{Me})_2)$, *Organometallics*, **1986**, *5*, 1772.
121. R. D. Adams and S. Wang, Reactivity of Unsaturated Clusters. Multiple Additions of Unsaturated Hydrocarbons to $\text{Os}_4(\text{CO})_{11}(\mu_4\text{-S})(\mu_4\text{-HC}_2\text{CO}_2\text{Me})$, *Organometallics*, **1986**, *5*, 1274.
122. R. D. Adams and J. E. Babin, Ligand Substitution Versus Ligand Addition. Differences in Reactivity Between First and Third Row Transition Metal Clusters. The Reactions of

- Dimethylamine with the Sulfido-Metal Carbonyl Clusters $M_3(CO)_9(\mu_3-S)_2$, $M=Fe, Os$, *Inorg. Chem.*, **1986**, 25, 3418-3422.
123. R. D. Adams, J. E. Babin, and K. Natarajan, A. Pentacoordinate Bridging Sulfido Ligand in a Square Pyramidal Geometry. The Synthesis and Crystal and Molecular Structure of $Os_5(CO)_{15}(\mu_5-S)[W(CO)_4(PPh_3)]$, *J. Am. Chem. Soc.*, **1986**, 108, 3518-3519.
 124. R. D. Adams, J. E. Babin and M. Tasi, The Formation of a Thioformaldehyde Ligand by the Addition of Sulfur to a Methylene Ligand in a Cluster Complex. The Synthesis and Structural Characterizations of the Clusters $Os_3(CO)_n(\mu-SCH_2)$, $n=10,11$, *Organometallics*, **1986**, 5, 1920-1922.
 125. R. D. Adams, J. E. Babin and H. S. Kim, Novel Ligand Transformations in Cluster Complexes. α -CH Bond Activation in a Secondary Carbene Ligand in a Triosmium Cluster, *Organometallics*, **1986**, 5, 1924-1925.
 126. R. D. Adams, J. E. Babin and H. S. Kim, High Nuclearity Clusters Containing Carbene Ligands. The Synthesis, Structural Analyses and Isomerization of Disulfidohexaosmiumcarbonyl Cluster Compounds Containing Secondary Dimethylaminocarbene Ligands, *Inorg. Chem.*, **1986**, 25, 4010-4015.
 127. R. D. Adams, and J. E. Babin, Ligand Substitution Versus Ligand Addition. II. The Reaction of Dimethylamine with $Ru_3(CO)_9(\mu_3-S)_2$ and the Crystal and Molecular Structures of $Ru_3(CO)_7(HNMe_2)(\mu-Me_2NC=O)(\mu_3-S)_2(\mu-H)$ and $Ru_3(CO)_6(HNMe_2)(\mu-Me_2NC=O)_2(\mu_3-S)_2$, *Inorg. Chem.*, **1986**, 25, 4319-4320.
 128. R. D. Adams, J. E. Babin, and M. Tasi, Cluster Synthesis. 13. Chemistry of Sulfido Ruthenium Carbonyl Clusters. The Synthesis and Characterization of the New Unsaturated Clusters, $Ru_4(CO)_{11-n}L_n(\mu_4-S)_2$, $n = 0-2$, $L = PMe_2Ph$, *Inorg. Chem.*, **1986**, 25, 4514.
 129. R. D. Adams and S. Wang, Cluster Framework Rearrangements. An Unusual Transformation of a Butterfly Cluster into a Rhombus. The Crystal and Molecular Structures of $Os_4(CO)_{12}(\mu_3-S)(\mu-HC_2R)$, $R=Ph$ and CO_2Me , *J. Am. Chem. Soc.*, **1987**, 109, 924.
 130. R. D. Adams, J. E. Babin and M. Tasi, High Nuclearity Clusters of Ruthenium. The Synthesis and Crystal and Molecular Structure of $Ru_8(CO)_{17}(\eta-toluene)(\mu_4-S)_2$, *Inorg. Chem.*, **1986**, 25, 4460.
 131. R. D. Adams and S. Wang, The Coupling of Cumulenes to an Alkyne Ligand in an Osmium Cluster Complex. The Reactions of $Os_4(CO)_{11}(\mu_4-HC_2CO_2Me)(\mu_4-S)$ with Allene and Methylisocyanate, *Organometallics*, **1987**, 6, 45-49.

132. R. D. Adams and S. Wang, Ligand-Assisted Addition Reactions. 1. Alkyne Additions and Couplings in the Unsaturated Cluster Complexes $\text{Os}_4(\text{CO})_{11}(\mu_4\text{-RC}_2\text{CO}_2\text{Me})(\mu_4\text{-S})$, R = H and CO_2Me , *Organometallics*, **1987**, 6, 739.
133. R. D. Adams, J. E. Babin, and H. S. Kim, Clusters Containing Carbene Ligands. 1. Transformations of Carbene Ligands at Multinuclear Metal Sites. α -Activation of C-H and S-C Bonds in Carbene Containing Thiolatotriosmium Carbonyl Cluster Compounds, *J. Am. Chem. Soc.*, **1987**, 109, 1414.
134. R. D. Adams and J. E. Babin, Cluster Condensation Reactions. The Transformation of Two Triangular Trinuclear Clusters into a Hexanuclear Cluster Containing a Novel-Fused Bitetrahedral Structure, *Inorg. Chem.*, **1987**, 26, 980-984.
135. R. D. Adams, J. E. Babin and H. S. Kim, The Synthesis and Characterization of Cluster Complexes Containing Iminium Ion Ligands. The Crystal and Molecular Structures of Two Isomers of $\text{Os}_3(\text{CO})_7(\mu\text{-CNMe}_2)(\text{H}_2\text{CNMe}_2)(\mu\text{-SPh})(\mu\text{-H})$, *Organometallics*, **1987**, 6, 749-754.
136. R. D. Adams, J. E. Babin and M. Tasi, An Unusual Example of Intramolecular Hydrogen Bonding in a Metal Carbonyl Cluster Compound. The Synthesis and Crystal and Molecular Structure of $\text{Ru}_6(\text{CO})_2(\mu\text{-CO})_2(\mu\text{-OH})_2(\mu_4\text{-S})$, *Inorg. Chem.*, **1987**, 26, 2561.
137. R. D. Adams, J. E. Babin and M. Tasi, Transformations of a Methylene Ligand in a Metal Cluster Containing Sulfur. A Model for Sulfur Poisoning in a Molecular Complex, *Organometallics*, **1987**, 6, 1717-1727.
138. R. D. Adams, J. E. Babin and M. Tasi, Cluster Synthesis. 14. The Synthesis and Structural Characterizations of the High Nuclearity Sulfido Ruthenium Carbonyl Cluster Compounds $\text{Ru}_5(\text{CO})_{15}(\mu_4\text{-S})_2$, $\text{Ru}_6(\text{CO})_{17}(\mu_4\text{-S})_2$, and $\text{Ru}_7(\text{CO})_{20}(\mu_4\text{-S})_2$, *Inorg. Chem.*, **1987**, 26, 2807-2814.
139. R. D. Adams and J. E. Babin, Clusters Containing Carbene Ligands. The Synthesis and Structural Characterization of the First Complex Containing a Triply Bridging Carbene Ligand, *Organometallics*, **1987**, 6, 1364.
140. R. D. Adams, J. E. Babin and M. Tasi, A Mixed-Metal Cluster with Two Quadruply Bridging Carbonyl Ligands, *Angew. Chem. Int. Ed. Engl.*, **1987**, 26, 685-686.
141. R. D. Adams, J. E. Babin, K. Natarajan, M. Tasi, J.-G. Wang, Cluster Synthesis. 15. Square Pyramidal Coordination of Sulfur in Metal Cluster Complexes. The Syntheses and Structural Characterization of $\text{Ru}_4(\text{CO})_7(\mu\text{-CO})_2(\mu_4\text{-S})[\text{W}(\text{CO})_4\text{PMe}_2\text{Ph}]$ and $\text{Os}_5(\text{CO})_{15}(\mu_5\text{-S})[\text{W}(\text{CO})_4\text{PPh}_3]$, *Inorg. Chem.*, **1987**, 26, 3708-3713.

142. R. D. Adams, J. E. Babin, M. Tasi and T. Wolfe, Cluster Synthesis. 16. The Synthesis and Structural Characterizations of a Series of Sulfido Ruthenium Carbonyl Cluster Compounds Containing a Bridging PhC₂H Ligand, *Organometallics*, **1987**, *6*, 2228-2235.
143. R. D. Adams and J. E. Babin, Clusters Containing Carbene Ligands. 2. The Transformation of a Secondary Dimethylaminocarbene Ligand into a Dimethylaminocarbyne Ligand by α -CH Activation, *Organometallics*, **1987**, *6*, 2236-2241.
144. R. D. Adams, J. E. Babin and M. Tasi, The Nature of Alkyne Oligomerization on the Face of A Mixed-Metal Trinuclear Cluster, *Organometallics*, **1987**, *6*, 2247-2248.
145. R. D. Adams and J. E. Babin, Clusters Containing Carbene Ligands. The Formation of a Carbene Ligand by C-H Activation of an π -Complexed Iminium Ligand, *J. Am. Chem. Soc.* **1987**, *109*, 6872-6873.
146. D. L. Reger, S. A. Klaeren, J. E. Babin and R. D. Adams, New CpFeCO[P(OPh)₃](h¹-alkenyl) and CpFeCO[P(OPh)₃](η^1 -(E)COC(CH₂OMe)=C(Me)Ph) and an NMR Method to Assign Alkenyl Ligand Structure, *Organometallics* **1988**, *7*, 181-189.
147. R. D. Adams, J. E. Babin and M. Tasi, Cluster Synthesis. 18. Metal-Metal Exchange Reactions. The Synthesis and Structural Characterizations of Ru₃Mo₂(CO)₁₀(μ -CO)₂Cp₂(μ_4 -S), *Organometallics* **1988**, *7*, 219-227.
148. R. D. Adams, J. E. Babin and M. Tasi, Cluster Synthesis. 17. The Synthesis and Structural Characterizations of Ru₅(CO)₁₅(μ_4 -S), Ru₆(CO)₁₈(μ_4 -S), and Ru₇(CO)₂₁(μ_4 -S), *Organometallics* **1988**, *7*, 503-513.
149. R. D. Adams, J. E. Babin, M. Tasi and J. G. Wang, Catalyst Design. The Activation of a Trinuclear Metal Cluster Complex by Metal Atom Substitution, *Organometallics* **1988**, *7*, 755-764.
150. R. D. Adams, James E. Babin and James Tanner, Cluster Synthesis. 19. The Synthesis of Ruthenium Carbonyl Cluster Complexes Containing a Quadruply-Bridging Aminocarbyne Ligand, *Organometallics* **1988**, *7*, 765-772.
151. R. D. Adams, J. E. Babin, M. Tasi and T. A. Wolfe, The Activation of Hydrogen by a High Nuclearity Metal Cluster Complex. The Synthesis and Structural Characterization of Ru₆(CO)₁₅(μ -CO)₂(μ_3 -H)₂(μ_4 -S), *New J. Chem.* **1988**, *12*, 481-486.
152. R. D. Adams, J. E. Babin, M. Tasi and T. A. Wolfe, Cluster Synthesis. 20. The Synthesis and Crystal and Molecular Structure of Ru₆(CO)₁₇(μ_4 - η^2 -HC₂Ph)(μ_4 -S), *Polyhedron*, **1988**, *7*, 1071.

153. R. D. Adams and J. E. Babin, Clusters Containing Carbene Ligands. 3. The Transformations of a Dimethylamino-methyl Ligand in a Triosmium Cluster. The Synthesis and Structural Characterizations of $\text{Os}_3(\text{CO})_{10}(\mu\text{-}\eta^2\text{-H}_2\text{CNMe}_2)(\mu\text{-H})$, $\text{Os}_3(\text{CO})_9[\mu_3\text{-}\eta^2\text{-C(H)NMe}_2](\mu\text{-H})_2$ and $\text{Os}_3(\text{CO})_{10}(\mu\text{-CNMe}_2)(\mu\text{-H})$, *Organometallics*, **1988**, 7, 963-969.
154. R. D. Adams, J. E. Babin and H. S. Kim, The Structure, Bonding and Transformation Behavior of Iminium, Aminocarbene and Aminocarbyne Ligands in Triosmium Cluster Complexes, *Polyhedron*, **1988**, 7, 967-978.
155. R. D. Adams and J. E. Babin, Clusters Containing Carbene Ligands. 4. The Activation of C-H Bonds in Iminium Ligands. The Synthesis and Crystal and Molecular Structures of $\text{Os}_3(\text{CO})_7(\mu\text{-CNMe}_2)_2(\mu\text{-SPh})(\mu\text{-H})$ and $\text{Os}_3(\text{CO})_8[\eta^2\text{-Ph(H)C=NMe}_2](\mu_3\text{-S})(\mu\text{-H})$, *New J. Chem.*, **1988**, 12, 641-648.
156. R. D. Adams and J. E. Babin, Clusters Containing Carbene Ligands. 5. The Synthesis, Structural Characterization and Reactivity of a Triply Bridging Dimethylaminocarbene Ligand in a Triosmium Cluster Complex. *Organometallics*, **1988**, 7, 2300-2306.
157. R. D. Adams, J. E. Babin and M. Tasi, Cluster Synthesis. 21. The Reaction of $\text{Mo}_2\text{Ru}(\text{CO})_7\text{Cp}_2(\mu_3\text{-S})$ with $\text{Ru}(\text{CO})_5$. The Synthesis of the First Cluster Complex to Contain Two Quadruply Bridging Carbonyl Ligands, *Inorg. Chem.*, **1988**, 27, 2618-2625.
158. R. D. Adams, J. E. Babin and M. Tasi, The Reactions of $\text{Mo}_2\text{Ru}(\text{CO})_7\text{Cp}_2(\mu_3\text{-S})$ with Phenylacetylene and $\text{Ru}(\text{CO})_5$, *Polyhedron*, **1988**, 7, 2263-2269.
159. R. D. Adams, J. E. Babin and J. T. Tanner, Cluster Synthesis. 22. The Synthesis and Structural Characterization of $\text{Ru}_7(\text{CO})_{19}(\mu\text{-CNMe}_2)(\mu\text{-H})$ Containing an Interstitial Hydride Ligand and $\text{Ru}_5(\text{CO})_{12}(\text{PMe}_2\text{Ph})_2(\mu_4\text{-}\eta^2\text{-CNMe}_2)(\mu\text{-H})$ Containing a Quadruply Bridging Dimethylaminocarbyne Ligand, *Organometallics*, **1988**, 7, 2027-2033.
160. R. D. Adams, J. E. Babin, M. Tasi and T. A. Wolfe, Pentadienyl Ligands in Cluster Complexes. The Synthesis and Structural Characterization of $\text{Ru}_5(\text{CO})_{12}(\mu_4\text{-S})(\mu\text{-H})(\mu\text{-1,5-Me}_2\text{C}_5\text{H}_5)$ and $\text{Ru}_6(\text{CO})_{15}(\mu_4\text{-S})(\mu\text{-H})(\mu\text{-1,5-Me}_2\text{C}_5\text{H}_5)$, *J. Am. Chem. Soc.*, **1988**, 110, 7093-7097.
161. R. D. Adams and J. D. Kuhns, A New Dirhenium Complex with an Unsupported Bridging Hydride Ligand, *Polyhedron*, **1988**, 7, 2543.
162. R. H. Fish, H. S. Kim, J. E. Babin and R. D. Adams, Studies on the Bonding of Polynuclear Heteroaromatic Nitrogen Ligands to Pentamethylcyclopentadienyl Rhodium Dication and the Role of Nitrogen versus π -Complexation on the Selective Hydrogenation of the Nitrogen Ring, *Organometallics*, **1988**, 7, 2250-2252.

163. J. A. Marshall, E. D. Robinson and R. D. Adams, Stereoselective total Synthesis of β -2,7, 11-Cembratriene-4,6-diol (β -CBT), a Tumor Inhibitory Constituent of Tobacco Smoke, *Tetrahedron Letters*, **1988**, 29, 4913.
164. R. D. Adams and J. T. Tanner, Clusters Containing Carbene Ligands. The Unusual Synthesis, Coordination and Reactivity of a Bridging Dimetallamethyl(diethylamino)carbene Ligand in the Cluster Complex $\text{Os}_3(\text{CO})_9[\mu_3\text{-HCC}(\text{NEt}_2)](\mu\text{-H})_2$, *Organometallics*, **1988**, 7, 2241 - 2243.
165. R. D. Adams, J. E. Babin, J. Estrada, M. B. Hall. A. A. Low, and J. G. Wang, Cluster Synthesis. 23. The Synthesis, Structure and Bonding of $\text{Fe}_4(\text{CO})_{10}(\mu\text{-CO})(\mu_4\text{-S})_2$, *Polyhedron*, **1989**, 8, 1885-1890.
166. R. D. Adams, J. E. Babin, J. G. Wang and W. Wu, Cluster Synthesis. 24. The Synthesis and Characterization of New Sulfur-Containing Tungsten-Iron Carbonyl Cluster Complexes, *Inorg. Chem.*, **1989**, 28, 703-709.
167. R. D. Adams, T. A. Wolfe, B. W. Eichhorn and R. C. Haushalter, Group 10 Telluride and Polytelluride Complexes: Synthesis and Structures of $\text{Pd}(\text{Te}_4)_2^{2-}$ and $(\text{Ph}_3\text{P})_2\text{Pt}(\mu\text{-Te})_2\text{Pt}(\text{PPh}_3)_2$, *Polyhedron*, **1989**, 8, 701-703.
168. R. D. Adams, J. E. Babin, P. Mathur, K. Natarajan and J. G. Wang, Cluster Synthesis. 25. The Synthesis and Characterization of New Mixed Metal Cluster Complexes by Metal-Metal Exchange. Reactions of the Sulfido Cluster Complexes $\text{M}_3(\text{CO})_9(\mu_3\text{-CO})(\mu_3\text{-S})$, $\text{M}=\text{Fe}$, Ru and Os with $\text{W}(\text{CO})_5\text{L}$, $\text{L}=\text{CO}$ or PMe_2Ph , *Inorg. Chem.*, **1989**, 28, 1440-1445.
169. R. D. Adams, J. E. Babin and T. A. Wolfe, Cluster Condensations. The Decarbonylation and Dimerization of the Sulfur-Bridged Cluster Complexes $\text{Ru}_3(\text{CO})_8\text{L}(\mu_3\text{-HC}_2\text{Ph})(\mu_3\text{-S})$, $\text{L}=\text{CO}$ and PMe_2Ph . X-ray Crystal Structures of $\text{Ru}_3(\text{CO})_8(\text{PMe}_2\text{Ph})(\mu_3\text{-HC}_2\text{Ph})(\mu_3\text{-S})$, $[\text{Ru}_3(\text{CO})_8(\mu_3\text{-HC}_2\text{Ph})(\mu_4\text{-S})]_2$ and two Isomers of $[\text{Ru}_3(\text{CO})_7(\text{PMe}_2\text{Ph})(\mu_3\text{-HC}_2\text{Ph})(\mu_4\text{-S})]_2$, *Polyhedron*, **1989**, 8, 1123-1134.
170. R. D. Adams, J. T. Tanner, The Anomalous Coordination Behavior of Ynamine Ligands in Polynuclear Metal Complexes. The Synthesis and Structural Characterization of $\text{Os}_3(\text{CO})_{10}[\mu\text{-CH}_3\text{C}_2\text{N}(\text{CH}_3)_2]$ and $\text{Os}_3(\text{CO})_9[\mu_3\text{-}\eta^3\text{-H}_2\text{CC}_2\text{N}(\text{CH}_3)_2](\mu\text{-H})$, *Organometallics*, **1989**, 8, 563-564.
171. D. L. Reger, M. F. Huff, T. A. Wolfe and R. D. Adams, A Novel Copper (I) Complex with Bridging Alkyne Ligands. The Synthesis and Structural Characterization of $[\text{Cu}_4(\text{O}_2\text{CCF}_3)_4(\mu\text{-EtC}\equiv\text{CEt}_2)]$, *Organometallics*, **1989**, 8, 848 - 850.
172. R. D. Adams and J. G. Wang, Cluster Condensations. The Dimerization of $\text{Os}_3(\text{CO})_9(\mu_3\text{-CO})(\mu_3\text{-S})$, *Polyhedron*, **1989**, 8, 1437-1443.

