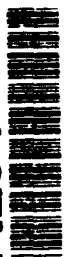


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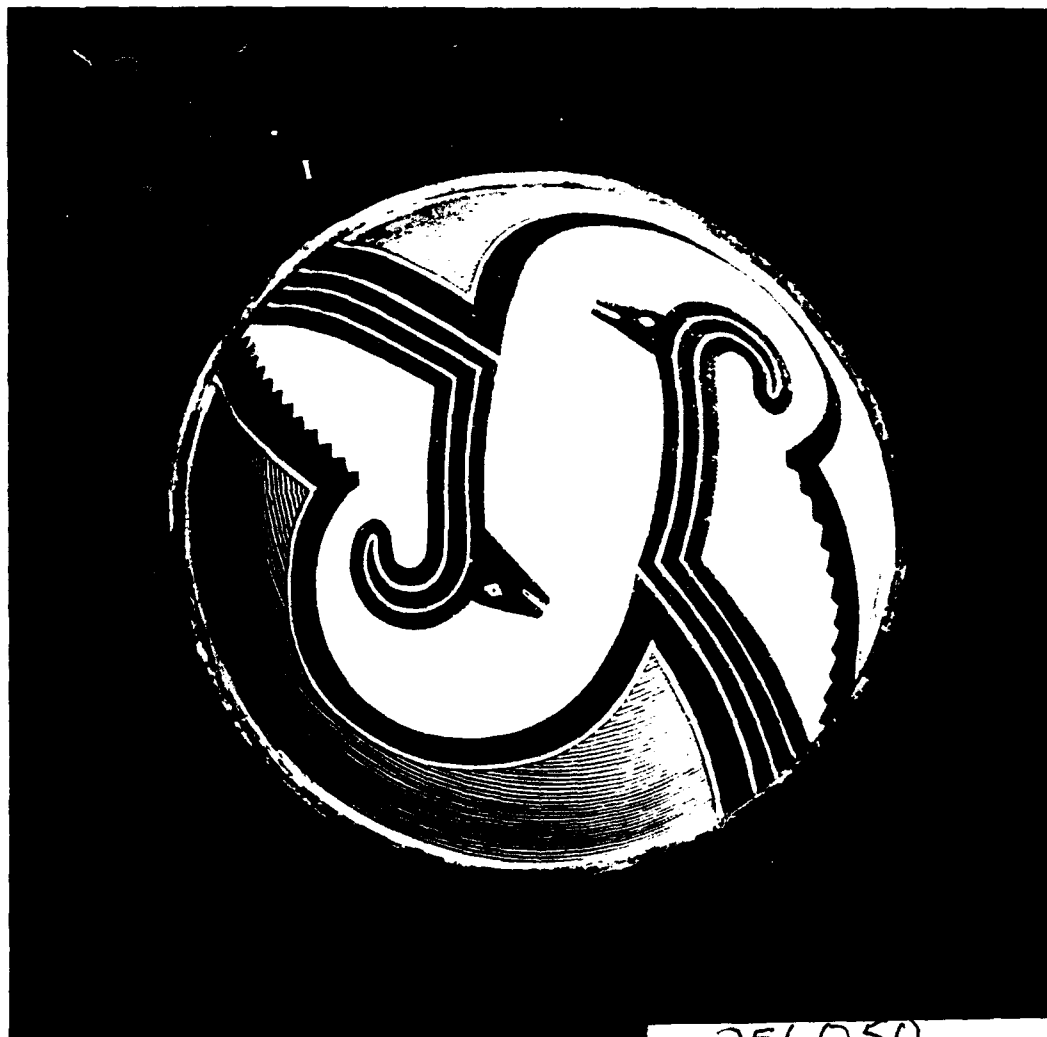


