

## JANE L. FOX

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### **Education:**

University of Michigan. B.S. in Chemistry with high honors and high distinction, 1973.  
William J. Branstrom Freshman Prize. Moses and Sophia Gomborg Scholarships, 1971, 1972.  
Nola Sauer Minnis Prize. James B. Angell Scholar, 1972, 1973, 1974.  
Phi Beta Kappa. Mortar Board (Senior Women's Honorary).  
Harvard University. Enrolled September, 1973. Ph. D. in Chemical Physics, November, 1978. National Science Foundation Predoctoral Fellow, 1973–1976. Research Advisor: Professor Alexander Dalgarno.  
**Awards:** Recipient of the 2003 Editors' citation for excellence in refereeing for Journal of Geophysical Research-Planets  
Elected to Fellowship in the American Geophysical Union, 2005.

### **Employment:**

Harvard University. Teaching Fellow, Summer 1974, Fall 1974, Spring 1975, Fall 1975.  
Max Planck Institut für Strömungsforschung, Göttingen, FRG. Stipendiatin, Summer 1977.  
National Science Foundation National Needs Postdoctoral Fellow, October 1978–October 1979. Postdoctoral Advisor: Professor Michael McElroy.  
Center for Earth and Planetary Physics, Harvard University. Research Fellow in Atmospheric Physics, October 1978–January 1980.  
University of Illinois, Urbana, IL. Assistant Professor of Chemistry and Electrical Engineering. January, 1980–July, 1981.  
Smithsonian Astrophysical Observatory, Cambridge, MA. Physicist. July 1981–August, 1984. July, 1985.  
State University of New York at Stony Brook, Stony Brook, NY. Assistant Professor of Atmospheric Sciences and Mechanical Engineering. September 1984–August 1987.  
State University of New York at Stony Brook, Stony Brook, NY. Associate Professor of Atmospheric Sciences and Mechanical Engineering, September 1987–December 1991.  
Massachusetts Institute of Technology, Visiting Associate Professor, September 1987–January, 1988.  
State University of New York at Stony Brook, Stony Brook, NY. Institute for Terrestrial and Planetary Atmospheres and Marine Sciences Research Center, Associate Professor, January, 1992–August, 1992.

State University of New York at Stony Brook, Stony Brook, NY. Professor, Institute for Terrestrial and Planetary Atmospheres and Marine Sciences Research Center, September, 1992–December, 2002. Professor Emeritus, December, 2002–present.

Wright State University, Dayton OH. Research Professor, Department of Physics, September, 1995–1999. Associate Professor, 1999–2000, Research Professor, December, 2002–present.

### **Selected Professional Activities:**

Member: American Geophysical Union (since 1977). American Astronomical Society, Division of Planetary Sciences.

Associate Editor, Journal of Geophysical Research, Space Physics, Jan. 1989– December, 1992.

Associate Editor, Journal of Geophysical Research (Planets), January, 1995–December, 1998.

Member of the NASA Planetary Atmospheres Management Operations Working Group, 1992–1994.

Member of The Panel on Definition of the NSF Planetary Astronomy Program, May 11–12, 1994, National Science Foundation, Arlington, VA.

Member, NASA Solar System Exploration Subcommittee, March, 1995–March, 1996.

Group chief or chair of 6 proposal review panels. Member of 9 additional review panels.

Chair of the search committee for the editorship of JGR-Planets, 2006.

Reviewer of proposals to NASA, NSF, US Army, and other organizations.

Reviewer of manuscripts to J. Geophys. Res., Geophys. Res. Lett., Icarus, Adv. Space Res., Rev. Geophys., Astrophys. J. Lett., Science

12 invited review articles

### **Publications:**

#### *Refereed Journals:*

Fox, J. L., A. Dalgarno, and G. A. Victor, The absorption of energetic electrons by argon gas, *Planet. Space Sci.*, *25*, 71–78, 1977.

Fox, J. L., A. Dalgarno, E. R. Constantinides, and G. A. Victor, The nitrogen dayglow on Mars, *J. Geophys. Res.*, *82*, 1615–1616, 1977.

Fox, J. L., and A. Dalgarno, Radiative transition probabilities of the  $1s2p^2P$  and  $1s2p^2D$  states of the lithium isoelectronic sequence, *Phys. Rev. A* *16*, 283–288, 1977.

Fox, J. L. and A. Dalgarno, Electron energy deposition in carbon dioxide, *Planet. Space Sci.*, *27*, 491–502, 1979.

Fox, J. L., and A. Dalgarno, Ionization, luminosity and heating of the upper atmosphere of Mars. *J. geophys. Res.* *84*, 7315–7333, 1979.

Fox, J. L., and A. Dalgarno, The production of nitrogen atoms on Mars and their escape, *Planet. Space Sci.*, *28*, 41–46, 1980.

Fox, J. L., and A. Dalgarno, Ionization, luminosity, and heating of the upper atmosphere of Venus, *J. Geophys. Res.*, *86*, 629–639, 1981.