173. R. D. Adams, Metal Cluster Complexes Containing Carbene Ligands, *Chem. Rev.*, **1989**, *89*, 1703-1712.
174. R. D. Adams, J. E. Babin and J. G. Wang, Clusters Containing Carbene Ligands. 6. The Synthesis of Higher Nuclearity Metal Carbene Cluster Complexes by Carbene Ligand Transfer. The Synthesis and Structures of $\text{Ru}_4(\text{CO})_{10}[\text{C}(\text{Ph})\text{NMe}_2](\mu_4\text{-S})_2$ and $\text{Ru}_4(\text{CO})_{10}[\text{C}(\text{Ph})\text{NMe}_2](\mu_4\text{-S})(\mu_5\text{-S})[\text{W}(\text{CO})_5]$ *Polyhedron*, **1989**, *8*, 2351-2358.
175. R. D. Adams, Clusters and Their Implications for Catalysis, in "Metal-Metal Bonds and Clusters in Chemistry and Catalysis", J. P. Fackler, Ed., Plenum Publishers, **1990**.
176. R. D. Adams, G. Chen, J. T. Tanner and J. Yin, Clusters Containing Carbene Ligands. A New Route to Alkyl(dialkylamino)carbene Ligands by a Novel 1,1-Hydrogenation of Ynamine Ligands, *Organometallics*, **1989**, *8*, 2493-2495.
177. R. D. Adams J. T. Tanner, Insertion of an Ynamine into and the C-N Bond of a Dimethylaminocarbene Ligand, *Organometallics*, **1989**, *8*, 2276-2277.
178. R. D. Adams and I. T. Horváth, Thioosmium Clusters, *Inorg. Synth.*, **1989**, *26*, 303-309.
179. R. D. Adams, G. Chen, and J. G. Wang, Platinum-Iron Carbonyl Cluster Complexes. The Synthesis and Structural Characterizations of $\text{Pt}_3\text{Fe}_3(\text{CO})_{15}$ and $\text{Pt}_5\text{Fe}_2(\text{CO})_{12}(\text{COD})_2$, *Polyhedron*, **1989**, *8*, 2521-2523.
180. R. D. Adams, G. Chen, S. Sun, J. T. Tanner, and T. A. Wolfe, Cluster Complexes Containing Ynamine Ligands. 1. The Synthesis and Structural Characterizations of the Complexes $\text{Os}_4(\text{CO})_{11}(\mu_3\text{-MeC}_2\text{NMe}_2)(\mu\text{-MeC}_2\text{NMe}_2)(\mu_3\text{-S})$, $\text{Os}_4(\mu\text{-C}(\text{Me})\text{C}(\text{NMe}_2)\text{C}(\text{NMe}_2)\text{CMe}]$ ($\mu_3\text{-S}$), $\text{Os}_4(\text{CO})_{11}[\mu\text{-C}(\text{NMe}_2)\text{C}(\text{Me})\text{C}(\text{Me})\text{C}(\text{NMe}_2)](\mu_3\text{-S})$, $\text{Os}_4(\text{CO})_9(\mu\text{-MeC}_2\text{NMe}_2)[\mu\text{-C}(\text{Me})\text{C}(\text{NMe}_2)\text{C}(\text{Me})\text{C}(\text{NMe}_2)](\mu_3\text{-S})$ and $\text{Os}_3(\text{CO})_7(\mu_3\text{-MeC}_2\text{NMe}_2)(\mu\text{-MeC}_2\text{NMe}_2)(\mu_3\text{-S})$, *Organometallics*, **1990**, *9*, 251 - 260.
181. E. Rivera, M.A. Kennedy, R. D. Adams, and P. D. Ellis, Cd Shielding Tensors of Cadmium Compounds. 7. X-ray Structure and Cd NMR Studies of poly-bis(acetato)bis-(imidazole)Cd(II). A Model Compound for Cd-Substituted Carboxypeptidase-A and Thermolysin, *J. Am. Chem. Soc.*, **1990**, *112*, 1400.
182. R. D. Adams, J. E. Babin and T. A. Wolfe, Reactions of Iminium Ligands with Alkynes. The Addition of $\text{HC}\equiv\text{CO}_2\text{Me}$ to $\text{Os}_3(\text{CO})_{10}(\mu\text{-H}_2\text{CNMe}_2)(\mu\text{-H})$, *Organometallics*, **1990**, *9*, 440-446.

183. R. D. Adams, G. Chen, S. Sun and T. A. Wolfe, The Ring Opening and Oligomerization of Thiirane by Hexaosmium Carbonyl Cluster Complexes, *J. Am. Chem. Soc.*, **1990**, *112*, 868-869.
184. Z. Nomikou, J. F. Halet, R. Hoffmann, J. T. Tanner, and R. D. Adams, Electronic Structure of the Non-Classical Trimetallic Alkyne Cluster Complex $\text{Os}_3(\text{CO})_9(\mu_3\text{-HC}_2\text{NEt}_2)(\mu\text{-H})_2$, *Organometallics*, **1990**, *9*, 588 - 595.
185. R. D. Adams, G. Chen, J. T. Tanner and J. Yin, Clusters Containing Ynamine Ligands. 2. The Reactions of $\text{MeC}\equiv\text{CNMe}_2$ with $\text{M}_3(\text{CO})_{10}(\mu_3\text{-S})$, $\text{M} = \text{Fe, Ru, and Os}$, Including the Structural Characterizations of $\text{Ru}_2(\text{CO})_6[\mu\text{-SC}(\text{NMe}_2)\text{CMe}]$, $\text{Ru}_2(\text{CO})_6[\mu\text{-SCMeC}(\text{NMe}_2)]$ and $\text{Os}_3(\text{CO})_9[\mu_3\text{-MeC}_2\text{NMe}_2](\mu_3\text{-S})$, *Organometallics*, **1990**, *9*, 595 - 601.
186. R. D. Adams, J. E. Babin, H. S. Kim, J. T. Tanner and T. A. Wolfe, Clusters Containing Carbene Ligands. 7. The Preparation of $\text{Os}_3(\text{CO})_8[\text{C}(\text{H})\text{NMe}_2](\mu_3\text{-S})(\mu\text{-H})_2$ and the Nature of its Reactions with Secondary and Tertiary Amines, *J. Am. Chem. Soc.*, **1990**, *112*, 3426-3435.
187. R. D. Adams, G. Chen, J. G. Wang, and W. Wu, Ligand Influences on the State of Cluster Aggregation. Ligand Dependent Formation of Cluster Complexes with $[\text{PtRu}_2]_n$, $n=1, 2, 3$ Metal Groupings, *Organometallics*, **1990**, *9*, 1339 - 1341.
188. R. D. Adams, G. Chen, J. T. Tanner, and J. Yin, Cluster Synthesis. 26. The Condensation of $\text{Ru}_3(\text{CO})_9(\mu\text{-MeC}_2\text{NMe}_2)(\mu_3\text{-S})$ to $\text{Ru}_6(\text{CO})_{14}(\mu_3\text{-MeC}_2\text{NMe}_2)_2(\mu_4\text{-S})_2$ and $\text{Ru}_6(\text{CO})_{13}(\mu\text{-MeC}_2\text{NMe}_2)(\mu_3\text{-MeC}_2\text{NMe}_2)(\mu_4\text{-S})_2$, *Organometallics*, **1990**, *9*, 1240 - 1245.
189. R. D. Adams, G. Chen, J. T. Tanner, and J. Yin, Clusters Containing Carbene Ligands. 8. The Formation of Ligands Containing Dialkylaminocarbene Centers by a Novel 1,1 Hydrogenation of Ynamine Ligands, *Organometallics*, **1990**, *9*, 1523 - 1529.
190. R. H. Fish, H. S. Kim, R. H. Fong, and R. D. Adams, Facile Nucleophilic Addition of Methyl Ketone Enolates to Pentamethylcyclopentadienylrhodium($\eta^6\text{-p-xylene}$) Dication, *Organometallics*, **1990**, *9*, 1327 - 1329.
191. J. C. Edwards, R. D. Adams, and P. D. Ellis, A ^{95}Mo Solid-State NMR Study of Hydrodesulfurization Catalysts. I. The Formation of Fresh HDS Catalyst Precursors by Adsorption of Polyoxomolybdates onto $\gamma\text{-Alumina}$, *J. Am. Chem. Soc.*, **1990**, *112*, 8349.
192. R. D. Adams, G. Chen, and J. T. Tanner, Clusters Containing Carbene Ligands. 9. The Reaction of $\text{MeC}\equiv\text{CNMe}_2$ with $\text{Os}_3(\text{CO})_{10}(\mu\text{-H})_2$, *Organometallics*, **1990**, *9*, 1530 - 1538.

193. R. D. Adams, Systematics of the Synthesis of Transition Metal Carbonyl Clusters, in "Chemistry of Metal Cluster Complexes" D. F. Shriver, H. D. Kaesz, and R. D. Adams, Eds., VCH Publishers, New York, **1990**, Ch. 3.
194. R. D. Adams and M. Tasi, Synthesis and Reactivity of Sulfido Ruthenium Carbonyl Clusters, *J. Cluster Sci.*, **1990**, *1*, 249.
195. R. D. Adams, I. Arafa, G. Chen, J. C. Lii, and J. G. Wang, New Platinum-Iron Carbonyl Cluster Complexes and Their Reactions with Alkynes, *Organometallics*, **1990**, *9*, 2350 - 2357.
196. R. D. Adams and M. P. Pompeo, Ring-Opening Reactions of Strained-Ring Thioethers in Metal Cluster Complexes. The Photo-Induced Transformation of Thietane to Allylthiolate in a Triosmium Cluster Complex, *Organometallics*, **1990**, *9*, 1718 - 1720.
197. R. D. Adams, G. Chen, M. P. Pompeo, and S. Sun, Cluster Synthesis. 27. New Sulfido Osmium Carbonyl Cluster Complexes from the Pyrolysis of $\text{Os}_6(\text{CO})_{16}(\mu_4\text{-S})(\mu_3\text{-S})$, *Polyhedron*, **1990**, *9*, 2385.
198. R. D. Adams, G. Chen, W. Wu, and J. Yin, Cluster Synthesis. 28. New Platinum-Cobalt Carbonyl Cluster Complexes and Products Obtained from their Reactions with Alkynes, *Inorg. Chem.*, **1990**, *29*, 4208-4214.
199. R. D. Adams, G. Chen, D. A. Katahira, J. T. Tanner and W. Wu, Hydrogen-Rich Metal Cluster Complexes. Hexahydrido Platinum-Osmium Carbonyl Cluster Complexes from the Reaction of $\text{Pt}_2\text{Os}_4(\text{CO})_{18}$, *Inorg. Chem.*, **1990**, *29*, 3269.
200. R. D. Adams, T. A. Wolfe, and W. Wu, Cluster Synthesis. 29. Synthesis and Characterization of New Sulfur-Containing Tungsten-Ruthenium Carbonyl Cluster Complexes, *Polyhedron*, **1991**, *10*, 447.
201. R. D. Adams and M. P. Pompeo, Transformation of Strained-Ring Thioethers by Metal Cluster Complexes. The Nature of the Ring-Opening of a Bridging 3,3-Dimethylthietane Ligand in a Triosmium Cluster Complex, *Organometallics*, **1990**, *9*, 2651 - 2653.
202. R. D. Adams and G. Chen, Clusters Containing Carbene Ligands. A Novel Example of Carbene Ligand Transfer from a Metal Atom to a Carbon Atom, *Organometallics*, **1990**, *9*, 2882 - 2883.
203. D. Touchard, J. L. Fillaut, P. H. Dixneuf, R. D. Adams, and B. E. Segmüller, Dithioformate $\text{Fe}(\eta^2\text{-HC}(\text{SR})\text{S})$ Complexes and Cleavage of the Coordinated C-S bond by alkynes. A Route to $\text{FeCH}(\text{SR})\text{COC}(\text{CO}_2\text{Me})=\text{C}(\text{CO}_2\text{Me})\text{S}(\text{CO})(\text{PR}_3)_2$ Complexes, *J. Organomet. Chem.* **1990**, 386, 95.

204. R. D. Adams and M. P. Pompeo, The Ring Opening Oligomerization of 3,3-Dimethylthietane in a Triosmium Cluster Complex, *J. Am. Chem. Soc.*, **1991**, *113*, 1619.
205. R. D. Adams, G. Chen, J. C. Lii, and W. Wu, Cluster Synthesis. 30. New Platinum-Osmium Carbonyl Cluster Complexes from the Reaction of $\text{Os}_3(\text{CO})_{10}(\text{NCMe})_2$ with $\text{Pt}(\text{COD})_2$, *Inorg. Chem.*, **1991**, *30*, 1007.
206. R. D. Adams and W. Wu, Unsaturation in a High Nuclearity Metal Carbonyl Cluster Complex. The Synthesis, Structures and Interconversions of $\text{Pt}_2\text{Os}_4(\text{CO})_{12}(\text{COD})_2$ and $\text{Pt}_2\text{Os}_4(\text{CO})_{11}(\text{COD})_2$, *Organometallics*, **1991**, *10*, 35-36.
207. R. D. Adams, G. Chen, and J. Yin, Clusters Containing Ynamine Ligands. 3. The Syntheses and Structural Characterizations of $\text{Re}_2(\text{CO})_8(\mu\text{-MeC}_2\text{NMe}_2)$ and $\text{Re}_2(\text{CO})_7[\mu\text{-C}(\text{Me})\text{C}(\text{NMe}_2)\text{C}(\text{NMe}_2)\text{C}(\text{Me})]$, *Organometallics*, **1991**, *10*, 1278 -1287.
208. R. D. Adams, M. P. Pompeo and J. T. Tanner, Clusters Containing Carbene Ligands. 10. The Transformation of an Ynamine into an Aminocarbene Ligand by Unsymmetric Hydrogenation Using a Triosmium Cluster Complex, *Organometallics*, **1991**, *10*, 1068 - 1078.
209. R. D. Adams and J. A. Belinski, Alkylidyne-Alkyne Coupling Reactions. The Reactions of $\text{Mo}_2\text{Co}(\text{CO})_7\text{Cp}_2(\mu_3\text{-CH})$ with EtC_2Et and PhC_2Ph , *Organometallics*, **1991**, *10*, 2114 - 2120.
210. R. D. Adams and J. A. Belinski, The Preparation and Structural Characterization of Ruthenium Carbonyl Cluster Complexes Containing 3,3-Dimethylthietane Ligands, *J. Cluster Sci.*, **1990**, *1*, 319 - 333.
211. R. D. Adams, J. A. Belinski and T. A. Wolfe, Cluster Synthesis. 31. The Preparation and Structural Characterization of $\text{Ru}_3\text{Mo}_2(\text{CO})_{11}\text{Cp}_2(\mu_4\text{-C}_2\text{Ph})(\mu_3\text{-S})(\mu\text{-H})$, *J. Cluster Sci.*, **1990**, *1*, 307 - 318.
212. R. D. Adams, M. P. Pompeo and W. Wu, Cluster Synthesis. 32. Hydrogen-Rich Metal Cluster Complexes from the Reaction of $\text{Pt}_2\text{Os}_4(\text{CO})_{18}$ with Hydrogen. The Synthesis and Molecular Structures of $\text{PtOs}_5(\text{CO})_{16}(\mu\text{-H})_6$, $\text{Pt}_2\text{Os}_5(\text{CO})_{17}(\mu\text{-H})_6$, $\text{PtOs}_6(\text{CO})_{18}(\mu\text{-H})_8$, and $\text{Pt}_2\text{Os}_7(\text{CO})_{23}(\mu\text{-H})_8$, *Inorg. Chem.*, **1991**, *30*, 2425-2432.
213. R. D. Adams, J. C. Lii, and W. Wu, High Nuclearity Platinum Osmium Alloy Cluster Complexes. The Synthesis and Structural Characterizations of $\text{Pt}_4\text{Os}_6(\text{CO})_{22}(\text{COD})$ and $\text{Pt}_5\text{Os}_6(\text{CO})_{21}(\text{COD})_2$, *Inorg. Chem.*, **1991**, *30*, 2257-2258.
214. R. D. Adams, M. P. Pompeo and W. Wu, Cluster Synthesis. 33. New Platinum-Osmium Carbonyl Cluster Complexes from $\text{Pt}_2\text{Os}_5(\text{CO})_{17}(\mu\text{-H})_6$. The Synthesis and Characterization of $\text{PtOs}_5(\text{CO})_{15}(\mu_3\text{-S})(\mu\text{-H})_2$, $\text{PtOs}_5(\text{CO})_{18}(\mu\text{-H})_4$ and $\text{PtOs}_4(\text{CO})_{15}(\mu\text{-H})_2$, *Inorg. Chem.*, **1991**, *30*, 2899.

