

AD-A151 009 MIXED VALENCE MATERIALS(U) VERMONT UNIV BURLINGTON DEPT 1/1
OF CHEMISTRY W E GEIGER 1985 N00014-82-K-0289

UNCLASSIFIED

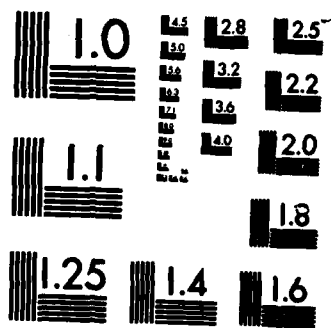
F/G 7/2

NL

END

FILMED

DTIC



MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER Final Report	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER 2
4. TITLE (and Subtitle) Mixed Valence Materials		5. TYPE OF REPORT & PERIOD COVERED Final
		6. PERFORMING ORG. REPORT NUMBER
AUTHOR(s) William E. Geiger, Jr.		8. CONTRACT OR GRANT NUMBER(s) N00014-82-K-0289
PERFORMING ORGANIZATION NAME AND ADDRESS The University of Vermont Department of Chemistry Burlington, VT 05405		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS 6115311
CONTROLLING OFFICE NAME AND ADDRESS Office of Naval Research (Code 413) 800 N. Quincy Street Arlington, VA 22217-5000		12. REPORT DATE Undated
		13. NUMBER OF PAGES 3
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office) Same as Dlk #11		15. SECURITY CLASS. (of this report) Unclassified
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE --
16. DISTRIBUTION STATEMENT (of this Report) Unlimited		
This document has been approved for public release and sale; its distribution is unlimited.		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		
18. SUPPLEMENTARY NOTES Adeninium Bridged		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) Magnetism, Copper Complexes, Mixed Valence Materials. Fluoride, Fe2F5.2H2O		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) Spectroscopic and Magnetic Studies of a Mixed-Valence Iron Fluoride, Fe2F5.2H2O were carried out. The Structure of a Mixed-Valence Iron Fluoride FeF2H2O was determined. Magnetic Exchange in a Chloride- and Adeninium-Bridged Linear Trimer of Copper (II)-Octachlorobis-(adeninium) tricopper (II) Tetrahydrate was effected. Originator Supplied Keywords include,		

AD-A151 009

DTC FILE COPY

DTIC
ELECTE
MAR 8 1985
S
A
D

DD FORM 1473

1 JAN 73

EDITION OF 1 NOV 65 IS OBSOLETE

S N 0102-LF-014-6601

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

78

The University of Vermont

DEPARTMENT OF CHEMISTRY
COOK PHYSICAL SCIENCE BUILDING
BURLINGTON, VERMONT 05405
(802) 656-2594



~~February~~ 4, 1985

~~FEB~~ 8 1985

Dr. Ken Wynne
Chemistry Division Code 413
Research Programs
Office of Naval Research
800 North Quincy Street
Arlington, VA 22217

Dear Ken:

I understand from talking with Chris Allen that your office would like to obtain some information about Contract N00014-82-K-0289, for which the late David B. Brown was principal investigator. I have looked through Dave's files and to the best of my information and recollection, tried to pull together on the enclosed sheets the requested information on personnel and publications. If there are any further questions, please give me a call.

Sincerely,

Bill

William E. Geiger Jr.
Professor of Chemistry

WEG/jms

cc: Mike Kelly
Steve Stoddard

Accession For	
NTIS GRA&I	☒
DTIC TAB	☐
Unannounced	☐
Justification	
By	
Distribution/	
Availability Codes	
Dist	Spec
A-1	



An Equal Opportunity/Affirmative Action Employer

A) Personnel

- 1) Graduate students receiving Ph.D. who were supported by ONR

Dr. Erick Walton (1979)
Dr. Chester T. Dziobkowski (1979)
Dr. Barry Cushman (1979)

- 2) Postdoctoral associates supported by ONR

Dr. David Anderson
Dr. Zbigniew Peplinski
Dr. Fritz Wenk
Dr. James Wroblewski

B) Publications

"Spectroscopic and Magnetic Studies of a Mixed-Valence Iron Fluoride, $\text{Fe}_2\text{F}_5 \cdot 7\text{H}_2\text{O}$," E.G. Walton, P.J. Corvan, D.B. Brown, and P. Day, Inorg. Chem. 15, 1737 (1976).