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44TH ANNUAL GASEOUS ELECTRONICS CONFERENCE

22-25 OCTOBER, 1991, ALBUQUERQUE, NEW MEXICO



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REPORT DOCUMENTATION PAGE			Form Approved OMB No. 0704-0188	
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.				
1. AGENCY USE ONLY (Leave blank)		2. REPORT DATE May 1992		3. REPORT TYPE AND DATES COVERED Final 1 Sep 91-31 Aug 92
4. TITLE AND SUBTITLE 44th Annual Gaseous Electronics Conference			5. FUNDING NUMBERS DAAL03-91-G-0326	
6. AUTHOR(S) Harold M. Anderson, principal investigator				
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) University of New Mexico Albuquerque, NM 87131			8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES) U. S. Army Research Office P. O. Box 12211 Research Triangle Park, NC 27709-2211			10. SPONSORING / MONITORING AGENCY REPORT NUMBER ARO 28901.1-PH-CF	
11. SUPPLEMENTARY NOTES The view, opinions and/or findings contained in this report are those of the author(s) and should not be construed as an official Department of the Army position, policy, or decision, unless so designated by other documentation.				
12a. DISTRIBUTION / AVAILABILITY STATEMENT Approved for public release; distribution unlimited.			12b. DISTRIBUTION CODE	
13. ABSTRACT (Maximum 200 words) The decade of the 1990's is opening for the Gaseous Electronics Conference with precedent setting growth. The technical program comprises 110 oral presentations and 191 poster presentations for a total of 301 papers. The total number of authors are 582. Two timely workshops will be held dealing with: • GEC Reference Cell Issues • Comparison Session on High Density Plasma Processing Other arranged sessions deal with: • Particulates in RF Discharges • Cathodes in Discharges: A Review • Electron and Atom Collision Related Phenomena • New and Alternative Applications for Plasma Processing • Ionized Gas Physics in Pulsed Power Applications				
14. SUBJECT TERMS Conference, Gaseous Electronics, Plasma Physics, Inertial Fusion, Ion Beams			15. NUMBER OF PAGES 223	
			16. PRICE CODE	
17. SECURITY CLASSIFICATION OF REPORT UNCLASSIFIED	18. SECURITY CLASSIFICATION OF THIS PAGE UNCLASSIFIED	19. SECURITY CLASSIFICATION OF ABSTRACT UNCLASSIFIED	20. LIMITATION OF ABSTRACT UL	

44th Annual Gaseous Electronics Conference

22-25 October 1991 • Albuquerque, New Mexico

PROGRAM AND ABSTRACTS

A Sponsored Conference
of the
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Division of Atomic, Molecular, and Optical Physics

Hosted by:
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Center for High Technology Materials
The University of New Mexico

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This bowl is on display at the Maxwell Museum of
Anthropology at the University of New Mexico.

On the bowl two mountain sheep are shown in a highly
stylized fashion. Since these sheep are not portrayed as they
would have been found in the natural world, it may be that
this design had a special symbolic meaning, although we do
not know what that meaning might have been.

Cover Design: Steve Rhodes
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Photography : Michael Mouchette

Printing : UNM Printing Services

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HB-7 Production of Excited Helium Atoms in the Singlet Levels by Electron Collisions with Metastable Helium Atoms.* R. B. LOCKWOOD, FRANCIS A. SHARPTON, L. W. ANDERSON, J. E. LAWLER, and Chun C. LIN, U. of Wisconsin—Cross sections for electron excitation out of the metastable levels into several singlet levels of He have been measured. A beam of He atoms containing a small fraction of metastables (10^{-5}) is crossed by an electron beam. The intensities of several emission lines such as the $4^1D \rightarrow 2^1P$ (492nm) or $3^1S \rightarrow 2^1P$ (728nm) transitions are measured. For energies below 19 eV excitation out of the ground level is not possible. The emission is entirely due to electron excitation into $He(n^1L)$ out of either the 2^1S or 2^3S metastable levels. The number density of each metastable is determined by a laser-induced fluorescence experiment. From the energy dependence of the observed emission, the individual cross sections for exciting 3^1S , 3^1D , and 4^1D from each metastable level are determined and the results are presented. To measure cross sections at higher energies, a different method for producing metastables is presented.

*Supported by the National Science Foundation.

HB-8 Threshold Behavior in Electron Excitation of Na. B. MARINKOVIC,* P. WANG, and ALAN GALLAGHER,** JILA, U. OF Colorado and NIST - We have measured the optical excitation functions of the 4D, 5D, and 4P states of sodium, in the threshold energy region with ~ 30 meV energy resolution. At this resolution the D states appear as step functions at threshold, while the 4P state onset is considerably more gradual. Some structures are observed in the 4-6 eV region, but these are not very large in our data. A cylindrical trochoidal monochromator, a high density atomic beam and large-angle light collection are used to achieve useable S/N.

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