215. R. D. Adams, G. Chen and W. Wu, Multicenter Ligand Transformations. Hydrogenation with a Trans Stereochemistry. The Synthesis of $\text{Re}_2(\text{CO})_8[\text{trans-}\mu\text{-Me(H)C=C(H)NMe}_2]$ by the Addition of Hydrogen to $\text{Re}_2(\text{CO})_8(\mu\text{-MeC}\equiv\text{CNMe}_2)$, *Organometallics*, **1991**, *10*, 2087 - 2088.
216. R. D. Adams and W. Wu, Cluster Synthesis. 34. Unsaturation in a High Nuclearity Platinum-Osmium Carbonyl Cluster Complex. Studies of the Synthesis, Structure and Reactivity of $\text{Pt}_2\text{Os}_4(\text{CO})_{11}(\text{COD})_2$, *Inorg. Chem.*, **1991**, *30*, 3605-3612.
217. R. D. Adams and G. Chen, Clusters Containing Carbene Ligands. 11. Carbene Ligand Transfer. The Reaction of $\text{Os}_3(\text{CO})_{11}[\text{C}(\text{Et})\text{NMe}_2]$ with Terminal Alkynes, *Organometallics*, **1991**, *10*, 3020 - 3027.
218. R. D. Adams and G. Chen, Clusters Containing Carbene Ligands. 12. The Synthesis and Transformations of $\text{Os}_3(\text{CO})_{11}[\text{C}(\text{Et})\text{NMe}_2]$, the First Simple Carbene Derivative of $\text{Os}_3(\text{CO})_{12}$, *J. Cluster Sci.*, **1991**, *2*, 29.
219. R. D. Adams, J. C. Lii and W. Wu, Cluster Synthesis. 35. On the Way to High Nuclearity Platinum-Osmium Alloy Cluster Complexes. The Synthesis and Structural Characterizations of $\text{Pt}_2\text{Os}_3(\text{CO})_9(\text{COD})_2(\mu\text{-H})_2$ and $\text{Pt}_4\text{Os}_6(\text{CO})_{21}(\text{COD})(\mu\text{-H})_2$, COD = cycloocta-1,5-diene, *Inorg. Chem.*, **1991**, *30*, 3613-361.
220. R. D. Adams, J. E. Cortopassi and M. P. Pompeo, The Unusual Coordination Properties of Trialkoxysilyl Groups in Metal Cluster Complexes. The Synthesis, Structure and Reactivity of $\text{Os}_3(\text{CO})_9[\mu_3\text{-}\eta^3\text{-Si}(\text{OEt})_3](\mu\text{-H})$, *Inorg. Chem.*, **1991**, *30*, 2960.
221. R. D. Adams and G. Chen, Clusters Containing Carbene Ligands. 13. Studies of the Reactivity of a Bridging Aminocarbene Center in an Osmium Cluster Complex, *Organometallics*, **1991**, *10*, 3028 - 3035.
222. R. D. Adams, G. Chen, L. Chen, M. P. Pompeo and J. Yin, The Transformation of Heteroatom Substituted Alkynes into Substituted Vinylidene Ligands Accompanied by CO Insertion, *Organometallics*, **1991**, *10*, 2541 - 2543.
223. R. D. Adams, J. A. Belinski and M. P. Pompeo, Evidence for the Activation of Thietanes to Ring Opening by Nucleophiles through Bridging Coordination, *Organometallics*, **1991**, *10*, 2539 - 2541.
224. R. D. Adams, M. S. Alexander, I. Arafa and W. Wu, Cluster Synthesis. 36. New Platinum-Ruthenium and Platinum-Osmium Carbonyl Cluster Complexes from the Reactions of the Complexes $\text{Pt}_2\text{M}_4(\text{CO})_{18}$, M = Ru and Os with Cyclooctadiene in the Presence of UV Irradiation, *Inorg. Chem.*, **1991**, *30*, 4717.

225. R. D. Adams, J. A. Belinski and J. Schierlmann, The Ring Opening and Unusual Coupling of 3,3-Dimethylthietane Ligands in a Dirhenium Carbonyl Complex, *J. Am. Chem. Soc.*, **1991**, *113*, 9004.
226. R. D. Adams, G. Chen, L. Chen, W. Wu and J. Yin, Coordination and Interconversion of a Ketonic Grouping between One and Two Transition Metal Atoms, *J. Am. Chem. Soc.*, **1991**, *113*, 9406.
227. R. D. Adams, G. Chen, L. Chen, J. Yin and J. F. Halet, Clusters Containing Ynamine Ligands. 4. The Synthesis and Characterization of $\text{ReMn}(\text{CO})_8[\mu\text{-MeC}_2\text{NMe}_2]$ and $\text{ReMn}(\text{CO})_7[\mu\text{-MeCC}(\text{NMe}_2)\text{C}(\text{NMe}_2)\text{CMe}]$ and the Development of a Bonding Model for the Coordination of Ynamines to $\text{M}_2(\text{CO})_8$ Clusters, *J. Cluster Sci.*, **1991**, *2*, 83.
228. R. D. Adams and W. Wu, Cluster Synthesis. 37. Platinum-Ruthenium Carbido Cluster Complexes. The Syntheses and Structural Characterizations of $\text{PtRu}_5(\text{C})(\text{CO})_{16}$, $\text{Pt}_2\text{Ru}_5(\text{C})(\text{CO})_{13}(\text{COD})_2$, and $\text{Pt}_3\text{Ru}_5(\text{C})(\text{CO})_{14}(\text{COD})_2$, *J. Cluster Sci.*, **1991**, *2*, 271-290.
229. R. D. Adams and M. P. Pompeo, Carbon-Sulfur Bond Cleavage with a Loss of Stereochemistry in the Ring Opening of *trans*-2,4-Diphenylthietane by $\text{Os}_3(\text{CO})_{10}(\text{NCMe})_2$, *Organometallics*, **1992**, *11*, 103.
230. R. D. Adams and J. T. Tanner, The Activation of Tertiary Amines by Osmium Cluster Complexes. Further Studies of the Reaction of $\text{Os}_3(\text{CO})_{10}(\text{NCMe})_2$ with Triethylamine, *Appl. Organomet. Chem.*, **1992**, *6*, 449.
231. R. D. Adams and G. Chen, Clusters Containing Carbene Ligands. 14. Further Studies of the Reactivity of the Carbene Centers in the Dicarbene Cluster Complex $\text{Os}_3(\text{CO})_9[\mu\text{-C}(\text{Et})\text{N}(\text{Me})\text{CH}](\mu\text{-H})_2$ with Diphenylacetylene, *Organometallics*, **1992**, *11*, 837 - 845.
232. R. D. Adams, T. Datta and J. A. Estrada, Crystal Structure Analysis of $\text{Y}_2\text{Cu}_2\text{O}_5$, *J. Superconduct.*, **1992**, *5*, 33 - 38.
233. R. D. Adams, G. Chen and Y. Chi, Clusters Containing Ynamine Ligands. 5. The Coordination and Transformations of an Ynamine Ligand in a Dimanganese Complex. The Synthesis and Structural Characterizations of $\text{Mn}_2(\text{CO})_8[\mu\text{-MeC}_2\text{NEt}_2]$, $\text{Mn}_2(\text{CO})_8[\mu\text{-H}_4\text{CCC}(\text{H})\text{NEt}_2]$, $\text{Mn}_2(\text{CO})_8[\mu\text{-}\eta^2\text{-C}_3\text{H}_3\text{NEt}_2]$ and $\text{Mn}_2(\text{CO})_7[\mu\text{-}\eta^2\text{-C}_3\text{H}_3\text{NEt}_2]$, *Organometallics*, **1992**, *11*, 1473 - 1479.
234. R. D. Adams, G. Chen, Y. Chi, W. Wu, and J. Yin, Clusters Containing Ynamine Ligands. 6. Transformations of an Ynamine Ligand in a Dirhenium Complex. The Synthesis and Structural Characterizations of $\text{Re}_2(\text{CO})_8[\mu\text{-H}_2\text{CCHCNMe}_2]$, $\text{Re}_2(\text{CO})_7[\mu\text{-H}_2\text{CCCNMe}_2](\mu\text{-H})$ and $\text{Re}_2(\text{CO})_8[\mu\text{-H}_2\text{C}=\text{CCNMe}_2](\mu\text{-H})$, *Organometallics*, **1992**, *11*, 1480 - 1486.

235. R. D. Adams, J. E. Cortopassi and M. P. Pompeo, Hydrosilation by an Osmium Cluster Complex. The Isolation and Structural Characterization of an Intermediate, *Organometallics*, **1992**, *11*, 1-2.
236. R. D. Adams, Y. Chi, D. D. DesMarteau, D. Lentz, R. Marschall, The Opening of Metal Carbonyl Cluster Complexes by Ligand Addition. The Synthesis and Structural Characterization of $\text{Os}_3(\text{CO})_{11}(\mu\text{-CNCF}_3)_2$, a Stabilized Derivative of the Hypothetical Complex $\text{Os}_3(\text{CO})_{13}$, *J. Am. Chem. Soc.*, **1992**, *114*, 1909.
237. R. D. Adams and M. P. Pompeo, Promotion of Ring-Opening Nucleophilic Addition to Thietane Ligands by the Bridging Coordination of the Sulfur Atom in the Complexes $\text{Os}_3(\text{CO})_{10}[\mu\text{-SCH}_2\text{CMe}_2\text{CH}_2]$ and $\text{Os}_3(\text{CO})_{10}[\mu\text{-trans-SC(H)MeCH}_2\text{C(H)Me}]$, *Organometallics*, **1992**, *11*, 1460 - 1465.
238. R. D. Adams and G. Chen, Ring Opening of a Nitrogen Containing Strained Ring Heterocycle in an Osmium Cluster Complex, *Organometallics*, **1992**, *11*, 3510 - 3511.
239. R. D. Adams, J. A. Belinski and M. P. Pompeo, The Transformations of 3,3-Dimethylthietane in Triosmium Cluster Complexes, *Organometallics*, **1992**, *11*, 2016 - 2024.
240. R. D. Adams and M. P. Pompeo, The Thermal and Photo-assisted Ring Opening of Thietane in a Triosmium Cluster Complex, *Organometallics*, **1992**, *11*, 2281 - 2289.
241. R. D. Adams, J. E. Cortopassi and M. P. Pompeo, The Coordination of Trialkoxysilyl Ligands in Triosmium Cluster Complexes. Complexes with Edge and Triply Bridging Trialkoxysilyl Ligands, *Inorg. Chem.*, **1992**, *31*, 2563.
242. R. D. Adams, J.-C. Lii, and W. Wu, Cluster Synthesis. 38. The Formation of High Nuclearity Platinum-Osmium Cluster Complexes. The Synthesis, Structural Characterizations and Interrelationships of $\text{Pt}_4\text{Os}_6(\text{CO})_{22}(\text{COD})$, $\text{Pt}_5\text{Os}_6(\text{CO})_{21}(\text{COD})_2$, $\text{Pt}_4\text{Os}_6(\text{CO})_{19}(\text{COD})_2$, and $\text{Pt}_7\text{Os}_6(\text{CO})_{21}(\text{COD})_2$, COD = Cycloocta-1,5-diene, *Inorg. Chem.*, **1992**, *31*, 2556-2562.
243. R. D. Adams, Z. Li, J.-C. Lii, and W. Wu, Cluster Synthesis. 39. New Platinum-Ruthenium Carbonyl Cluster Complexes with Bridging Hydride Ligands. The Synthesis and Structural Characterizations of $\text{Ru}_4\text{Pt}(\text{CO})_{13}(\text{COD})(\mu\text{-H})_2$, $\text{Ru}_3\text{Pt}(\text{CO})_9(\mu\text{-CO})(\text{COD})(\mu\text{-H})_2$, $\text{Ru}_4\text{Pt}_2(\text{CO})_{11}(\text{COD})_2(\mu_3\text{-H})_2$ and $\text{Ru}_5\text{Pt}_5(\text{CO})_{18}(\text{COD})_2(\mu\text{-H})_2$, COD = Cycloocta-1,5-diene, *Inorg. Chem.*, **1992**, *31*, 3445-3450.
244. R. D. Adams and J. A. Belinski, The Nucleophilic Ring Opening of Bridging Thietanes in Open Triosmium Cluster Complexes, *Organometallics*, **1992**, *11*, 2488 - 2493.
245. R. D. Adams, Z. Li, J.-C. Lii, and W. Wu, A New Type of Bridging Carbonyl Ligand: $\mu_3\text{-}\eta^2$, and Not One but Two, *J. Am. Chem. Soc.*, **1992**, *114*, 4918 - 4920.

246. R. D. Adams, J. A. Belinski and M. P. Pompeo, The Nucleophilic Ring Opening of a Bridging Thietane Ligand in an Open Tetraosmium Carbonyl Cluster Complex, *Organometallics*, **1992**, *11*, 3129 - 3134.
247. R. D. Adams and W. Wu, Di(benzene)hexarutheniumcarbido-undecacarbonyl, $\text{Ru}(\mu_6\text{-C})(\text{CO})_{11}(\eta^6\text{-C}_6\text{H}_6)_2$, a New Isomer. The Largest Molecular "Sandwich" Compound, *Polyhedron*, **1992**, *11*, 2123.
248. R. D. Adams, G. Chen, L. Chen, and M. P. Pompeo, Reversible Formation of an Intramolecular Agostic CH Interaction in a Dimanganese Complex, *J. Cluster Sci.*, **1992**, *3*, 103 - 108.
249. R. D. Adams, J.-C. Daran and Y. Jeannin, Organometallic Cluster Complexes Containing Ynamine Ligands, *J. Cluster Sci.*, **1992**, *3*, 1 - 54.
250. R. D. Adams and J. A. Belinski, The Ring Opening and Carbonylation of 3,3-Dimethylthietane Ligands in Ruthenium Carbonyl Cluster Complexes, *Organometallics*, **1992**, *11*, 3422 - 3426.
251. R. D. Adams, Z. Li, J.-C. Lii, and W. Wu, Cluster Synthesis. 40. New High Nuclearity Platinum-Ruthenium Carbonyl Cluster Complexes. The Synthesis and Structural Characterizations of $\text{Ru}_8\text{Pt}_2(\text{CO})_{23}(\mu_3\text{-H})_2$, $\text{Ru}_7\text{Pt}_3(\text{CO})_{22}(\mu_3\text{-H})_2$, $\text{Ru}_8\text{Pt}_2(\text{CO})_{21}(\mu_3\text{-}\eta^2\text{-CO})_2(\text{dppe})(\mu\text{-H})_2$ with a New Type of Triply Bridging CO Ligand and a New Layered Cluster Complex $\text{Ru}_6\text{Pt}_3(\text{CO})_{21}(\mu\text{-CO})(\mu_3\text{-H})_2$, *Organometallics*, **1992**, *11*, 4001 - 4009.
252. R. D. Adams, L. Chen and W. Wu, Insertion of an Alkyne into a Re-Re Bond. Evidence for an Intramolecular Insertion with a *Trans*-Stereochemistry, *Organometallics*, **1992**, *11*, 3505 - 3507.
253. R. D. Adams, J. E. Cortopassi, and S. B. Falloon, The Nucleophilic Ring Opening of Bridging Thietane Ligands in Trirhenium Carbonyl Cluster Complexes, *Organometallics*, **1992**, *11*, 3794 - 3801.
254. R. D. Adams, J. A. Belinski and L. Chen, The Coordination and Reactivity of 3,3-Dimethylthietane in Dimanganese Carbonyl Cluster Complexes, *Organometallics*, **1992**, *11*, 4104 - 4108.
255. R. D. Adams, Y. Chi, D. DesMarteau, D. Lentz, R. Marschall and A. Scherrmann, The Opening of Metal Carbonyl Cluster Complexes by Ligand Addition. The Reactions of $\text{Os}_3(\text{CO})_{11}(\text{NCMe})$ and $\text{Os}_3(\text{CO})_{10}(\text{NCMe})_2$ with CNCF_3 , *J. Am. Chem. Soc.*, **1992**, *114*, 10822 - 10826.

256. R. D. Adams, Z. Li, P. Swepston, W. Wu, and J. Yamamoto, The Synthesis and Structural Characterization of a Layer Segregated Platinum-Ruthenium Cluster Complex that Exhibits Selective Coordination and a High Activity for the Catalytic Hydrogenation of Diphenylacetylene, *J. Am. Chem. Soc.*, **1992**, *114*, 10657 - 10658.
257. R. D. Adams, G. Chen, X. Qu, W. Wu and J. H. Yamamoto, Cyclobutyne - The Ligand. The Synthesis and Molecular Structure of $\text{Os}_3(\text{CO})_9(\mu\text{-}\eta^2\text{-}\overline{\text{C}_2\text{CH}_2\text{CH}_2})(\mu\text{-SPh})(\mu\text{-H})$, *J. Am. Chem. Soc.*, **1992**, *114*, 10977-10978.
258. R. D. Adams and M. P. Pompeo, Controlled Oxidative Degradation of the Triosmium Carbonyl Cluster Complex $\text{Os}_3(\text{CO})_{10}[\mu\text{-}(\text{SCH}_2\text{CMe}_2\text{CH}_2)_3]$, *Organometallics* **1993**, *12*, 951.
259. R. D. Adams, G. Chen, and W. Wu, The Synthesis and Structural Analysis of $\text{Pt}_2\text{Ru}_4(\text{CO})_{18}$ and the Products Obtained from Its Reactions with 1,2-Bis(diphenylphosphino)ethane, *J. Cluster Sci.*, **1993**, *4*, 119.
260. R. D. Adams, Nucleophilic Ring Opening Transformations of Bridging Thietane Ligands in Metal Carbonyl Cluster Complexes, *J. Cluster Sci.* **1992**, *3*, 263.
261. R. D. Adams, G. Chen and J. Huang, Preparation and Structural Characterization of a Hexanuclear Molybdenum (II) Cluster Containing Carboxylate Ligands $(\text{Bu}_4\text{N})_2[\text{Mo}_6(\mu_3\text{-Cl})_8(\text{O}_2\text{CMe})_6]$, *J. Cluster Sci.*, **1993**, *4*, 151.
262. R. D. Adams and W. Wu, Cluster Synthesis. 41. New Platinum-Ruthenium Cluster Complexes from the Reaction of $\text{PhC}\equiv\text{CPh}$ with $\text{Pt}_2\text{Ru}_4(\text{CO})_{18}$. The Synthesis and Structural Characterizations of $\text{Pt}_2\text{Ru}_3(\text{CO})_8(\mu_3\text{-}\eta^2\text{-PhC}_2\text{Ph})_2(\mu_4\text{-}\eta^2\text{-PhC}_2\text{Ph})$, $\text{Pt}_3\text{Ru}_6(\text{CO})_{14}(\mu_3\text{-}\eta^2\text{-PhC}_2\text{Ph})_3$, $\text{Pt}_2\text{Ru}_4(\text{CO})_{14}(\mu_3\text{-}\eta^2\text{-PhC}_2\text{Ph})(\mu_4\text{-}\eta^2\text{-PhC}_2\text{Ph})$, $\text{Pt}_3\text{Ru}_6(\text{CO})_{18}(\mu_3\text{-}\eta^2\text{-PhC}_2\text{Ph})_3$, and $\text{PtRu}_2(\text{CO})_6(\mu_3\text{-}\eta^2\text{-PhC}_2\text{Ph})(\text{dppe})$, *Organometallics*, **1993**, *12*, 1248.
263. R. D. Adams and W. Wu, An Unusual Electron-Rich Carbido Platinum-Ruthenium Cluster from the Reaction of Diphenylacetylene with $\text{PtRu}_5(\text{CO})_{16}(\mu_6\text{-C})$. The Synthesis and Crystallographic Characterization of $\text{PtRu}_5(\text{CO})_{13}(\mu\text{-PhC}_2\text{Ph})(\mu_3\text{-PhC}_2\text{Ph})(\mu_5\text{-C})$, *Organometallics*, **1993**, *12*, 1238.
264. R. D. Adams and W. Wu, Cluster Complexes Containing Polyene Ligands. The Synthesis and Structural Characterization of Two Isomers of $\text{Ru}_6(\text{CO})_{14}(\mu_6\text{-C})(\text{trans-1,3,5-CH}_2\text{CHCHCHCH}_2)$ Containing *trans*-1,3,5-Hexatriene Ligands, *Organometallics*, **1993**, *12*, 1243.

