1. REPORT DATE (DD-MM-YYYY)  |  2. REPORT TYPE  
|  |  Technical Papers |

3. DATES COVERED (From - To)  |

4. TITLE AND SUBTITLE  

5. a. CONTRACT NUMBER  
5b. GRANT NUMBER  
5c. PROGRAM ELEMENT NUMBER  
5d. PROJECT NUMBER  
5e. TASK NUMBER  
5f. WORK UNIT NUMBER  

6. AUTHOR(S)  

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)  
Air Force Research Laboratory (AFMC)  
AFRL/PRS  
5 Pollux Drive  
Edwards AFB CA 93524-7048  

8. PERFORMING ORGANIZATION REPORT  

9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES)  
Air Force Research Laboratory (AFMC)  
AFRL/PRS  
5 Pollux Drive  
Edwards AFB CA 93524-7048  

10. SPONSOR/MONITOR'S ACRONYM(S)  

11. SPONSOR/MONITOR'S NUMBER(S)  

12. DISTRIBUTION / AVAILABILITY STATEMENT  
Approved for public release; distribution unlimited.  

13. SUPPLEMENTARY NOTES  

14. ABSTRACT  

15. SUBJECT TERMS  

16. SECURITY CLASSIFICATION OF:  
| a. REPORT  | b. ABSTRACT  | c. THIS PAGE |
| Unclassified  | Unclassified  | Unclassified |

17. LIMITATION OF ABSTRACT  
A  

18. NUMBER OF PAGES  

19a. NAME OF RESPONSIBLE PERSON  
Leilani Richardson  

19b. TELEPHONE NUMBER  
(661) 275-5015  
(include area code)  

Standard Form 298 (Rev. 8-98)  
Prescribed by ANSI Std. 239.16
MEMORANDUM FOR PR (Contractor/In-House Publication)

FROM: PROI (TI) (STINFO) 18 Apr 2000


16th International Symposium of Fluorine Chemistry
(Durham, UK, 23 Jul 00) (Submission Deadline: 18 Apr 2000) (Statement A)

1. This request has been reviewed by the Foreign Disclosure Office for: a.) appropriateness of distribution statement, b.) military/national critical technology, c.) export controls or distribution restrictions, d.) appropriateness for release to a foreign nation, and e.) technical sensitivity and/or economic sensitivity.
Comments:

________________________________________________________

________________________________________________________

________________________________________________________

Signature ________________________ Date ____________________

2. This request has been reviewed by the Public Affairs Office for: a.) appropriateness for public release and/or b.) possible higher headquarters review.
Comments:

________________________________________________________

________________________________________________________

________________________________________________________

Signature ________________________ Date ____________________

3. This request has been reviewed by the STINFO for: a.) changes if approved as amended, b.) appropriateness of distribution statement, c.) military/national critical technology, d.) economic sensitivity, e.) parallel review completed if required, and f.) format and completion of meeting clearance form if required
Comments:

________________________________________________________

________________________________________________________

________________________________________________________

Signature ________________________ Date ____________________

4. This request has been reviewed by PR for: a.) technical accuracy, b.) appropriateness for audience, c.) appropriateness of distribution statement, d.) technical sensitivity and economic sensitivity, e.) military/national critical technology, and f.) data rights and patentability
Comments:

________________________________________________________

________________________________________________________

________________________________________________________

Signature ________________________ Date ____________________

APPROVED/APPROVED AS AMENDED/DISAPPROVED

______________________________ Date ____________________
PHILIP A. KESSEL
Technical Advisor
Propulsion Science and Advanced Concepts Division
ON THE LEWIS ACIDITY OF LiF

V. Vij., J. A. Boatz, F. Tham, A. Vij and K. O. Christe*

Air Force Research Laboratory, Edwards Air Force Base CA, USA, Loker Hydrocarbon Research Institute, University of Southern California, Los Angeles, CA, USA, and Department of Chemistry, University of California, Riverside, CA, USA

Based on the recently developed pF' Lewis acidity scale,1 free gaseous LiF is a surprisingly strong Lewis acid, comparable to SiF₄. It was therefore of interest to study whether a strong Lewis base, such as CsF, could transfer a fluoride ion to LiF with formation of a LiF₂⁻ anion. Theoretical calculations were carried out for LiF₂⁻ and show that free gaseous LiF₂⁻ is a linear, vibrationally stable species. Furthermore, the phase-diagram of the LiF/CsF system shows a eutectic at a 1:1 mole ratio that gives a distinct X-ray powder diffraction pattern.² We have prepared this eutectic by fusion of a 1:1 mixture of LiF and CsF in a platinum crucible. Single crystals were obtained by slow cooling of the melt in a dry nitrogen stream. The resulting product was characterized by vibrational spectroscopy, and its crystal structure was determined. It is shown that CsLiF₂ does not contain isolated LiF₂⁻ anions, but exhibits an interesting three-dimensional network of alternating tetra-coordinated LiF₄ and octa-coordinated CsF₈ units.