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CALIFORNIA UNIV LOS ANGELES DEPT OF CHEMISTRY
SYNTHETIC STUDIES WITH METALLOCARBORANES. (U)
APR 75 M F HAWTHORNE

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⑥ SYNTHETIC STUDIES WITH METALLOCARBORANES.

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⑨ FINAL TECHNICAL REPORT, 15 Dec 74-14 Dec 74

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Principal Investigator: M. F. Hawthorne

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During the contract period major advances along several related lines of research were made.

The polyhedral expansion reaction of carboranes was extended to 8, 9, 10 and 11 vertex species yielding the respective 9, 10, 11 and 12 vertex metallocarboranes of both cobalt and iron.¹ This reaction was also useful in producing bimetallic metallocarboranes.² Bimetallic and trimetallic metallocarboranes were also produced in the expansion of monometalloboranes.^{3,4,5,6}

The reaction of nucleophiles with metallocarboranes produced high yields of novel Lewis base adducts of nido metallocarboranes.⁷ Thermal reactions of metallocarboranes, including migration of cobalt and carbon atoms^{8,9} and thermal metal transfer reactions^{10,11} were thoroughly explored and general rules governing these reactions were proposed.⁸ In addition, electron counting rules for metallocarboranes were proposed,¹² defining electronic considerations for stable closo and nido species.

X-ray diffraction studies of several important metallocarboranes were performed confirming proposed structures for these species.^{13,14,15}

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