265. R. D. Adams, L. Chen and W. Wu, The Reaction of Alkynes with Electron Withdrawing Substituents with $\text{Re}_2(\text{CO})_9(\text{NCMe})$. The Formation of *Trans*-Dimetallated Olefins by Alkyne Insertion into an Re-Re Bond, *Organometallics*, **1993**, *12*, 1257.
266. R. D. Adams, L. Chen and W. Wu, Facile Alkyne Coupling Reactions in Dirhenium Carbonyl Complexes, *Organometallics*, **1993**, *12*, 1623.
267. R. D. Adams and G. Chen, The Coordination and Activation of Azetidine by a Triosmium Cluster, *Organometallics*, **1993**, *12*, 2070.
268. R. D. Adams, G. Chen and J. Huang, Preparation and Structural Characterization of the Hexatungsten Cluster Complex $(\text{EDTEH})_2[\text{W}_6(\mu_3\text{-Cl})_8\text{Cl}_6]$, ($\text{EDTEH} = (\text{MeO}_2\text{CCH}_2)_2\text{N}(\text{H})\text{CH}_2\text{CH}_2\text{N}(\text{CH}_2\text{COMe})_2^+$), *J. Cluster Sci.*, **1993**, *4*, 271.
269. R. D. Adams and W. Wu, Further Studies of the Reactions of $\text{PtRu}_5(\mu_6\text{-C})(\text{CO})_{16}$ with Alkynes. The Preparation and Structural Characterizations of $\text{PtRu}_5(\text{CO})_{13}(\mu\text{-EtC}_2\text{Et})(\mu_3\text{-EtC}_2\text{Et})(\mu_5\text{-C})$ and $\text{Pt}_2\text{Ru}_6(\text{CO})_{17}(\mu\text{-}\eta^5\text{-Et}_4\text{C}_5)(\mu_3\text{-EtC}_2\text{Et})(\mu_6\text{-C})$, *J. Cluster Sci.*, **1993**, *4*, 245.
270. R. D. Adams, R. Layland, T. Datta and C. Payen, $\text{BaCo}_2\text{Si}_2\text{O}_7$: A New One-Dimensional Antiferromagnet Based on Chains of Oxide Bridged CoO_4 Tetrahedra, *Polyhedron*, **1993**, *12*, 2075.
271. R. D. Adams, G. Chen, L. Chen and J. Yin, The Reactions of $\text{Mn}_2(\text{CO})_9(\text{NCMe})$ with Alkynes Containing Electron Donating Substituents, *Organometallics*, **1993**, *12*, 2644.
272. R. D. Adams, G. Chen, X. Qu, W. Wu and J. H. Yamamoto, Cyclobutylene Ligands. I. The Synthesis and Reactivity of a Cyclobutylene Ligand in a Triosmium Complex including a Structural Characterization of the First Cyclobutylene Ligand in the Complex $\text{Os}_3(\text{CO})_9(\mu\text{-}\eta^2\text{-}\overline{\text{C}_2\text{CH}_2\text{CH}_2})(\mu\text{-SPh})(\mu\text{-H})$, *Organometallics*, **1993**, *12*, 3029.
273. R. D. Adams, J. E. Cortopassi and J. H. Yamamoto, The Synthesis and Properties of Bridging Siloxyl Ligands in Dirhenium Carbonyl Complexes, *Organometallics*, **1993**, *12*, 3036.
274. R. D. Adams, L. Chen and W. Wu, A New Route to Substituted Quinoline-2-thiolate Ligands by the Coupling and Cyclization of Arylthiocyanates to Alkyne Ligands, *Organometallics*, **1993**, *12*, 2404.
275. R. D. Adams, G. Chen, X. Qu, and W. Wu, Cyclobutylene Ligands. II. Reactions of the Cyclobutylene Triosmium Complex $\text{Os}_3(\text{CO})_9(\mu\text{-}\eta^2\text{-}\overline{\text{C}_2\text{CH}_2\text{CH}_2})(\mu\text{-SPh})(\mu\text{-H})$ with Diphenylacetylene, *Organometallics*, **1993**, *12*, 3426.

276. R. D. Adams, M. P. Pompeo, W. Wu and J. H. Yamamoto, Formation of Butenethiolate by the Ring Opening of Tetrahydrothiophene by a Triosmium Cluster Complex, *J. Am. Chem. Soc.*, **1993**, *115*, 8207.
277. R. D. Adams, G. Chen, L. Chen, W. Wu and J. Yin, Coupling of CO to HC≡COEt in Dimanganese Carbonyl Complexes, *Organometallics*, **1993**, *12*, 3431.
278. R. D. Adams and J. E. Cortopassi, Photon Capture by a Tetranuclear Metal Cluster Complex and the Isolation and Structural Characterization of its Metastable Photoproduct. Studies of PtOs₃(CO)₁₀(μ-η²-dppm)[Si(OMe)₃](μ-H) and its Photoisomer, *J. Am. Chem. Soc.*, **1993**, *115*, 8877.
279. R. D. Adams, L. Chen and W. Wu, Alkyne Coupling Reactions in Dimanganese Carbonyl Complexes. The Reactions of Mn₂(CO)₉(NCMe) with HC≡CCO₂Me, *Organometallics*, **1993**, *12*, 4112.
280. R. D. Adams, X. Qu, and W. Wu, Cyclobutyne Ligands. III. The Synthesis and Characterization of a Disubstituted Cyclobutyne Ligand in the Triosmium Complex Os₃(CO)₉(μ₃-η²- $\overline{\text{C}_2\text{CH}_2\text{C}(\text{Me})^t\text{Bu}}$)(μ₃-S), *Organometallics*, **1993**, *12*, 4117.
281. R. D. Adams, and J. E. Cortopassi and S. B. Falloon, Cluster-Assisted Cyclooligomerization of Thietane. A New Route to Polythioether Macrocycles, *J. Organomet. Chem.*, **1993**, *463*, C5.
282. R. D. Adams, L. Chen and W. Wu, Studies of the Coupling of Arylthiocyanates to Bridging Alkyne Ligands in Dirhenium Carbonyl Complexes, *Organometallics*, **1993**, *12*, 3812.
283. R. D. Adams, J.-C. Lii and W. Wu, Cluster Synthesis. 42. The Synthesis and Crystal and Molecular Structures of the Sulfur-Bridged Platinum-Ruthenium Carbonyl Cluster Compounds PtRu₃(CO)₉L(PPh₃)(μ₃-S)₂ (L = CO, PPh₃) and PtRu₄(CO)₁₂(PPh₃)(μ₄-S)₂, *J. Cluster Sci.*, **1993**, *4*, 423.
284. R. D. Adams, L. Chen and W. Wu, The Transformation of Alkenyl-N-Arylthioamido Ligands into Quinoline-2-thiolate Ligands in Dirhenium Carbonyl Complexes, *Organometallics*, **1993**, *12*, 4962.
285. R. D. Adams, J. E. Cortopassi, J. H. Yamamoto and W. Wu, Transformations of Thiacyclohexane by a Triosmium Cluster, *Organometallics*, **1993**, *12*, 4955.
286. R. D. Adams, L. Chen and W. Wu, Atom Transfer with Insertion into a Rhenium - Carbon Bond. The Oxygenation and Sulfurization of Re(CO)₄[E-HC=C(CO₂Me)CS₂]Re(CO)₄, *Angew. Chem. int. Ed. Engl.*, **1994**, *33*, 568.

287. R. D. Adams and W. Wu, New Platinum-Osmium Alkyne Complex from the Reaction of $\text{Pt}_2\text{Os}_4(\text{CO})_{18}$ with $\text{PhC}\equiv\text{CPh}$. The Synthesis, Characterization and Crystal Structure of $\text{Pt}_2\text{Os}_4(\text{CO})_8(\mu_3\text{-PhC}_2\text{Ph})_3(\mu_4\text{-PhC}_2\text{Ph})$, *J. Cluster Sci.*, **1994**, 5, 317.
288. R. D. Adams, L. Chen and W. Wu, Organic Reactions upon Dimetalated Olefins. The Observation of Insertion Reactions at Both Ends of the Alkyne in the Dirhenium Complex $\text{Re}(\text{CO})_4[\textit{trans-}\mu\text{-HC}=\text{C}(\text{CO}_2\text{Me})]\text{Re}(\text{CO})_4(\text{NCMe})$, *Organometallics*, **1994**, 13, 125.
289. R. D. Adams and L. Chen, Dimetalated Olefins Formed by the Insertion of an Alkyne into a Re - Re Bond. The Reaction of $\text{EtO}_2\text{CC}\equiv\text{CCO}_2\text{Et}$ with $\text{Re}_2(\text{CO})_9(\text{NCMe})$, *Organometallics*, **1994**, 13, 1264.
290. R. D. Adams, X. Qu, and W. Wu, Cyclobutylene Ligands. IV. Ruthenium Carbonyl Clusters Containing Substituted Cyclobutylene Ligands and the First Example of Quadruply Bridging Cyclobutylene Ligand, *Organometallics*, **1994**, 13, 1272.
291. R. D. Adams and L. Chen, Coupling of Alkynes and CO at a Dimanganese Center. A New Route to Carboxylate Functionalized Pyrans, *J. Am. Chem. Soc.*, **1994**, 116, 4467.
292. R. D. Adams, L. Chen and X. Qu, Cyclobutylene Ligands. V. C-H Bond Cleavage versus Ring Opening of a σ , π -coordinated Cyclobutenyl Ligands, *Organometallics*, **1994**, 13, 1992.
293. R. D. Adams, T. S. Barnard, Z. Li, W. Wu and J. Yamamoto, Cluster Synthesis. 43. New Layer Segregated Platinum-Ruthenium Cluster Complexes and their Reactions with Diphenylacetylene, *Organometallics*, **1994**, 13, 2357.
294. J. B. Ballif, P. Braunstein, A. D. Burrows, R. D. Adams and W. Wu, The Synthesis of Platinum and Palladium Cluster Compounds with Isocyanide or Functionalized Phosphine Ligands. Crystal Structures of $[\text{Pt}_5(\text{CO})(\mu\text{-CO})_5\{\text{Ph}_2\text{PCH}_2\text{C}(\text{O})\text{Ph}\}_4]$ and $[\text{Pt}_5(\mu\text{-CNC}_6\text{H}_3\text{Me}_2\text{-2,6})_3(\text{CNC}_6\text{H}_3\text{Me}_2\text{-2,6})_5\{\text{Ph}_2\text{PCH}_2\text{C}(\text{O})\text{Ph}\}_2]$, *J. Cluster Sci.*, **1994**, 5, 443.
295. R. D. Adams, L. Chen and M. Huang, Reactions of $\text{EtO}_2\text{CC}\equiv\text{CCO}_2\text{Et}$ with Dimanganese Carbonyls. Alkyne Insertion into the Mn-Mn Bond, Coupling to CO, and a New Route to Carboxylate-Substituted Pyrans, *Organometallics*, **1994**, 13, 2696.
296. R. D. Adams, L. Chen and W. Wu, Alkyne and CO Coupling Reactions to the Vinylidene Ligand in the Complex $\text{Mn}_2(\text{CO})_7[\mu\text{-}\eta^2\text{-C}=\text{CMe}(\text{CO}_2\text{Et})]$, *Organometallics*, **1994**, 13, 3068.
297. R. D. Adams, T. S. Barnard, Z. Li, W. Wu and J. Yamamoto, The Catalytic Hydrogenation of Diphenylacetylene by a Layer Segregated Platinum-Ruthenium Cluster Complex, *J. Am. Chem. Soc.*, **1994**, 116, 9103-9113.

298. R. D. Adams and S. B. Falloon, The Catalytic Cyclooligomerization of Thietane by Trirhenium Cluster Complexes. A New Route to Polythiaether Macrocycles, *J. Am. Chem. Soc.*, **1994**, *116*, 10540.
299. R. D. Adams, S. B. Falloon, and K. T. McBride, The Coordination of Polythioether Macrocycles to Metal Cluster Complexes. 1. The Synthesis and Structural Characterizations of $\text{Ru}_5(\text{CO})_{13}(\mu\text{-}\eta^1\text{-}12\text{S}3)(\mu_5\text{-C})$ and $\text{Ru}_5(\text{CO})_{11}(\mu\text{-}\eta^3\text{-}12\text{S}3)(\mu_5\text{-C})$, 12S3 = 1,5,9-Trithiacyclododecane, *Organometallics*, **1994**, *13*, 4870.
300. R. D. Adams, The Insertion of Alkynes into Metal - Metal Bonds and Organic Chemistry of the Dimetalated Olefin Complexes, *Chem. Soc. Rev.*, **1994**, 335.
301. R. D. Adams, T. S. Barnard, Z. Li, W. Wu and J. H. Yamamoto, The Synthesis and Structural Analysis of the New High Nuclearity Platinum-Ruthenium Cluster Complex $\text{Pt}_2\text{Ru}_8(\text{CO})_{18}(\mu_3\text{-EtC}_2\text{Et})_2(\mu_4\text{-EtC}_2\text{Et})$ Containing Three Alkyne Ligands, *J. Cluster Sci.*, **1994**, *5*, 551.
302. R. D. Adams, L. Chen and M. Huang, Organic Reactions upon Dimetalated Olefins. Reactions of the Olefinic Group in the Dirhenium Complex $(\text{OC})_4\text{Re}[\text{E-HC}=\text{C}(\text{CO}_2\text{Me})\text{CS}_2]\text{Re}(\text{CO})_4$ with Amines, *J. Chin. Chem. Soc.*, **1995**, *42*, 11.
303. R. D. Adams, L. Chen and J. H. Yamamoto, The Coordination and Fragmentation of 1,4-Dithiacyclohexane by a Triosmium Cluster, *Inorg. Chim. Acta*, **1995**, *229*, 47.
304. R. D. Adams, J. E. Cortopassi and Z. Li, Cluster Synthesis. 44. The Synthesis and Structural Characterization of an Unusual New High Nuclearity Platinum-Osmium Cluster Complex, $\text{Pt}_5\text{Os}_6(\text{CO})_{25}$, *J. Cluster Sci.*, **1995**, *6*, 61.
305. R. D. Adams and M. Huang, Reactions of Isocyanide Substituted Dimanganese Carbonyl Complexes with Alkynes. Alkyne-Isocyanide Coupling and the Synthesis of Metallated N-Substituted pyridines, *Organometallics*, **1995**, *14*, 506.
306. R. D. Adams, X. Qu and W. Wu, Cyclobutyne Ligands. 6. Reactions of Alkynes with the Cyclobutyne Triosmium Complex $\text{Os}_3(\text{CO})_9(\mu_3\text{-}\overline{\text{C}_2\text{CH}_2\text{C}(\text{Me})^t\text{Bu}})(\mu_3\text{-S})$ in the Presence of UV Irradiation, *Organometallics*, **1995**, *14*, 1377.
307. R. D. Adams, S. B. Falloon, K. T. McBride and J. H. Yamamoto, The Coordination of Polythiaether Macrocycles to Metal Cluster Complexes. 2. The Coordination of Polythiaether Macrocycles to Hexaruthenium Carbido Carbonyl Clusters, *Organometallics*, **1995**, *14*, 1739.
308. R. D. Adams and S. B. Falloon, The Catalytic Cyclooligomerization of Thietane by Dirhenium Carbonyl Complexes, *Organometallics*, **1995**, *14*, 1748.

309. R. D. Adams and J. E. Cortopassi, The Synthesis and Structural Characterization of $\text{Os}_3(\text{CO})_8[\text{Si}(\text{OMe})_3][\mu\text{-PMe}_2(\text{C}_6\text{H}_4)](\mu\text{-H})_2$. An Unusual Unsaturated Triosmium Cluster Complex, *J. Cluster Sci.*, **1995**, *6*, 437.
310. R. D. Adams, T. S. Barnard and J. E. Cortopassi, Cluster Synthesis 45. The Synthesis and Structural Characterizations of Gold Phosphine Derivatives of the Layer-Segregated Cluster $\text{Pt}_3\text{Ru}_6(\text{CO})_{21}(\mu_3\text{-H})(\mu\text{-H})_3$, *Organometallics*, **1995**, *14*, 2232.
311. R. D. Adams and X. Qu, The Coordination and Transformations of Benzothienyl Ligands by Triosmium Cluster Complexes, *Organometallics*, **1995**, *14*, 2238.
312. R. D. Adams, Organometallic Compound, McGraw-Hill Yearbook of Science & Technology, New York, **1995**, p. 305 - 307.
313. R. D. Adams and M. Huang, Alkyne Insertions into Metal - Metal Bonds. The Synthesis of Heteronuclear Dimetallated Olefins by the Insertion of $\text{MeO}_2\text{CC}\equiv\text{CCO}_2\text{Me}$ into an Re - Fe Single Bond, *Organometallics*, **1995**, *14*, 2887.
314. R. D. Adams and J. H. Yamamoto, The Coordination of Polythiaether Macrocycles to Metal Cluster Complexes. 3. The Synthesis, Structures and Dynamical Activity of the Cluster Complexes $\text{Ru}_3(\text{CO})_7(\mu\text{-CO})_2(1,1,1\text{-}\eta^3\text{-}12\text{S}3)$ and $\text{Ru}_3(\text{CO})_7(\mu\text{-CO})_2(1,1,1\text{-}\eta^3\text{-}9\text{S}3)$, *Organometallics*, **1995**, *14*, 3704.
315. R. D. Adams, R. Layland, and C. Payen, $\text{Cu}_4(\text{AsO}_4)_2(\text{O})$: A New Copper Arsenate with Unusual Magnetic Properties, *Inorg. Chem.*, **1995**, *34*, 5397.
316. R. D. Adams, R. Layland, and C. Payen, New Manganese Pyrophosphates. The Syntheses, Crystallographic Characterizations and Magnetic Properties of BaMnP_2O_7 and CaMnP_2O_7 , *Polyhedron*, **1995**, *14*, 3473.
317. R. D. Adams and X. Qu, Carbon - Carbon Bond Cleavage by Osmium Clusters. The Ring Opening of a Cyclobutenyl Ligand by a Triosmium Cluster, *Organometallics*, **1995**, *14*, 4167.
318. R. D. Adams and M. Huang, Reactions of Heteronuclear Dimetalated Olefin Complexes. The Reactions of $\text{CpFe}(\text{CO})_2[\mu\text{-}(\text{Z})\text{-}(\text{MeO}_2\text{C})\text{C}=\text{C}(\text{CO}_2\text{Me})]\text{Re}(\text{CO})_4$ with CO and p-tolyliothiocyanate, *Organometallics*, **1995**, *14*, 4535.
319. R. D. Adams and S. B. Falloon, Cluster Catalysis. The Catalytic Cyclooligomerization of Thietane by Tetraosmium and Tetraruthenium Tetrahydride Carbonyl Cluster Complexes, *Organometallics*, **1995**, *14*, 4594.