"Magnetic Exchange Interaction in the Chloro-Bridged Copper (II) Complex $\text{N,N,N}',\text{N}'$ -tetramethylethylenediammonium Hexachlorodocuprate (II)," D.B. Brown, J.W. Hall, M.R. Scott, and W.E. Hatfield, Inorg. Chem. 16, 1813 (1977).

"Standards for Magnetic Measurements. A Comparison and a Proposal for the Use of Tetramethylethylenediammonium Tetrachlorocuprate (II)," D.B. Brown, V.H. Crawford, J.W. Hall, and W.E. Hatfield, J. Phys. Chem. 81, 1303 (1977).

"Structure of a Mixed-Valence Iron Fluoride, $\text{Fe}_2\text{F}_5 \cdot 2\text{H}_2\text{O}$," W. Hall, S. Kim, J. Zubieta, E.G. Walton, and D.B. Brown, Inorg. Chem., 16, 1884 (1977).

"Magnetic Exchange in a Chloride- and Adeninium-Bridged Linear Trimer of Copper (II) - Octachlorobis - (adeninium) tricopper (II) Tetrahydrate," D.B. Brown, J.R. Wasson, J.W. Hall, and W.E. Hatfield, Inorg. Chem., 16, 2526 (1977).

"The Preparation and Magnetic and Structural Examination of Monomeric, Dimeric, and Polymeric Adenine Complexes of Copper (II)," D.B. Brown, J.W. Hall, H.M. Hells, E.G. Walton, D.J. Hodgson, and W.E. Hatfield, Inorg. Chem., 16, 2675, (1977).

"Mossbauer and Magnetic Studies of a Mixed-Valence Ferrimagnet, $\text{Fe}_2\text{F}_5 \cdot 2\text{H}_2\text{O}$," E.G. Walton, D.B. Brown, H. Wong, and W.M. Relf, Inorg. Chem., 16, 2425 (1977).

"Physical and Chemical Properties of Squarate Complexes. I. Spectral, Magnetic, and Thermal Behavior of Dimeric Iron (III) Squarate", J.T. Wroblewski, and D.B. Brown, Inorg. Chem., 17, 2959 (1978).

"Preparation, Magnetic Susceptibilities, and Mossbauer Spectra of Dimeric and Polymeric Iron Complexes with Dihydroxybenzoquinones," J.T. Wroblewski and D.B. Brown, *Inorg. Chem.*, 18, 498 (1979).

"Interaction of Hydrazine with Copper (II) Chloride in Acidic Solutions. Formation, Spectral and Magnetic Properties, and Structures of Copper (II), Copper (I), and Mixed-Valence Species," D.B. Brown, J.A. Donner, J.W. Hall, S.R. Wilson, R.B. Wilson, D.J. Hodgson, and W.E. Hatfield, *Inorg. Chem.* 18, 2635 (1979).

"Synthesis, Magnetic Susceptibility, and Spectroscopic Properties of Single- and Mixed-Valence Iron Oxalate, Squarate, and Dihydroxybenzoquinone Coordination Polymers," J.T. Wroblewski and D.B. Brown, *Inorg. Chem.* 18, 2738 (1979).

"Physical and Chemical Properties of Squarate Complexes. II. Mossbauer Spectroscopy and Magnetic Susceptibility Studies of Several Dimeric and Trimeric Iron (III) Complexes Containing the Squarate Dianion," J.T. Wroblewski and D.B. Brown, *Inorg. Chim. Acta* 35, 109 (1979).