320. R. D. Adams and S. B. Falloon, The Chemistry of Thietane Ligands in Polynuclear Metal Carbonyl Complexes, *Chem. Rev.*, **1995**, *95*, 2587.
321. R. D. Adams, R. Layland and C. Payen, A New Mixed Metal Titanate. The Synthesis and Characterization of Ba₂NiTi₅O₁₃, *Chem. Mater.*, **1995**, *7*, 2168-2170.
322. R. D. Adams, "Synthesis of Compounds Containing Heteronuclear Metal-Metal Bonds", in *Comprehensive Organometallic Chemistry II*, 1982 - 1994, Abel, E., Stone, F. G. A., and Wilkinson, G. Exec. Ed., Elsevier, Oxford, **1995**, *10*, Ch. 1.
323. R. D. Adams, M. Huang, J. A. Yamamoto and L. Zhang, The Coordination of *N,N*-Diethyl-*N'*-*p*-tolylthiourea to Polynuclear Rhenium Carbonyl Complexes, *Chem. Ber.* **1996**, *129*, 137.
324. R. D. Adams, R. Layland, and C. Payen, A New Manganese Ortho-Arsenate. The Synthesis, Structure and Magnetic Properties of Ba₂Mn(AsO₄)₂, *Polyhedron*, **1996**, *15*, 1235.
325. R. D. Adams and X. Qu, The Chemistry of Cyclobutyne and Cyclobutenyl Ligands in Metal Cluster Complexes, *Synlett.*, **1996**, 493.
326. D. L. Reger, J. E. Collins, R. Layland and R. D. Adams, A Six-Coordinate Tris(3,5-dimethyl-1-pyrazolyl)methane-Thallium (I) Complex with a Stereochemically Inactive Lone Pair: Syntheses and Solid State Structures of {[HC(3,5-Me₂pz)₃]₂Tl}PF₆ and {[HC(3,5-Me₂pz)₃]₃Tl}PF₆, *Inorg. Chem.*, **1996**, *35*, 1372.
327. R. D. Adams, M. Danot, R. Layland and C. Payen, A New Mixed Metal Titanate. The Synthesis and Characterization of Ba₂Fe₂Ti₄O₁₃, *Polyhedron*, **1996**, *15*, 2567-2571.
328. R. D. Adams, S. B. Falloon, J. Perrin, J. A. Queisser and J. H. Yamamoto, The Catalytic Ring Opening Cyclooligomerization (ROC) of Thietane by the Complexes M(CO)₅L, M = Cr and W; L = CO, thietane and 1, 5, 9-trithiacyclododecane, *Chem. Ber.*, **1996**, *129*, 313.
329. R. D. Adams and M. Huang, The Synthesis of Stabilized Dimetalated Thioimidate Complexes by the Insertion of Ethoxycarbonylthiocyanate into a Rhenium - Rhenium Bond, *Chem. Ber.*, **1996**, *129*, 485.
330. P. Braunstein, C. Charles, R. D. Adams and R. Layland, The Synthesis of [Fe(CO)₃(η¹-dppm){Sn(*n*-Bu)₂}]₂ by Silicon - Tin Exchange, its Crystal Structure and its Use as a Metallodiphosphine Ligand, *J. Cluster Sci.*, **1996**, *7*, 145.
331. R. D. Adams, R. Layland, C. Payen and T. Datta, The Synthesis, Structural Analyses and Unusual Magnetic Properties of Ba₂CoSi₂O₇ and BaCo₂Si₂O₇, *Inorg. Chem.*, **1996**, *35*, 3492.

332. R. D. Adams and M. Huang, The Ring Opening Insertion of a Substituted Dithiazole-3-thione into the Re - Re Bond in a Dirhenium Carbonyl Complex, *Organometallics*, **1996**, *15*, 2125.
333. J. Andrieu, P. Braunstein, F. Naud, R. D. Adams and R. Layland, Ligand Redistribution Reactions leading to New Phosphinoenolate, Methyl Palladium Complexes. Crystal Structure of $[\text{Pd}(\text{Me})\{\text{Ph}_2\text{PCH}=\text{C}(\text{O})\text{Ph}\}(\text{PPh}_3)]$, *Bull. Soc. Chim. Fr.*, **1996**, *133*, 669.
334. R. D. Adams, J. A. Queisser and J. H. Yamamoto, New Polythioether Macrocycles from the Catalytic Ring Opening Cyclooligomerization of 3-Methylthietane by $\text{Re}_2(\text{CO})_9(\text{SCH}_2\text{CHMeCH}_2)$ and $\text{W}(\text{CO})_5(\text{SCH}_2\text{CHMeCH}_2)$, *Organometallics*, **1996**, *15*, 2489.
335. R. D. Adams, T. S. Barnard, J. E. Cortopassi and Lijuan Zhang, Cluster Synthesis 46. New Mixed Metal Complexes of the Layer-Segregated Cluster $\text{Pt}_3\text{Ru}_6(\text{CO})_{21}(\mu_3\text{-H})(\mu\text{-H})_3$, *Organometallics*, **1996**, *15*, 2664.
336. R. D. Adams and J. H. Yamamoto, Bis-Ethanedithiolate Triruthenium Cluster Complexes from the Reaction of $\text{Ru}_3(\text{CO})_{12}$ with 1,2,5,6-Tetrathiacyclooctane, *J. Cluster Sci.*, **1996**, *7*, 643 - 654.
337. R. D. Adams and M. Huang, Studies of the Insertion of an Organic Isothiocyanate into a Rhenium - Rhenium Single Bond and a New Mode of Metal Promoted Coupling of Isothiocyanates, *Organometallics*, **1996**, *15*, 3644.
338. R. D. Adams, M. Huang, W. Huang and J. A. Queisser, The Catalytic Cyclooligomerization of β -Propiothiolactone by a Dirhenium Complex. A Convenient Route to New Polythiolactone Macrocycles, *J. Am. Chem. Soc.*, **1996**, *118*, 9442.
339. R. D. Adams, J. A. Queisser and J. H. Yamamoto, Catalytic Transformations of Thiiranes by the $\text{W}(\text{CO})_5$ Grouping. A New Route to Cyclic Polydisulfides, *J. Am. Chem. Soc.*, **1996**, *118*, 10674.
340. R. D. Adams and R. Layland and C. Payen, The Synthesis, Structural Analysis and Magnetic Properties of a New Mixed Metal Ferrite $\text{Ba}_3\text{Fe}_{24}\text{Ti}_7\text{O}_{53}$, *Chem. Ber.* **1996**, *129*, 1441.
341. R. D. Adams and M. Huang, Reactions of a Dicarboxylate Substituted Allene with Activated Dirhenium Carbonyl Complexes, *Organometallics*, **1996**, *15*, 4437-4442.
342. R. D. Adams, R. Layland and K. T. McBride, An Extraordinary Example of Metalloselectivity. The Extraction of Copper from the Mixed Metal Cluster $\text{Cu}_2\text{Ru}_6(\text{CO})_{16}(\mu_6\text{-C})(\text{NCMe})_2$ by 1,5,9-trithiacyclododecane, *Organometallics*, **1996**, *15*, 5425.

343. R. D. Adams and M. Huang, The Coordination and Transformations of a Dicarboxylate Substituted Allene to a Dimanganese Carbonyl Grouping, *Chem. Ber.*, **1996**, *129*, 1447-1451.
344. R. D. Adams and R. Layland and C. Payen, The Synthesis, Crystal Structures and Magnetic Properties of $\text{Cu}_4(\text{AsO}_4)_2(\text{O})$ and $\text{Ba}_2\text{Cu}_7(\text{AsO}_4)_6$, *Chem. Ber.*, **1997**, *130*, 63.
345. R. D. Adams, M. Huang and L. Zhang, The Reaction of $\text{MeO}_2\text{C}(\text{H})\text{C}=\text{C}=\text{C}(\text{H})\text{CO}_2\text{Me}$ with $\text{Ru}_3(\text{CO})_{12}$. New Diruthenium Complexes with Bridging Carboxylate-Substituted Allene Ligands, *J. Cluster Sci.*, **1997**, *8*, 101.
346. R. D. Adams, M. Huang and W. Wu, Synthesis and X-ray Crystal Structure Analysis of $\text{Fe}_2(\text{CO})_6(\mu_3\text{-S})_2\text{Pd}(\text{bipy})$, *J. Cluster Sci.*, **1997**, *8*, 115-122.
347. R. D. Adams and R. Layland, A New Copper Titanate. The Synthesis and Structural Characterization of $\text{Ba}_8\text{Cu}_2\text{Ti}_{22}\text{O}_{54}$, *Polyhedron*, **1997**, *16*, 2105-2108.
348. R. D. Adams, T. S. Barnard, Z. Li and L. Zhang, Reactions of $\text{Pt}_3\text{Ru}_6(\text{CO})_{21}(\mu_3\text{-H})(\mu\text{-H})_3$ with Phosphines. The Synthesis and Structural Characterizations of $[\text{Pt}_3\text{Ru}_6(\text{CO})_{20}(\text{PPh}_3)(\mu\text{-H})_3(\mu_3\text{-H})]$ and $[\text{Pt}(\text{PMe}_3)_3\text{H}][\text{Pt}_3\text{Ru}_6(\text{CO})_{21}(\mu_3\text{-H})(\mu\text{-H})_2]$, *Chem. Ber.*, **1997**, *130*, 729.
349. R. D. Adams, J. H. Yamamoto, A. Holmes and B. J. Baker, Catalytic Transformations of Thiiranes by $\text{W}(\text{CO})_5$, *Organometallics*, **1997**, *16*, 1430.
350. R. D. Adams and K. T. McBride, A New Route to Polyselenoether Macrocycles. The Catalytic Macrocyclization of 3,3-Dimethylselenatane by $\text{Re}_2(\text{CO})_9$, *Chem. Commun.*, **1997**, 525.
351. R. D. Adams, J. L. Perrin, J. A. Queisser and J. B. Wolfe, The Catalytic Macrocyclization of 3,3-Dimethylthietane by $\text{Re}_2(\text{CO})_9(\overline{\text{SCH}_2\text{CMe}_2\text{CH}_2})$, *Organometallics*, **1997**, *16*, 2612.
352. R. C. Layland, J. B. Claridge, R. D. Adams and H.-C. zur Loye, The Structures and Characterization of Two New Oxides of the Sr_4PtO_6 Type: $\text{Ca}_3\text{NaRuO}_6$ and $\text{Ca}_3\text{NaRuO}_6$, *Z. Anorg. Allg. Chem.*, **1997**, *623*, 1131.
353. R. D. Adams, K. T. McBride and R. D. Rogers, A New Route to Polyselenoether Macrocycles. The Catalytic Macrocyclization of 3,3-Dimethylselenatane by $\text{Re}_2(\text{CO})_9(\overline{\text{SeCH}_2\text{CMe}_2\text{CH}_2})$, *Organometallics*, **1997**, *16*, 3895.
354. R. D. Adams, M. Huang and W. Huang, Catalytic Ring Opening of β -Propiothiolactones by Diruthenium and Dimanganese Carbonyl Complexes, *Organometallics*, **1997**, *16*, 4479-4485.

355. D.-S. Choi, S. Huang, M. Huang, T. S. Barnard, R. D. Adams, J. M. Seminario and J. M. Tour, Revised Structures of *N*-Substituted Dibrominated Pyrrole Derivatives and Their Polymeric Products. Termaleimide Models with Low Optical Bandgaps, *J. Org. Chem.*, **1998**, *63*, 2646.
356. R. D. Adams, T. S. Barnard, J. E. Cortopassi, W. Wu and Z. Li, Platinum-Ruthenium Carbonyl Cluster Complexes, *Inorg. Synth.*, **1998**, *32*, 280.
357. R. D. Adams, T. S. Barnard, A. Rawlett and J. M. Tour, The Coordination and Structure of a Thiolate Terminated "Molecular Scale Wire" Linked to a Triosmium Cluster, *Eur. J. Inorg. Chem.*, **1998**, 429 - 431.
358. R. D. Adams and K. T. McBride, Cluster Complexes of Polythioether Macrocycles. The Synthesis and Molecular Structures of $\text{Ru}_6(\text{CO})_{13}(\text{cis-} \overline{\text{SCH}_2\text{CHMe}(\text{CH}_2\text{SCH}_2\text{CHMe})_2\text{CH}_2})(\mu_6\text{-C})$ and $\text{Ru}_6(\text{CO})_{13}(\text{trans-} \overline{\text{SCH}_2\text{CHMe}(\text{CH}_2\text{SCH}_2\text{CHMe})_2\text{CH}_2})(\mu_6\text{-C})$, *J. Cluster Sci.*, **1998**, *9*, 93 - 105.
359. R. D. Adams, Catalytic Synthesis of Polythioether Macrocycles in "Catalysis by Di- and Polynuclear Metal Cluster Complexes" in R. D. Adams and F. A. Cotton, Eds., Wiley-VCH Publishers, New York, **1998**, Ch. 8.
360. R. D. Adams, J. W. Long IV and J. L. Perrin, A New Route to Dihydrodithiins by a Catalytic Reaction of Vinylthiiranes with $\text{W}(\text{CO})_5(\text{NCMe})$, *J. Am. Chem. Soc.*, **1998**, *120*, 1922.
361. R. D. Adams and T. S. Barnard, Catalytic Hydrosilylation of Diarylalkynes by Layer-segregated Platinum-Ruthenium Cluster Complexes $\text{Pt}_3\text{Ru}_6(\text{CO})_{20}(\mu_3\text{-RC}_2\text{R})(\mu_3\text{-H})(\mu\text{-H})$, *Organometallics*, **1998**, *17*, 2567-2573.
362. R. D. Adams and T. S. Barnard, Does a Metal to Metal "Ligand" Effect Influence the Catalytic Activity of Bimetallic Cluster Complexes? Synthesis and Catalytic Activity of $\text{Pt}_3\text{Ru}_6(\text{CO})_{19}(\text{SMe}_2)(\mu_3\text{-PhC}_2\text{Ph})(\mu_3\text{-H})(\mu\text{-H})$, *Organometallics*, **1998**, *17*, 2885.
363. R. D. Adams and M. Huang, Formation of a Stable Adduct of Ethoxycarbonyldithiocarbamic acid and a Dimer of Ethoxycarbonyl Isothiocyanate, *Eur. J. Inorg. Chem.* **1998**, 1025.
364. R. D. Adams and M. Huang, New Dithiocarbamate Compounds of Manganese Carbonyl and a Zinc Polymer, *Polyhedron*, **1998**, *17*, 2759 - 2764.
365. R. D. Adams, M. Huang and S. Johnson, New Compounds with Extended Structure Lattices from the Reactions of Cuprous Iodide with Cyclic Polydisulfides, *Polyhedron*, **1998**, *17*, 2775.

366. R. D. Adams and W. Huang, Ring Opening of 1,3-Dithietane-1,1-Dioxide by a Triosmium Cluster, *J. Organomet. Chem.* **1999**, 573, 14.
367. R. D. Adams and J. L. Perrin, Butene Dithiolate Triosmium Cluster Complexes from the Reaction of $\text{Os}_3(\text{CO})_{10}(\text{NCMe})_2$ with 3,6-Dihydro-1,2-dithiin, *J. Organomet. Chem.*, **1999**, 582, 9.
368. R. D. Adams, Uwe Bunz, Wei Fu and Lamvien Nguyen, The Synthesis and Structural Analysis of the Bis- $\text{Co}_2(\text{CO})_6$ Adduct of the Cyclic Tetrayne C_{20}H_8 , *J. Organomet. Chem.*, **1999**, 578, 91.
369. R. D. Adams, U. Bunz, W. Fu and G. Roidl, The Synthesis and Structural Analyses of Ruthenium Carbonyl Cluster Complexes Containing the Bis-(trimethylsilyl)hexatriyne Ligand, *J. Organomet. Chem.*, **1999**, 578, 55.
370. G. Roidl, V. Enkelmann, R. D. Adams and U. Bunz, An Alternative Synthesis of Vollhardt's [(1,2-diethynyl-3,4-bis(trimethylsilyl)cyclobutadiene)cyclopentadienylcobalt and Selective Formation of its Dimer, *J. Organomet. Chem.*, **1999**, 578, 144.
371. R. D. Adams, W. Fu and B. Qu, Use of Semi-Rigid Polyynes to Direct the Shapes of Metal Clusters. The Reaction of $\text{Pt}_2\text{Ru}_4(\text{CO})_{18}$ with *o*-bis(phenylethynyl)benzene, *Inorg. Chem. Commun.*, **1999**, 2, 1.
372. R. D. Adams, T. S. Barnard and K. Brosius, Formation of 1,3-Dioxolanes by the Addition of Carbonyls to Epoxides Catalyzed by $[\text{Cp}^*\text{Ir}(\text{NCMe})_3]^{2+}$, *J. Organomet. Chem.*, **1999**, 582, 358.
373. R. D. Adams, B. Zhang, C. J. Murphy and L. K. Yeung, Halide Enhancement of the Luminescence of Cd_{10}S_4 Thiolate Clusters, *Chem. Commun.*, **1999**, 383-384.
374. R. D. Adams and J. L. Perrin, Catalytic Transformations of Vinylthiiranes by Tungsten Carbonyl Complexes. A New Route to 3,6-Dihydro-1,2-dithiins, *J. Am. Chem. Soc.*, **1999**, 121, 3984.
375. R. D. Adams, O Sung Kwon and Joseph L. Perrin, The Effect of a Vinyl Substituent on the Ring Opening of Tetrahydrothiophene at a Triosmium Center, *J. Organomet. Chem.*, **1999**, 584, 223-229.
376. R. D. Adams, W. Fu and B. Qu, Intramolecular Alkyne Coupling in the Reactions of 1,8-bis(phenylethynyl)naphthalene with $\text{Pt}_2\text{Ru}_4(\text{CO})_{18}$, *J. Cluster Sci.*, **2000**, 11, 55-65.
377. N. G. Pschirer, W. Fu, R. D. Adams, and U. H. F. Bunz, Ring-closing Alkyne Metathesis with Simple Catalyst Systems: an access to molecular triangles and rhomboids, *Chem. Commun.* **2000**, 87-88.

378. L. K. Yeung, K. Sooklal, R. Mahtab, B. Zhang, R. D. Adams and C. J. Murphy, A Comparison of the Photophysical Properties of Thiolate-Capped CdS Quantum Dots with Thiolate-Capped CdS Molecular Clusters, *Mater. Res. Soc. Symp. Proc.*, **2000**, 571, 247.
379. R. D. Adams and J. L. Perrin, The Catalytic Transformation of Thiiranes to Cyclic Disulfides and by Tungsten Carbonyl Complexes, *Polyhedron*, **2000**, 19, 521-523.
380. R. D. Adams, O. S. and J. L. Perrin, Coordinations of Vinyltetrahydrothiophene to a Trirhenium Cluster, *J. Organomet. Chem.*, **2000**, 596, 102-108.
381. R. D. Adams, Catalytic Macrocyclizations of Thietanes and Thiiranes by Metal Carbonyl Complexes, *Accts. Chem. Res.*, **2000**, 33, 171-178.
382. R. D. Adams, J. L. Perrin, J. A. Queisser and R. D. Rogers, Synthesis and Structural Characterization of Chiral Thiacycrows. The Crystal and Molecular Structure of (*R,R,R*)-2,6,10-trimethyl-1,5,9-trithiacyclododecane, *J. Organomet. Chem.*, **2000**, 596, 115-120.
383. R. D. Adams, O. S. Kwon and J. L. Perrin, Cleavage of Carbon-Sulfur Bonds in Vinylthiane by a Triosmium Cluster. A Remarkable Two Center Mechanism Predicated on Metal – Metal Bond Cleavage, *Organometallics* **2000**, 19, 2246-2248.
384. R. D. Adams, Metal Segregation in Bimetallic Clusters and its Possible Role in Synergism and Bifunctional Catalysis, *J. Organomet. Chem.* **2000**, 600, 1-6.
385. R. D. Adams and J. L. Perrin, The Ring Opening of 2-Vinylthietane by a Triosmium Carbonyl Cluster Complex, *J. Molecular Struct.*, **2000**, 550, 439-444.
386. U. H. F. Bunz, G. Roidl, and R. D. Adams, A Novel Weakly Diatropic Dehydroannulene Containing Cyclobutadiene(cyclopentadienyl)cobalt unit. an Organometallic Dehydroannulene obeys Hückel's rule, *J. Organomet. Chem.* **2000**, 600, 56-62.
387. J. Andrieu, P. Braunstein, F. Naud and R. D. Adams, Cationic Palladium Complexes with Ketophosphine and Phosphino Enolate Ligands and Reactivity toward C-C Coupling Reactions. Crystal Structures of $[\text{PdMe}\{\text{Ph}_2\text{PCH}_2\text{C}(\text{O})\text{Ph}\}(\text{PCy}_3)](\text{PF}_6)$ and $[\text{Pd}\{\text{Ph}_2\text{PCHC}(\text{O})\text{Ph}\}(\text{SMe}_2)_2](\text{PF}_6)$, *J. Organomet. Chem.* **2000**, 601, 43-50.
388. R. D. Adams, The Catalytic Synthesis of Thiacycrows from Thietanes and Thiiranes by Metal Carbonyl Complexes, *Aldrichimica Acta*, **2000**, 33, 39-48.
389. R. D. Adams, B. Captain, W. Fu and P. J. Pellechia, The Facile Dynamical Intramolecular Exchange of a Phosphine Ligand between Two Metal Atoms, *Chem. Commun.*, **2000**, 937-938.
390. R. D. Adams and B. Qu, The Effect of Metals on the Electronic Communication Through a Molecular Wire Model, *Organometallics*, **2000**, 19, 2411-2413.

391. K. D. Shimizu, H. O. Freyer, R. D. Adams, Synthesis, Resolution and Structure of Axially Chiral N-Arylimides, *Tet. Lett.*, **2000**, *41*, 5431-5434.
392. C. Degenhardt III, B. Shortell, R. D. Adams, K. D. Shimizu, Synthesis and Structural Characterization of Adaptable Shape Persistent Building Blocks, *Chem. Commun.*, **2000**, 929.
393. R. D. Adams, B. Captain and W. Fu, The Oxidative Addition of Silanes to Ru₅(CO)₁₅ (μ_5 -C) under Photolytic Conditions. The Synthesis and Structural Characterizations of Ru₅(CO)₁₄(SiEt₃)(μ_5 -C)(μ -H) and Ru₅(CO)₁₅(SiEt₃)(μ_5 -C)(μ -H), *Organometallics*, **2000**, *19*, 3670-3673.
394. P.-H. Ge, W. Fu, W. A. Herrmann, E. Herdtweck, C. Campana, R. D. Adams and Uwe H. F. Bunz, Structural Characterization of a Cyclohexameric *meta*-Phenyleneethynylene Made by Alkyne Metathesis with In-Situ-Catalysts, *Angew. Chem. Int. Ed. Engl.* **2000**, *39*, 3607-3610.
395. P. Braunstein, C. Frison, X. Morise and R. D. Adams, Coordination Properties of Novel Hemilabile Acetamide-Derived P,O Phosphine Ligands. Crystal Structures of Ph₂PNHC(O)Me and [PdMe{PPh₂NHC(O)Me}{PPh₂NHC(O)Me}][O₃SCF₃], *Dalton Trans.* **2000**, 2205-2214.
396. R. D. Adams, U. Bunz, B. Captain, W. Fu, W. Steffen, New Alkyne Bridged Mixed – Metal Clusters and Studies of Their Activity for Catalytic Hydrosilylation of Alkynes, *J. Organomet. Chem.* **2000**, *614-615*, 75-82.
397. R. D. Adams and B. Qu, New Triosmium Complexes Containing a Partially Hydrogenated Bis-Ferrocenylbutadiyne Ligand. Their Structures and Electrochemical Responses, *Organometallics*, **2000**, *19*, 4090-4094.
398. R. D. Adams and B. Qu, Mixed Metal Cluster Complexes Containing the Bis-Ferrocenylbutadiyne Ligand. Their Structures and Electrochemical Responses, *J. Organomet. Chem.*, **2001**, *620*, 303-307.
399. R. D. Adams and B. Qu, Insertion of Bis-Ferrocenylbutadiyne into an Osmium Hydride bond. The Synthesis, Structure and Electrochemical Response of Os₄(CO)₁₁(μ - η^2 -Z-FcCC(H)C₂Fc)(μ -H)₃ *J. Organomet. Chem.* **2001**, *619*, 271-274.
400. R. D. Adams, B. Captain and W. Fu, New Mixed Metal Cluster Complexes Containing Platinum. The Synthesis and Structural Characterizations of PtFe₄(CO)₁₂(COD)(μ_5 -C) and PtFe₄(CO)₁₂(PMe₂Ph)₂(μ_5 -C), *J. Cluster Sci.*, **2001**, *12*, 303-312.
401. R. D. Adams, B. Qu and M. D. Smith, A New Route to Dehydroannulenes by Coupling of Linear Polyynes Using Ruthenium Carbonyl, *Inorg. Chem.* **2001**, *40*, 2932-2934.

402. R. D. Adams, B. Qu and M. D. Smith, A Comparison of Ferrocenyl Carbenium/Non-Carbenium Structures in Isomeric Osmium Cluster Complexes Obtained from the Reaction of Bis-Ferrocenylbutadiyne with $\text{Os}_3(\text{CO})_{10}(\mu\text{-py})(\mu\text{-H})$, *J. Organomet. Chem.* **2001**, 637-639, 514.
403. R. D. Adams, O.-S. Kwon, B. Qu and M. D. Smith, Electro-Communication of Ferrocenyl Groups through 1,8-Bis(ferrocenyl)octatetrayne Coordinated to Osmium Clusters, *Organometallics*, **2001**, 20, 5225-5232.
404. R. D. Adams, O.-S. Kwon and M. D. Smith, $\text{Mn}_2(\text{CO})_6(\mu\text{-CO})(\mu\text{-S}_2)$ - The Simplest Disulfide of Manganese Carbonyl, *Inorg. Chem.*, **2001**, 40, 5322-5323.
405. R. D. Adams, K. Brosius and O.-S. Kwon, A Simple Route to Thiocrowns. Catalytic Macrocyclization of Thiirane by Cationic Manganese Carbonyl Complexes, *Inorg. Chem Commun.*, **2001**, 4, 671-673.
406. R. D. Adams, O.-S. Kwon and M. D. Smith, New Evidence on the Factors Affecting Bridging and Semibridging Character of Carbonyl Ligands. The Structures of $\text{Mn}_2(\text{CO})_7(\mu\text{-SCH}_2\text{CH}_2\text{S})$ and its Phosphine Derivatives $\text{Mn}_2(\text{CO})_{7-x}(\text{PMe}_2\text{Ph})_x(\mu\text{-SCH}_2\text{CH}_2\text{S})$, X=1, 2, *Israel, J. Chem* , **2001**, 41, 197.
407. A. S. Lipton, M. D. Smith, R. D. Adams and P. D. Ellis, ^{67}Zn Solid-State and Single-Crystal NMR Spectroscopy and X-ray Crystal Structure of Zinc Formate Dihydrate, *J. Am. Chem. Soc.*, **2002**, 124, 410-414.
408. R. D. Adams, O.-S. Kwon and M. D. Smith, Insertion of a Bis(phosphine)platinum Group into the S-S bond of $\text{Mn}_2(\text{CO})_7(\mu\text{-S}_2)$, *Inorg. Chem.* **2002**, 41, 1658-1661.
409. R D. Adams, O-S, Kwon and M. D. Smith, Insertion of Cyclopentadienylmetal groups into the S-S bond of the $\text{Mn}_2(\text{CO})_7(\mu\text{-S}_2)$, *Organometallics*, **2002**, 21, 1960-1965.
410. R. D. Adams, B. Captain, W. Fu and M. D. Smith, Synthesis of New Ruthenium-Tin Carbonyl Clusters including $\text{Ru}_5(\text{CO})_7(\text{SnPh}_2)_4(\text{SnPh}_3)(\text{C}_6\text{H}_6)(\mu_5\text{-C})(\mu\text{-H})$ Containing Unprecedented Incorporation of Five Tin Ligands, *Inorg. Chem.*, **2002**, 41, 2302-2303.
411. R. D. Adams, B. Captain, W. Fu and M. D. Smith, Lewis Acid-Base Interactions between Metal Atoms and Their Applications for the Synthesis of Bimetallic Cluster Complexes, *J. Am. Chem. Soc.*, **2002**, 124, 5628-5629.
412. R. D. Adams and Joseph L. Perrin, A Convenient Synthesis of 1,5,9-Trithiacyclododecane, *Inorg. Synth.*, **2002**, 33, 119-121.
413. O. S. Alexeev, G. W. Graham, M. Shelef, R. D. Adams and B. C. Gates, $\gamma\text{-Al}_2\text{O}_3$ - Supported PtRu Clusters Prepared from $[\text{Pt}_2\text{Ru}_4(\text{CO})_{18}]$: Characterization by Infrared and Extended x-ray Absorption Fine Structure Spectroscopies, *J. Phys. Chem B*, **2002**, 106, 4697-4704.

414. R. D. Adams, B. Captain, W. Fu and M. D. Smith, CH and PC Bond Activations of PMe₂Ph ligands by an Octahedral Ru₆ Cluster, *J. Organomet. Chem.*, **2002**, 651, 124-131.
415. R. D. Adams, K. M. Brosius and O-S. Kwon, The Catalytic Synthesis of Thiocrowns from Thiiranes by Group VI and VII Transition Metal Carbonyl Complexes, *J. Organomet. Chem.* **2002**, 42, 51.
416. R. D. Adams, B. Captain, W. Fu, P. J. Pellechia and M. D. Smith, A Novel Dynamical Rearrangement of a Metal Cluster in a Process that Closely Resembles the Hopping Mechanism of Adatom Diffusion on Metal Surfaces, *Angew. Chem. int. Ed.*, **2002**, 41, 1951-1953.
417. R. D. Adams, B. Qu, M. D. Smith and T. A. Albright, Syntheses, Structures, Bonding and Redox Behavior of 1,4-Bis(ferrocenyl)butadiyne Coordinated Osmium Clusters, *Organometallics*, **2002**, 21, 2970-2978.
418. R. D. Adams, B. Qu and M. D. Smith, Synthesis and Characterization of 1,12-Bis(ferrocenyl)-1,3,5,7,9,11-dodecahexayne and its Coordination to Triosmium and Dicobalt Carbonyls, *Organometallics*, **2002**, 21, 3867-3872.
419. R. D. Adams, O-S. Kwon and M. D. Smith, Disulfides of Manganese Carbonyl. The Synthesis of Mn₂(CO)₇(μ-S₂) and its Reactions with Tertiary Phosphines and Arsines, *Inorg. Chem.*, **2002**, 41, 6281-6290.
420. R. D. Adams, B. Qu and M. D. Smith, Reactions of H₂Os₃(CO)₁₀ with 1,8-Bis(ferrocenyl)octatetrayne Yield Cyclizations and *trans*-Hydrogenation of Alkyne Groups, *Organometallics*, **2002**, 21, 4847-4852.
421. R. D. Adams, O-S. Kwon and M. D. Smith, Reactions of Thioethers with Mn₂(CO)₇(μ-S₂) Proceed with CO Displacement and Insertion of the Sulfur Atom into the Mn-Mn Bond, *Inorg. Chem.*, **2002**, 41, 5525-5529.
422. R. D. Adams, B. Captain, W. Fu and M. D. Smith, High Nuclearity Ruthenium-Tin Clusters from the Reactions of Triphenylstannane with Pentaruthenium Carbonyl Carbido Cluster Complexes, *Inorg. Chem.*, **2002**, 41, 5593-5601.
423. R. D. Adams and S. Miao, Sulfur-Bridged Manganese Carbonyl Anion: Synthesis, Structure and Reactivity of [Mn₃S₄(CO)₁₀]⁻, *J. Organomet. Chem.* **2003**, 665, 43-47.
424. R. D. Adams, B. Captain, and W. Fu, Germanium-Rich Pentaruthenium Carbonyl Clusters Including Ru₅(CO)₁₁(μ-GePh₂)₄(μ₅-C) and its Reactions with Hydrogen, *Inorg. Chem.*, **2003**, 42, 1328-1333.

425. R. D. Adams, B. Captain, W. Fu, P. J. Pellechia and M. D. Smith, The Remarkable Dynamical Opening and Closing of Platinum- and Palladium Pentaruthenium Carbido Carbonyl Cluster Complexes, *Inorg. Chem.*, **2003**, *42*, 2094-2101.
426. R. D. Adams, B. Captain, W. Fu and P. J. Pellechia, Dynamical Intramolecular Metal to Metal Ligand Exchange of Phosphine and Thioether Ligands in Derivatives $\text{PtRu}_5(\text{CO})_{16}(\mu_6\text{-C})$, *Inorg. Chem.*, **2003**, *42*, 3111-3118.
427. R. D. Adams, B. Captain and W. Fu, Facile Introduction of Bridging MPh_2 groups $\text{M} = \text{Ge}, \text{Sn}, \text{Pb}$ into Platinum-Pentaruthenium and Hexaruthenium Carbido Carbonyl Cluster Complexes, *J. Organomet. Chem.*, **2003**, *671*, 158-165.
428. R. D. Adams, B. Captain, O-S. Kwon and S. Miao, New Disulfido Molybdenum-Manganese Complexes Exhibit Facile Addition of Small Molecules to the Sulfur Atoms, *Inorg. Chem.* **2003**, *42*, 3356-3365.
429. R. D. Adams, and O-S Kwon, Syntheses and Reactivity of the Diselenido Molybdenum-Manganese Complex $\text{CpMoMn}(\text{CO})_5(\mu\text{-Se}_2)$, *Inorg. Chem.* **2003**, *42*, 6175-6182.
430. R. D. Adams and S. Miao, New Mixed-Metal Sulfido Metal Carbonyl Complexes by Insertion of Metal Carbonyl Groups into the S – S bond of $\text{CpMoMn}(\text{CO})_5(\mu\text{-S}_2)$, *Organometallics*, **2003**, *22*, 2492-2497.
431. R. D. Adams, O-S. Kwon, S. Sanyal, Syntheses of Structures of Selenido Dimanganese and Iron – Manganese Carbonyl Cluster Complexes, *J. Organomet. Chem.*, **2003**, *681*, 258-263.
432. R. D. Adams, O-S, Kwon, The Addition of Platinum and Palladium Groups to the Disulfido Ligand in Molybdenum-Manganese Carbonyl Complexes, $\text{Cp}'\text{MoMn}(\text{CO})_5(\mu\text{-S}_2)$, ($\text{Cp}' = \text{C}_5\text{H}_5$ and C_5Me_5), *J. Cluster Sci.*, **2003**, *14*, 367-379.
433. R. D. Adams, B. Captain, W. Fu and M. D. Smith. Metallation of $\text{PtRu}_5(\text{CO})_{16}(\mu_6\text{-C})$ by Using Bis(tri-*t*-butyl phosphine) complexes of Palladium and Platinum, *J. Organomet. Chem.*, **2003**, *682*, 113-118.
434. R. D. Adams, B. Captain and J. L. Smith, The Activation and Transformations of Acenaphthylene by Osmium Carbonyl Cluster Complexes, *J. Organomet. Chem.*, **2003**, *683*, 421-429.
435. S. Miao, R. D. Adams, D.-S. Guo, Q.-F. Zhang, Structural Isomers of Symmetry-Substituted Resorcin[4]arenes, *J. Molec. Struct.* **2003**, *119*, 659.
436. R. D. Adams, B. Captain and J. L. Smith, Jr., Diacenaphtho[1,2-*c*:1',2'-*e*]-1,2-dithiin: Synthesis, Structure and Reactivity, *J. Organomet. Chem.*, **2004**, *689*, 65.

437. R. D. Adams, B. Captain, W. Fu, J. L. Smith, Jr. and M. D. Smith, Addition of Platinum and Palladium Tri-*t*-butyl Phosphine Groups to Open Pt-Fe and Pt-Ru Metal Carbonyl Clusters, *Organometallics*, **2004**, *23*, 589-594.
438. R. D. Adams, B. Captain, and M. D. Smith, High Nuclearity Bimetallic Rhodium - Palladium Carbonyl Cluster Complexes. Synthesis and Characterization of $\text{Rh}_6(\text{CO})_{16}[\text{Pd}(\text{PBU}^t_3)]_3$ and $\text{Rh}_6(\text{CO})_{16}[\text{Pd}(\text{PBU}^t_3)]_4$, *J. Cluster Sci.* **2004**, *15*, 139-149.
439. R. D. Adams, B. Captain, W. Fu, M. B. Hall, J. Manson, M. D. Smith and C. Edwin Webster, Bimetallic Cluster Complexes: The Synthesis, Structures and Bonding of Ruthenium Carbonyl Cluster Complexes Containing Palladium and Platinum with the Bulky Tri-*t*-butylphosphine Ligand, *J. Am. Chem. Soc.* **2004**, *126*, 5253-5267.
440. R. D. Adams, B. Captain, P. J. Pellechia and J. L. Smith, Jr., Platinum - Rhodium Carbonyl Clusters - New Structures and New Types of Dynamical Activity in the Metal Atoms, *Inorg. Chem.* **2004**, *43*, 2695-2702.
441. R. D. Adams, B. Captain, O-S. Kwon, P. J. Pellechia, and S. Sanyal, Synthesis and Properties of Oligomers of Iron-Manganese Carbonyl Complexes with Bridging Disulfido Ligands *J. Organomet. Chem.* **2004**, 689, 1370.
442. R. D. Adams, and S. Miao, Metal Carbonyl Derivatives of 1,4-Quinone and 1,4-Hydroquinone, *J. Am. Chem. Soc.* **2004**, *126*, 5056.
443. R. D. Adams, B. Captain and L. Zhu, Platinum Participation in the Hydrogenation of Phenylacetylene by $\text{PtRu}_5(\text{CO})_{15}(\text{PBU}^t_3)$, *J. Am. Chem. Soc.* **2004**, *126*, 3042-3043.
444. R. D. Adams, S. Miao, M. D. Smith, M. B. Hall, J. Manson, C. E. Webster and H. Farach, Nickel-Manganese Sulfido Carbonyl Cluster Complexes. Synthesis, Structure, and Properties of the Unusual Paramagnetic Complexes $\text{Cp}_2\text{Ni}_2\text{Mn}(\text{CO})_3(\mu_3\text{-E})_2$, E = S, Se, *Inorg. Chem.*, **2004**, *43*, 2515.
445. R. D. Adams, B. Captain, W. Fu, M. B. Hall, M. D. Smith and C. E. Webster, Dinuclear Ruthenium and Iron Complexes Containing Palladium and Platinum with Tri-*t*-Butyl Phosphine Ligands: Synthesis, Structures and Bonding, *Inorg. Chem.*, **2004**, *43*, 3921-3929.
446. R. D. Adams, S. Miao and M. D. Smith, Light-Promoted Addition of Alkenes, Dienes, C_{60} and Disulfur to the Disulfido Ligand in the Complex $\text{CpMoMn}(\text{CO})_5(\mu\text{-S}_2)$, *Organometallics*, **2004**, *23*, 3327.
447. R. D. Adams and B. Captain, Bimetallic Cluster Complexes: Synthesis, Structures and Applications to Catalysis, *J. Organometal. Chem.*, **2004**, 689, 4521-4529.