"Thermal Reactions of the Mixed-Valence Iron Fluorides, $\text{Fe}_2\text{F}_5 \cdot n\text{H}_2\text{O}$," D.B. Brown, J.A. Dilts, and E.G. Walton, *J.C.S. Dalton Trans.*, 845 (1980).

"Solid State Structure and Electric Properties of a Mixed-Valence Two-Dimensional Metal, KCu_4S_3 ," D.B. Brown, J.A. Zubieta, P.A. Vella, J.T. Wroblewski, T. Watt, W.E. Hatfield, and P. Day, *Inorg. Chem.* 19, 1945 (1980).

"Synthetic Approaches to Mixed-Valence Chemistry," D.B. Brown and J.T. Wroblewski, in "Mixed-Valence Compounds," D.B. Brown, Ed. D. Reidel, Publishing Co. Dordrecht, 1980.

"Applications of the Mossbauer Effect to the Study of Mixed-Valence Compounds," D.B. Brown and J.T. Wroblewski, in "Mixed-Valence Compounds," D.B. Brown, ed., D. Reidel Publishing Co., Dordrecht, 1980.

"Mixed-Valence Compounds," D.B. Brown, ed., D. Reidel Publishing Co., Dordrecht, 1980.

"A Study of the Variable-Temperature Magnetic Susceptibility of Two Ti(III) Oxalate Complexes," J. T. Wroblewski and D. B. Brown, *Inorg. Chim. Acta*, 38, 227 (1980).

"A Method for Dispersing Compounds in Polystyrene Films for Spectroscopic Study", J. T. Wroblewski, C.T. Dziobkowski, and D. B. Brown, *J. Chem. Educ.* 56, 660 (1979).

"Synthesis and Properties of Several New Molecular Conductors," in "Molecular Metals," D. B. Brown and J. T. Wroblewski, W.E. Hatfield, ed., Plenum, New York (1979) p. 399.

"New Highly Conducting Coordination Compounds," in "Molecular Metals," D. B. Brown, K. Carneiro, P. Day, B. Hoffman, H. J. Keller, W. A. Little, A. E. Underhill, and J. M. Williams, W. E. Hatfield, ed., Plenum, New York (1979) p. 527.

"Magnetic Properties and Mössbauer Spectra of Several Iron(III)-Carboxylic Acid Complexes," C. T. Dziobkowski, J. T. Wroblewski, and D. B. Brown, Inorg. Chem. 20, 671 (1981).

"Magnetic and Spectroscopic Properties of $\text{Fe}^{\text{II}}\text{Fe}^{\text{III}}_2\text{O}(\text{CH}_3\text{CO}_2)_6\text{L}_3$, L = H_2O or $\text{C}_5\text{H}_5\text{N}$. Direct Observation of the Thermal Barrier to Electron Transfer in a Mixed-Valence Complex," C. T. Dziobkowski, J. T. Wroblewski, and D. B. Brown, Inorg. Chem. 20, 679 (1981).

"Reanalysis of the Thermal, Magnetic, and Spectra Properties of $\text{Cr}_3\text{O}(\text{CH}_3\text{COO})_6(\text{H}_2\text{O})_3\text{Cl}\cdot 6\text{H}_2\text{O}$ on the Basis of an Intercluster Spin-Exchange Model," J. T. Wroblewski, C. T. Dziobkowski, and D. B. Brown, Inorg. Chem. 20, 684 (1981).

"The Electrical Properties of $\text{Na}_2\text{Cu}_4\text{S}_6$, a Mixed-Valence One-Dimensional Metal," Z. Padlinski, D. B. Brown, T. Watt, W. E. Hatfield, and P. Day, Inorg. Chem., 21, 1752 (1982).

END

FILMED

4-85

DTIC