448. R. D. Adams, B. Captain, P. J. Pellechia and L. Zhu, Addition of Pt(PBu^t)₃ groups to Ru₅(CO)₁₂(η⁶-C₆H₆)(μ₅-C). Synthesis, Structures and Dynamical Activity, *Inorg. Chem.* **2004**, *43*, 7243.
449. R. D. Adams, B. Captain, J. L. Smith, Jr., M. B. Hall, C. L. Beddie, and C. E. Webster, Superloading of Tin Ligands into Rhodium and Iridium Carbonyl Cluster Complexes, *Inorg. Chem.* **2004**, *43*, 7576-7578.
450. R. D. Adams and S. Miao, Metal Carbonyl Derivatives of Quinones and Hydroquinones: Synthesis, Structure and Electrochemical Properties, *Inorg. Chem.* **2004**, *43*, 8414-8426.
451. R. D. Adams and S. Miao, Cyclopentadienylcobalt Sulfide and Selenide Cluster Compounds: Synthesis and Structural Characterizations, *Inorg. Chim. Acta*, **2005**, *358*, 1401-1406.
452. R. D. Adams, B. Captain, M. Johansson, and J. L. Smith, Jr., New Rhenium-Tin Cluster adds Palladium Phosphine Groups across Re-Sn Bonds, *J. Am. Chem. Soc.* **2005**, *127*, 488-489.
453. R. D. Adams, B. Captain, M. B. Hall, J. L. Smith, Jr., and C. E. Webster, High Nuclearity Iridium-Platinum Clusters: Syntheses, Structures, Bonding, and Reactivity, *J. Am. Chem. Soc.* **2005**, *127*, 1007-1014.
454. R. D. Adams, B. Captain, and J. L. Smith, Jr., High-Nuclearity Iridium Carbonyl Clusters Containing Phenylgermyl Ligands - Synthesis, Structure, and Reactivity, *Inorg. Chem.*, **2005**, *44*, 1413-1420.
455. R. D. Adams, O-S. Kwon and S. Miao, Disulfido Metal Carbonyl Complexes Containing Manganese, *Accts. Chem. Res.*, **2005**, *38*, 183-190.
456. P. Braunstein, C. Chantel, R. D. Adams, Iron, silicon, tin polymetallic complexes: formation of *trans*, *cis*, *cis*-[Fe(CO)₂(dppm-P,P)SnClPh₂]₂] by silicon – tin exchange and its crystal structure, *Comp.-Rend. Chim.*, **2005**, *8*, 1873-1877.
457. R. D. Adams, E. Boswell, S. Miao and S. Sanyal, Trinuclear metal clusters with three different metal atoms from the insertion of CpCo and Cp*Rh groups into the S – S bonds of [CpFeMn(CO)₅(μ-S₂)₂]₂, *J. Cluster Sci.*, **2005**, *16*, 117-126.
458. R. D. Adams, B. Captain, Highly Unsaturated Platinum-Rhenium Cluster Complex Adds an Unusually Large Amount of Hydrogen, *Angew. Chem. int. Ed.*, **2005**, *44*, 2531-2533.
459. R. D. Adams, B. Captain and L. Zhu, New High Nuclearity Platinum-Ruthenium Carbonyl Cluster Complexes Containing a Phenylacetylene Ligand: Structures and Properties, *Organometallics*, **2005**, *24*, 2419-2423.
460. R. D. Adams, B. Captain, and J. L. Smith, Jr. Rhodium Cluster Complexes Containing Bridging Phenylgermyl Ligands, *Inorg. Chem.*, **2005**, *44*, 4276-4281.

461. R. D. Adams, B. Captain, R. H. Herber, M. Johansson, I. Nowik, J. L. Smith, Jr. and M. D. Smith, Addition of Palladium and Platinum Tri-*tert*-Butylphosphine Groups to Re–Sn and Re–Ge Bonds, *Inorg. Chem.*, **2005**, *44*, 6346-6358.
462. R. D. Adams and J. L. Smith, Jr., Rhenium Carbonyl Complexes Containing Bridging SiPh₃ and SiPh₂ Ligands, *Organometallics*, **2005** *24*, 4489-4493.
463. R. D. Adams, B. Captain and L. Zhu, Synthesis of PtRu₅(CO)₁₄(PBU^t₃)(μ-H)₂(μ₆-C) and its Reactions with Pt(PBU^t₃)₂, HGePh₃, and HSnPh₃, *Inorg. Chem.*, **2005**, *44*, 6623-6631.
464. Q.-F. Zhang, R. D. Adams, D. Fenske, Stable Hydrogen-bonded Spherical Capsules formed from Self-assembly of Pyrogallol[4]arenes, *J. Inclu. Phenom. Macrocyclic Chem.* **2005**, *53*, 275-279.
465. Q.-F. Zhang, R. D. Adams, D. Fenske, Tetracopper(I) phosphonitocavitand: synthesis, halide anion inclusion and optical nonlinearity, *J. Molec. Struc.* **2005**, *741*, 129-134.
466. R. D. Adams, B. Captain and L. Zhu, Addition of Alkynes to High Nuclearity Platinum-Ruthenium Carbonyl Cluster Complexes, *J. Cluster Sci.*, **2005**, *16*, 397-411.
467. Q.-F. Zhang, R. D. Adams, W.-H. Leung, Syntheses, spectroscopic properties and crystal structures of two organoruthenium(II) complexes of bipyridines: [{Cp*⁺Ru(2,2'-bipy)}₂(μ-Cl)][PF₆]⁻ and [{(η⁶-*p*-cymene)Ru}₂(μ-OH)₂(4,4'-bipy)]₂[BF₄]₄, *Inorg. Chim. Acta*, **2006**, *359*, 978-983.
468. R. D. Adams, B. Captain, W. Fu, M. D. Smith and L. Zhu, Platinum-Osmium Cluster Complexes from the Addition of Pt(PBU^t₃) groups to Os₃(CO)₁₂, *Inorg. Chem.*, **2006**, *45*, 430-436.
469. R. D. Adams, B. Captain and L. Zhu, Pd(PBU^t₃) Adducts of Os₃(CO)₁₂. Synthesis and Structures of Pd₂Os₃(CO)₁₂(PBU^t₃)₂ and Pd₃Os₃(CO)₁₂(PBU^t₃)₃, *J. Cluster Sci.*, **2006**, *17*, 87-95.
470. R. D. Adams, B. Captain, W. Fu, M. D. Smith, New Highly Unsaturated Platinum – Rhenium Cluster Complex Activates Hydrogen Reversibly Under Mild Conditions, *Angew. Chem. int. Ed.*, **2006**, *45*, 1109-1112.
471. R. D. Adams, B. Captain and L. Zhu, The Importance of Cluster Fragmentation in the Catalytic Hydrogenation of Phenylacetylene by PtRu₅ Carbonyl Cluster Complexes, *J. Organomet. Chem.*, **2006**, *691*, 3122-3128.
472. Siani, B. Captain, O. S. Alexeev, E. Stafyla, A. B. Hungria, P. A. Midgley, J. M. Thomas, R. D. Adams, M. D. Amiridis, Improved CO Oxidation Activity in the Presence and Absence of Hydrogen over Cluster derived PtFe/SiO₂ Catalysts, *Langmuir*, **2006**, *22*, 5160-5167.

473. R. D. Adams, B. Captain and L. Zhu, A New Tris-(diphenylstannylene)triosmium Carbonyl Cluster Complex and its Reactions with $\text{Pt}(\text{PBU}^t_3)_2$ and $\text{Pt}(\text{PPh}_3)_4$, *Organometallics*, **2006**, *25*, 2049-2054.
474. A. B. Hungria, R. Raja, R. D. Adams, B. Captain, J. M. Thomas, P. A. Midgley, V. Golvenko and B. F. G. Johnson, Single-Step Conversion of Dimethyl Terephthalate to Cyclohexanedimethanol with A Trimetallic Nanoparticle Catalyst: Ru_5PtSn , *Angew. Chem. int. Ed.*, **2006**, *45*, 4782-4785.
475. R. D. Adams, C. B. Hollandsworth and J. L. Smith, Jr., Unsaturated Cyclopentadienyl-Molybdenum and Tungsten Carbonyl Cluster Complexes Containing Pd- and $\text{Pt}(\text{PBU}^t_3)$ Groups, *Organometallics*, **2006**, *25*, 2673-2682.
476. Q.-F. Zhang, Yu-Jie Liu, R. D. Adams, A. Rothenberger, D. Fenske, and W.-H. Leung, Reaction of Tetracopper(I) Phosphonitocavitand with PhSeSiMe_3 : Synthesis and Structure of a Polyanionic Cluster $[\text{pyH}]_6[(\text{CuCl})_9(\mu_3\text{-SePh})_5(\mu_4\text{-SePh})]$, *J. Cluster Sci.*, **2006**, *17*, 445-455.
477. R. D. Adams, B. Captain, C. B. Hollandsworth, M. Johansson, J. L. Smith, Jr., Synthesis and Structures of Oxo-Bridged Distannyl- and Digermyldirhenium Complexes, *Organometallics*, **2006**, *25*, 3848-3855.
478. R. D. Adams, B. Captain and L. Zhu, Cluster Fragmentation and Facile Cleavage of Phenyl groups from the SnPh_3 Ligand in Reactions of $\text{Os}_3(\text{CO})_{11}(\text{SnPh}_3)(\mu\text{-H})$ with CO and HSnPh_3 , *Organometallics*, **2006**, *25*, 4183-4187.
479. R. D. Adams, B. Captain, W. C. Pearl, Jr., Bimetallic Clusters of Iron with Palladium and Platinum. Synthesis and Structures of $\text{Fe}_2(\text{CO})_9[\text{M}(\text{PBU}^t_3)]_2$ (M = Pd or Pt) and $\text{Fe}_2(\text{CO})_8[\text{Pt}(\text{PBU}^t_3)]_2(\mu\text{-H})_2$, *Inorg. Chem.*, **2006**, *45*, 8283-8287.
480. R. D. Adams, B. Captain and L. Zhu, Platinum Promoted Insertion of an Alkyne into a Metal-Hydrogen Bond, *J. Am. Chem. Soc.* **2006**, *128*, 13672-13673.
481. B. L. García, B. Captain, R. D. Adams, A. B. Hungria, P. A. Midgley, J. M. Thomas and J. W. Weidner, Bimetallic Cluster Provides a High Activity Electrocatalyst for Methanol Oxidation, *J. Cluster Sci.*, **2007**, *18*, 121-130.
482. R. D. Adams, B. Captain, C. Beddie and M. B. Hall, Photo-reversible Multiple Additions of Hydrogen to a Highly Unsaturated Platinum-Rhenium Cluster Complex, *J. Am. Chem. Soc.*, **2007**, *129*, 986-1000.
483. R. D. Adams, E. M. Boswell, B. Captain, and M. A. Patel, Multiple Additions of Phenylgermanium Ligands to Tetra ruthenium and Tetraosmium Carbonyl Cluster Complexes, *Inorg. Chem.* **2007**, *46*, 533-540.

484. R. D. Adams, B. Captain and L. Zhu, Facile Activation of Hydrogen by an Unsaturated Platinum-Osmium Cluster Complex, *J. Am. Chem. Soc.* **2007**, *129*, 2454-2455.
485. R. D. Adams, B. Captain, Mark D. Smith, C. Beddie and M. B. Hall, Unsaturated Platinum-Rhenium Cluster Complexes. Synthesis, Structures and Reactivity, *J. Am. Chem. Soc.* **2007**, *129*, 5981-5991.
486. R. D. Adams, B. Captain, E. Trufan and L. Zhu, The Activation of Metal Hydride Complexes by Tri-*t*-butylphosphine-Platinum and -Palladium Groups, *J. Am. Chem. Soc.* **2007**, *129*, 7545-7556.
487. R. D. Adams, B. Captain and L. Zhu, The Addition of Pt(PBu^t)₃ to Osmium-Tin Cluster Complexes, *Inorg. Chem.* **2007**, *46*, 4605-4611.
488. R. D. Adams and B. Captain, Saturated vs. Unsaturated: Ligand Addition to the Saturated Metal Site of an Unsaturated Binuclear Metal Complex, *Angew. Chem. int. Ed.* **2007**, *46*, 5714-5716.
489. R. D. Adams, B. Captain, and E. Trufan, Ruthenium carbonyl cluster complexes with phenylgermyl ligands from the reactions of Ph₃GeH with Ru(CO)₅ and Ru₃(CO)₁₂, *J. Cluster Sci.* **2007**, *18*, 642-659.
490. R. D. Adams, B. Captain and Q.-F. Zhang, Synthesis and Structures of New Copper-Indium Thiolate Cluster Complexes, *Zeitschrift fur Anorg. Allg. Chem.*, **2007**, *633*, 2187-2190.
491. R. D. Adams, E. M. Boswell, B. Captain, A. B. Hungria, P. A. Midgley, R. Raja, J. M. Thomas, Bimetallic Ru-Sn Nanoparticle Catalysts for the Solvent-free, Selective Hydrogenation of 1,5,9-Cyclododecatriene to Cyclododecene, *Angew. Chem. int. Ed.*, **2007**, *46*, 8182-8185.
492. R. D. Adams, B. Captain, M. B. Hall, E. Trufan, and X. Yang, The Synthesis, Characterization and Electronic Structures of a Novel Series of 2-Dimensional Trimetallic Cluster Complexes, Ru₃(CO)₉(μ-SnPh₂)₃[Pt(PBu^t)₃]_x, x = 0 – 3, *J. Am. Chem. Soc.*, **2007**, *129*, 12328-12340.
493. R. D. Adams and B. Captain, Polynuclear Transition Metal Cluster Complexes Containing Tin Ligands. Precursors to New Heterogeneous Catalysts, in "Turning points in solid-state, materials and surface chemistry", K. Harris and P. Edwards, Eds., Royal Society of Chemistry, London, 2007, Ch. 31, 534-549.
494. R. D. Adams, B. Captain and P. J. Pellechia, Studies of Ligand Additions to Coordinatively Unsaturated Dirhenium Complexes Containing the bulky PBu^t₃ Ligand, *Organometallics*, **2007**, *26*, 6564-6575.

495. R. D. Adams, B. Captain, Hydrogen Activation by Unsaturated Mixed Metal Cluster Complexes: New Directions, *Angew. Chem. int. Ed.*, **2008**, *47*, 252-257.
496. R. D. Adams, B. Captain and L. Zhu, Facile Activation of Hydrogen by Unsaturated Platinum-Osmium Carbonyl Cluster Complexes, *J. Organomet. Chem.*, **2008**, *693*, 819-833.
497. J. M. Thomas, R. D. Adams, E. M. Boswell, B. Captain, H. Grönbeck and R. Raja, Synthesis, Characterization, Electronic Structure and Catalytic Performance of Bimetallic and Trimetallic Nanoparticles Containing Tin, *Faraday Disc.* **2008**, *138*, 301-315.
498. A. Siani, O. S. Alexeev, B. Captain, G. Lafaye, P. Marécot, R. D. Adams, and M. D. Amiridis, Synthesis of Cluster-Derived PtFe/SiO₂ Catalysts for the Oxidation of CO, *J. Catal.*, **2008**, *255*, 162-179.
499. R. D. Adams, E. M. Boswell, B. Captain, and L. Zhu, Platinum-Ruthenium Cluster Complexes from the Reaction of Ru₃(CO)₁₂ with Pt(PBu^t)₂, *J. Cluster Sci.*, **2008**, *19*, 121-132.
500. R. D. Adams, E. Boswell, and B. Captain, Synthesis and Properties of an Unusual New High Symmetry Osmium-Palladium Carbonyl Cluster Complex, *Organometallics*, **2008**, *27*, 1169-1173.
501. R. D. Adams, B. Captain, W. C. Pearl, Jr., Facile Cleavage of a Phenyl Group from SbPh₃ by Dirhenium Carbonyl Complexes, *J. Organomet. Chem.* **2008**, *693*, 1636-1644.
502. R. D. Adams, L. Zhu, The Molecular and Solid State Structure of Lead Thiobenzoate Pb[SC(O)Ph]₂, *J. Molecular Struct.* **2008**, *890*, 130-132.
503. R. D. Adams, E. Boswell, Cleavage of t-butyl Groups from the Tri-t-butylphosphine Ligand in Osmium-Platinum Carbonyl Cluster Complexes, *Organometallics*, **2008**, *27*, 2021-2029.
504. R. D. Adams, E. M. Boswell, B. Captain, S. Miao, C. Beddie, C. E. Webster, M. B. Hall, N. Dalal, N. Kaur and D. Zipse, Disulfido Iron-Manganese Carbonyl Cluster Complexes. Synthesis, Structure, Bonding and Properties of the Radical CpFeMn₂(CO)₇(μ₃-S₂)₂, *J. Organomet. Chem.*, **2008**, *693*, 2732-2738.
505. R. D. Adams, E. Trufan, Diruthenium-tin Complexes from the Reaction of Ph₂SnH₂ with Ru(CO)₅ and their Reactions with Bis(tri-t-butylphosphine)platinum, *Organometallics*, **2008**, *27*, 4108-4115.
506. R. D. Adams, E. M. Boswell, M. B. Hall and X. Yang, The Activation of Hydrogen and Related Small Molecules by the Unsaturated Cluster Complex PtOs₃(CO)₇(PBu^t)₃(μ₃-PBu^t)₂(μ₄-CHCMeCH), *Organometallics*, **2008**, *27*, 4938-4947.

507. R. D. Adams, D. A. Blom, B. Captain, R. Raja, J. M. Thomas, and E. Trufan, Toward Less Dependence on Platinum Group Metal Catalysts: The Merits of Utilizing Tin, *Langmuir*, **2008**, *24*, 9223-9226.
508. F. Yang, E. Trufan, R. D. Adams, and D. W. Goodman, The Structure of Molecular-Sized Ru₃Sn₃ clusters on a SiO₂ Film on Mo(112), *J. Phys. Chem. C.*, **2008**, *112*, 14233-14235.
509. R. D. Adams, B. Captain and E. Trufan, Ruthenium-Tin Complexes from the Reaction of HSnPh₃ with Ru₃(CO)₁₀(NCMe)₂ and their Reactions with Bis(tri-*t*-butylphosphine)platinum, *J. Organometal. Chem.* **2008**, *693*, 3593-3602.
510. R. D. Adams, B. Captain, Unusual Structures and Reactivity of Mixed Metal Cluster Complexes Containing the Palladium/Platinum Tri-*t*-butylphosphine Grouping, *Acc. Chem. Res.* **2009**, *42*, 409-418.
511. V. D. Reddy, D. Dayal, S. C. Cosenza, M. V. Ramana Reddy, W. C. Pearl, Jr., R. D. Adams, Glycal-Ruthenium Carbonyl Clusters: Syntheses, Characterization, and Anticancer Activity, *J. Organomet. Chem.*, **2009**, *694*, 959-967.
512. R. D. Adams, M. B. Hall, W. C. Pearl, Jr., and X. Yang, Transformations and Reactions of Re₂(CO)₈(μ-SbPh₂)(μ-H) induced by the addition of a Platinum(tri-*t*-butylphosphine) Group, *Inorg. Chem.*, **2009**, *48*, 652-662.
513. R. Raja, R. D. Adams, D. A. Blom, W. C. Pearl Jr., E. Gianotti, J. M. Thomas, A New Catalytic Liquid-Phase Ammoxidation Approach towards the Preparation of Niacin (Vitamin B₃), *Langmuir*, **2009**, *25*, 7200-7204, <http://pubs.acs.org/doi/abs/10.1021/la900803a>.
514. R. D. Adams and E. Trufan, Platinum-Germanium Compounds from the Reactions of (COD)PtMe₂ (COD = 1,5-cyclooctadiene) with HGePh₃, *Inorg. Chem.* **2009**, *48*, 6124-6129.
515. R. D. Adams, W. C. Pearl, Jr., Rhenium-bismuth carbonyl cluster compounds, *Inorg. Chem.*, **2009**, *48*, 9519-9525, <http://pubs.acs.org/doi/abs/10.1021/ic901176x>
516. E. D. Peterson, M. Fu, K. B. Ucer, R. D. Adams, D. L. Carroll, Ultrafast Charge Transfer From CdSe Nanoparticles to Methylviologen and Single-Walled Carbon Nanotubes and its Effect on Hybrid Bulk Heterojunction Photovoltaic Devices. *Proceedings of the IEEE Photovoltaics Specialists Conference* **2009**, *34*, 002430-002434.
517. B. McQuirt, J. Kielbasa, J.-H. Park, P. Sisco, J. Zhang, E. D. Peterson, C. Murphy, R. D. Adams, R. Williams, D. L. Carroll, Light scattering of interacting gold nanorods *Phys. Status Solidi B* **2009**, *246*, 2771-2773.
518. R. D. Adams, W. C. Pearl, Jr., Synthesis of Anionic Rhenium Carbonyl Hydrides by the Ring Opening of Rhenium Carbonyl Heterocycles, *J. Organometal. Chem.* **2010**, *695*, 937-940.

519. R. D. Adams and E. Trufan, Ruthenium-Tin Cluster Complexes and their Applications as Bimetallic Nanoscale Heterogeneous Hydrogenation Catalysts, *Phil. Trans Royal. Soc.* **2010**, 368, 1473-1493, <http://rsta.royalsocietypublishing.org/content/368/1915/1473.short>.
520. R. D. Adams and E. Trufan, Rhodium-Germanium Carbonyl Complexes, *Inorg. Chem.* **2010**, 49, 3029-3034.
521. R. D. Adams, Y. Kan, E. Trufan and Q. Zhang, Iridium-Ruthenium Cluster Complexes with SnPh₃ Ligands from the Reaction of IrRu₃(CO)₁₃(μ-H) with HSnPh₃, *J. Cluster Sci.*, **2010**, 21, 371-378.
522. E. Gianotti, V. N. Shetti, M. Manzoli, J. A. L. Blaine, W. C. Pearl, Jr., R. D. Adams, S. Coluccia, and R. Raja, Synergistic Behavior of Bimetallic Rhenium Cluster Catalysts: Spectroscopic Investigation into the Nature of the Active Site, *Chem Eur. J.* **2010**, 16, 8202-8209.
523. R. D. Adams, W. C. Pearl, Jr., Reactions of the Platinum(tri-*t*-butylphosphine) Group with Bridging SbPh₂ Ligands in Rhenium-Antimony Carbonyl Complexes, *Inorg. Chem.*, **2010**, 49, 6188-6195.
524. R. D. Adams and W. C. Pearl, Jr., Osmium-Bismuth Complexes from the Reaction of Os₃(CO)₁₁(NCMe) with BiPh₃, *Inorg. Chem.*, **2010**, 49, 7170-7175.
525. A. Uhl, Y. Lei, H. Khosravian, C. Becker, K. Wandelt, R. D. Adams, M. Trenary, and R. J. Meyer, Formation of Ruthenium-Tin Nanoparticles on Al₂O₃/Ni₃Al(111) from an Organometallic Precursor, *J. Phys. Chem. C*, **2010**, 40, 17062-17068.
526. R. D. Adams, W. C. Pearl, Jr., Reactions of Bis(tri-*t*-butylphosphine)Platinum with Metal-Hydride Complexes. The Reactions of Pt(P-*t*-Bu₃)₂ with HRe(CO)₄SbPh₃, *Organometallics*, **2010**, 29, 3887-3895.
527. R. D. Adams and E. Trufan, Iridium-germanium and -tin Carbonyl Complexes, *Organometallics*, **2010**, 29, 4346-4353.
528. M.-L. Fu and N. Rangel, R. D. Adams and J. Seminario, Synthesis, Crystal Structure, Photophysical Properties, and DFT Calculations of a Bis(tetrathia-calix[4]arene) tetracadmium Complex, *J. Cluster Sci.*, **2010**, 21, 867-878.
529. E. D. Peterson, G. M. Smith, M. Fu, Minglai, R. C. Coffin, R. D. Adams, D. L. Carroll, Increased Photon Absorption and Conversion In Ternary Bulk Heterojunction Systems of CdSe/CdS Core-Shell Nanoparticles/Methyl Viologen Composites, Conjugated Polymers, and Fullerenes, *Proceedings of the IEEE Photovoltaics Specialists Conference* **2010**, 001643-001647.

530. R. D. Adams, W. C. Pearl, Jr., Trimetallic ReBiPt complexes containing spiro-bismuth ligands from the reaction of the bis(tri-*t*-butylphosphine)platinum with $\text{Re}_3(\text{CO})_{12}(\mu\text{-BiPh}_2)(\mu\text{-H})_2$, *J. Organomet. Chem.*, **2011**, 696, 1198-1210.
531. E. Peterson, P. N. Sisco, C. J. Murphy, R. D. Adams, and D. Carroll, Metallic Nanoantennae and their Use in Organic-Polymer Photovoltaics, *J. Cluster Sci.*, **2011**, 22, 59-64.
532. M.-L. Fu, R. D. Adams, D. Cristancho, P. Leon, and J. M. Seminario, Spectroscopic and Photophysical Studies of Charge-transfer in a Cd_8 thiolate cluster containing a coordinated N-Methyl-4,4'-bipyridinium ligand, *Eur. J. Inorg. Chem.*, **2011**, 660-665.
533. R. D. Adams, Y. Kan, Q. Zhang, Transformations of Triphenylgermyl ligands in Iridium-Ruthenium Carbonyl Cluster Complexes, *Organometallics*, **2011**, 30, 328-333.
534. R. D. Adams, M. Chen, E. Trufan and Q. Zhang, A New Method for Introducing Tin ligands into Tetrairidium Dodecacarbonyl, *Organometallics*, **2011**, 30, 661-664, <http://pubs.acs.org/doi/abs/10.1021/om1012083>.
535. R. D. Adams, M. Chen and E. Trufan, Complexes Containing Bridging Tin- and Germanium-substituted Metalloxy-carboxylate Ligands from the Reactions of Ph_3SnOH and Ph_3GeOH with $\text{Os}_3(\text{CO})_{12}$ in the Presence of Base, *J. Organomet. Chem.*, **2011**, 696, 2894-2898.
536. A. Siani, B. Captain, R. D. Adams, O. S. Alexeev, and M. D. Amiridis, Synthesis and Structural Characterization of Cluster-Derived $\text{PtFe}_2/\text{SiO}_2$ Catalysts, *Top. in Catal.* **2011**, 54, 318-333.
537. R. D. Adams, F. Fang, M. D. Smith and Q. Zhang. The Reactions of $\text{Ir}(\text{CO})\text{Cl}(\text{PPh}_3)_2$ with HSnPh_3 , *J. Organomet. Chem.*, **2011**, 696, 2904-2909.
538. E. D. Peterson, G. M. Smith, M. Fu, R. D. Adams, D. L. Carroll, Charge Balance and Photon Collection in Polymer Based Ternary Bulk Heterojunction Photovoltaic Devices Containing Cadmium Selenide Nanoparticles, *Appl. Phys. Lett.* **2011**, 99, 073304(1)-073304(3).
539. R. D. Adams, W. C. Pearl, Jr., Y. Wong, Q. Zhang, M. B. Hall and J. R. Walensky, A Tetrahena-heterocycle from the Palladium-Catalyzed Dimerization of $\text{Re}_2(\text{CO})_8(\mu\text{-SbPh}_2)(\mu\text{-H})$ exhibits an Unusual Host-Guest Behavior, *J. Am. Chem. Soc.*, **2011**, 133, 12994-12997, <http://pubs.acs.org/doi/abs/10.1021/ja205515u>.
540. R. D. Adams, Q. Zhang, X. Yang, Two Dimensional Bimetallic Carbonyl Cluster Complexes with New Properties and Reactivities, *J. Am. Chem. Soc.*, **2011**, 133, 15950 – 15953, <http://pubs.acs.org/doi/abs/10.1021/ja207840w>.
541. R. D. Adams and M. Chen, Transmetalation Reactions yield new Tetra- and Penta-iridium Carbonyl Complexes Containing σ -Bonded Phenyl Rings, *Organometallics*, **2011**, 30, 5867 - 5872.

542. K. J. Uffalussy, B. K. Captain, R. D. Adams, A. B. Hungria, J. R. Monnier, M. D. Amiridis, Synthesis and Characterization of Cluster-Derived PtRu₅Sn Catalysts, *ACS Catalysis*, **2011**, *1*, 1710 – 1718, <http://pubs.acs.org/doi/abs/10.1021/cs2003559>.
543. R. D. Adams, Y. Kan, Q. Zhang, M. B. Hall, E. Trufan, Bonding and Reactivity in the Electronically Unsaturated Hydrogen-Bridged Dimer [Ru₃(CO)₈(μ₃-CMe)(μ-H)₂(μ₃-H)]₂, *Organometallics*, **2012**, *31*, 50 - 53.
544. R. D. Adams and M. Chen, Synthesis of Higher Nuclearity Iridium Clusters: Reaction of [Ir₄(CO)₁₁Ph]⁻ with [Ir(COD)Cl]₂, *Organometallics*, **2012**, *31*, 445 – 450, dx.doi.org/10.1021/om201084h.
545. R. D. Adams, P. J. Pellechia, M. D. Smith and Q. Zhang, Iridium-Ruthenium-Gold Cluster Complexes: Structures and Skeletal Rearrangements, *J. Organomet. Chem.*, **2012**, 706-707, 20 – 25, doi:10.1016/j.jorganchem.2012.01.012.
546. R. D. Adams, F. Fang, Q. Zhang, M. B. Hall, E. Trufan, α-Cleavage of Phenyl Groups from GePh₃ Ligands in Iridium Carbonyl Cluster Complexes. A Mechanism and its Role in the Synthesis of Bridging Germylene Ligands, *Organometallics*, **2012**, *31*, 2621 – 2630, dx.doi.org/10.1021/om2007002.
547. R. D. Adams, M. Chen and Xinzheng Yang, Iridium-Gold Cluster Compounds. Syntheses, Structures and an Unusual Ligand-Induced Skeletal Rearrangement, *Organometallics*, **2012**, *31*, 3588–3598, dx.doi.org/10.1021/om3001026.
548. R. D. Adams, V. Rassolov and Q. Zhang, Synthesis and Transformations of Triosmium Carbonyl Cluster Complexes Containing Bridging Aryl Ligands, *Organometallics*, **2012**, *31*, 2961–2964, dx.doi.org/10.1021/om300235n.
549. R. D. Adams and M. Chen, Synthesis and Structures of Iridium-Gold Carbonyl Cluster Compounds Containing Methyl and σ-Aryl Ligands, *Organometallics*, **2012**, *31*, 6457 – 6465, dx.doi.org/10.1021/om300678c.
550. R. D. Adams, M. Chen, G. Elpitiya and Q. Zhang, Synthesis and Characterizations of Bismuth-bridged Triiridium carbonyl complexes containing germyl/germylene and stannyl/stannylene ligands, *Organometallics*, **2012**, *31*, 7264 – 7271, dx.doi.org/10.1021/om300813t.
551. R. D. Adams, Y. Kan, and Q. Zhang, Osmium-Germanium and Osmium-Germanium-Gold carbonyl cluster complexes: Syntheses, Structures, Bonding and Reactivity, *Organometallics*, **2012**, *31*, 8639 – 8646, <http://dx.doi.org/10.1016/j.jorganchem.2012.08.021>.

552. R. D. Adams, Y. Kan, V. Rassolov and Q. Zhang, Tetra ruthenium carbonyl complexes containing germyl and stannyl ligands from the reactions of $\text{Ru}_4(\text{CO})_{13}(\mu\text{-H})_2$ with HGePh_3 and HSnPh_3 *J. Organomet. Chem.*, **2013**, 730, 20 – 31, <http://dx.doi.org/10.1016/j.jorganchem.2012.08.021>.
553. R. D. Adams and M. Chen, Synthesis and Structures of New Tetrairidium Carbonyl Clusters Containing Phenylgermanium Ligands, *J. Organomet. Chem.*, **2013**, 733, 21 – 27, <http://dx.doi.org/10.1016/j.jorganchem.2013.02.035>.
554. R. D. Adams, V. Rassolov and Q. Zhang, Dynamical Rotation of Bridging Aryl Ligands in Unsaturated Metal Carbonyl Cluster Complexes, *Organometallics*, **2013**, 32, 1587 – 1590, dx.doi.org/10.1021/om400059c.
555. R. D. Adams, M. Chen, G. Elpitiya, X. Yang and Q. Zhang, Semibridging Phenyl Ligands in Iridium-copper and -silver Cluster Compounds: Synthesis, Structures and Bonding, *Organometallics*, **2013**, 32, 2416 – 2426, dx.doi.org/10.1021/om400133w.
556. R. D. Adams, Q. Zhang, Structures and Bonding of η^2 -bridging CO Ligands and their Influence on the Structures and Rearrangements of Higher Nuclearity Metal Carbonyl Cluster Complexes, *Organometallics*, **2013**, 32, 5171 – 5179, dx.doi.org/10.1021/om400722z.
557. R. D. Adams, M. Chen, G. Elpitiya, M. E. Potter, R. Raja, Iridium-Bismuth Cluster Complexes yield Bimetallic Nano-Catalysts for the Direct Oxidation of 3-Picoline to Niacin, *ACS Catal.*, **2013**, 3, 3106–3110, <http://pubs.acs.org/doi/abs/10.1021/cs400880k>.
558. R. D. Adams, V. Rassolov and Q. Zhang, Unsaturated Triosmium Carbonyl Cluster Complexes with Bridging Aryl Ligands: Structures, Bonding and Transformations, *Organometallics*, **2013**, 32, 6368 – 6378, dx.doi.org/10.1021/om4007399.
559. R. D. Adams, Y. Wong and Q. Zhang, Studies of the Structures and Bonding of Gold-Bridged Dirhenium Carbonyl Cluster Complexes, *Organometallics*, **2013**, 32, 7540 – 7546, <http://dx.doi.org/10.1021/om4010127>.
560. R. D. Adams, Y. Kan and Q. Zhang, Facile Cleavage of Phenyl Groups from BiPh_3 in its Reactions with $\text{Os}_3(\text{CO})_{10}(\text{NCMe})_2$ and Evidence for Localization of π -bonding in a Bridging Benzyne Ligand, *J. Organomet. Chem.*, **2014**, 751, 475 – 481, <http://dx.doi.org/10.1016/j.jorganchem.2013.07.027>.
561. R. D. Adams, O-S. Kwon and S. Miao, Heptacarbonyldisulfidodimanganese $\text{Mn}_2(\text{CO})_7(\mu\text{-S}_2)$, *Inorg. Synth.* **2014**, 36, 123 – 125.
562. R. D. Adams, V. Rassolov and Y. O. Wong, Facile C-H Bond Formation by Reductive-Elimination at a Dinuclear Metal Site, *Angew. Chem. int. Ed.* **2014**, 53, 11006 – 11009, DOI: [10.1002/anie.201406219](http://dx.doi.org/10.1002/anie.201406219).

563. R. D. Adams, Z. Luo and Y. O. Wong, Bridging Phenyl Ligands. Unsaturated Mercury-Triosmium Carbonyl Cluster Complexes Containing Bridging Phenyl Ligands, *J. Organomet. Chem.*, **2015**, 784, 46 – 51, <http://dx.doi.org/10.1016/j.jorganchem.2014.08.009>
564. R. D. Adams and Y. O. Wong, New Rhenium Carbonyl Cluster Complexes Containing Bridging Hydrocarbyl and Bridging Mercury Groups, *J. Organomet. Chem.*, **2015**, 784, 109 – 113; <http://dx.doi.org/10.1016/j.jorganchem.2015.01.008>
565. R. D. Adams, Y. O. Wong, and Q. Zhang, Synthesis, Structure and Bonding of a Digold Complex with Bridging Triphenylstannyl Ligands, *J. Organomet. Chem.*, **2015**, 795, 40 - 44; <http://dx.doi.org/10.1016/j.jorganchem.2015.01.021>.
566. R. D. Adams, W. C. Pearl, Jr., Y. O. Wong, M. B. Hall, and J. R. Walensky, Host-Guest Behavior of a Heavy Atom Heterocycle $\text{Re}_4(\text{CO})_{16}(\mu\text{-SbPh}_2)_2(\mu\text{-H})_2$ obtained from a Palladium-Assisted Ring Opening Dimerization of $\text{Re}_2(\text{CO})_8(\mu\text{-SbPh}_2)(\mu\text{-H})$, *Inorg. Chem.* **2015**, 54, 3536 – 3544, DOI:10.1021/acs.inorgchem.5b00080.
567. R. D. Adams, J. Tedder, and Y. O. Wong, Phenyl - Gold Complexes of Ru_6 and Ru_5 Carbonyl Clusters, *J. Organomet. Chem.*, **2015**, 795, 2 - 10; <http://dx.doi.org/10.1016/j.jorganchem.2015.03.024>
568. R. D. Adams, G. Elpitiya, K. Khivantsev, O. S. Alexeev and M. D. Amiridis, Ammoxidation of Propane to Acrylonitrile over Silica-Supported Fe-Bi Nanocatalysts, *Applied Catalysis A Gen.* **2015**, 501, 10-16. <http://dx.doi.org/10.1016/j.apcata.2015.04.025>.
569. R. D. Adams, Z. Luo, M. Chen and V. Rassolov, Multicenter Transformations of the Methyl Ligand in $\text{CH}_3\text{Os}_3\text{Au}$ Carbonyl Cluster Complexes: Synthesis, Characterization and DFT Analyses, *J. Organomet. Chem.* **2015**, ASAP; <http://dx.doi.org/10.1016/j.jorganchem.2015.07.041>
570. R. D. Adams, Z. Luo, High Nuclearity Clusters Containing Methyl Groups. Synthesis and Structures of Pentaosmium-Gold Carbonyl Cluster Compounds *J. Organomet. Chem.* **2015**, ASAP, <http://dx.doi.org/10.1016/j.jorganchem.2015.07.022>.
571. R. D. Adams and G. Elpitiya, The Addition of Gold and Tin to Bismuth-Triiridium Carbonyl Complexes, R. D. Adams and G. Elpitiya, The Addition of Gold and Tin to Bismuth-Triiridium Carbonyl Complexes, *Inorg. Chem.* **2015**, 54, 8042 - 8048; <http://pubs.acs.org/doi/full/10.1021/acs.inorgchem.5b01261>.
572. R. D. Adams and G. Elpitiya, Iridium-Bismuth Carbonyl Cluster Complexes, *J. Organomet. Chem.* **2015**, ASAP, <http://dx.doi.org/10.1016/j.jorganchem.2015.08.001>.

573. R. D. Adams and G. Elpitiya, Synthesis and Characterization of an Iridium-Bismuth Metallaheterocycle, *Polyhedron* **2016**, *103*, 131 - 134, <http://dx.doi.org/10.1016/j.poly.2015.08.044>
574. R. D. Adams, V. Rassolov and Y. O. Wong, Binuclear Aromatic C-H Bond Activation at a Dirhenium Site, *Angew. Chem. int. Ed.* **2016**, *55*, 1324 - 1327, <http://dx.doi.org/10.1002/anie.201508540>.
575. R. D. Adams, J. Kiprotich, D. V. Peryshkov and Y. O. Wong, Cage Opening of a Carborane Ligand by Metal Cluster Complexes, *Chem. Eur. J.* **2016**, <http://dx.doi.org/10.1002/chem.201601075>.