Fox, J. L., and G. A. Victor,  $O^{++}$  in the Venusian Ionosphere, *J. Geophys. Res.*, *86*, 2438–2442, 1981.

- Fox, J. L., S. C. Wofsy, M. B. McElroy and M. J. Prather, A stratospheric chemical instability, *J. Geophys. Res.*, *87*, 11,126–11,132, 1982.
- Fox, J. L., The chemistry of metastable species in the Venusian ionosphere, *Icarus*, *51*, 248–260, 1982.
- Fox, J. L., Atomic carbon in the atmosphere of Venus, *J. Geophys. Res.* *87*, 9211–9216, 1982. *Erratum* in *J. Geophys. Res.*, *90*, 11,106, 1985.
- Fox, J. L., and A. Dalgarno, Nitrogen escape from Mars, *J. Geophys. Res.* *88*, 9027–9032, 1983.
- Wetmore, R. W., J. L. Fox, and A. Dalgarno, Radiative lifetimes of the second negative system of  $O_2^+$ , *Planet. Space Sci.*, *32*, 1111, 1984.
- Fox, J. L., and A. Dalgarno, The vibrational distribution of  $N_2^+$  in the terrestrial ionosphere. *J. geophys. Res.* *90*, 7557, 1985.
- Fox, J. L., The  $O_2^+$  vibrational distribution in the Venusian ionosphere, *Adv. Space Res.*, *5*, 165, 1985.
- Fox, J. L., The  $O_2^+$  vibrational distribution in the dayside ionosphere, *Planet. Space Sci.* *34*, 1252, 1986.
- Fox, J. L.,  $Ar^+$  in the terrestrial ionosphere, *J. Geophys. Res.*, *91*, 1731, 1986.
- Fox, J. L., Models for aurora and airglow emissions from other planetary atmospheres, INVITED paper based on presentation at the 1985 IAGA meeting in Prague, *Can. J. Phys.* *64*, 1631, 1986.
- Fox, J. L., and G. A. Victor, Electron energy deposition in  $N_2$  gas, *Planet. Space Sci.*, *36*, 329, 1988.
- Fox, J. L., Heating efficiencies in the thermosphere of Venus reconsidered, INVITED article for the special issue of Planetary and Space Science in honor of A. Dalgarno on the occasion of his 60th birthday, *Planet. Space Sci.*, *36*, 37, 1988.
- Fox, J. L., and J. H. Black, Photodissociation of CO in the thermosphere of Venus, *Geophys. Res. Lett.* *16*, 291, 1989.
- Fox, J. L. and A. Dalgarno, Franck-Condon factors and transition probabilities of the second negative band system of  $O_2^+$ , *J. Geophys. Res.*, *1119*, 1990.
- Fox, J. L., The red and green lines of atomic oxygen in the nightglow of Venus. *Adv. Space Res.* *10* (5), 31, 1990.
- Fox, J. L. and H. A. Taylor, Jr., A signature of auroral precipitation in the nightside ionosphere of Venus, *Geophys. Res. Lett.*, *17*, 1625, 1990.
- Kim, Y. H., and J. L. Fox, The Jovian ionospheric E region, *Geophys. Res. Lett.*, *18*, 123, 1991.
- Fox, J. L. and S. W. Bougher, Structure, luminosity and dynamics of the Venus thermosphere, *Space Sci. Rev.*, *55*, 357–489, 1991. INVITED review for the special issue of Space Science Reviews on Venus Aeronomy, edited by C. T. Russell.
- Fox, J. L. and A. I. F. Stewart, The Venus ultraviolet aurora: a soft electron source. *J. Geophys. Res.*, *96*, 9829, 1991.
- Fox, J. L., Cross sections and reactions rates of relevance to aeronomy, *Rev. Geophys.*, *April 1991 Supplement (U. S. National Report to International Union of Geodesy and*

- Geophysics*), 1110-1131, 1991. INVITED contribution to the quadrennial US National Report to the IUGG.
- Kim, Y. H., J. L. Fox, and H. A. Porter,  $H_3^+$  in the Jovian ionosphere: densities and vibrational distribution, *J. Geophys. Res.*, *97*, 6093, 1992.
- Fox, J. L., The chemistry of the Venus nightside ionosphere, *Planet. Space Sci.*, *40*, 1663, 1992. INVITED article for the special issue of Planetary and Space Science honoring David Bates on the occasion of his retirement from editorship of the journal.
- Fox, J. L., The production and escape of nitrogen atoms on Mars, *J. Geophys. Res.*, *98*, 3297–3310, 1993.
- Fox, J. L., J. F. Brannon, and H. S. Porter, Upper limits to the nightside ionosphere of Mars, *Geophys. Res. Lett.*, *20*, 1339, 1993.
- Fox, J. L., On the escape of oxygen and hydrogen from Mars, *Geophys. Res. Lett.*, *20*, 1747–1750, 1993.
- Brannon, J. F., J. L. Fox, and H. S. Porter, Evidence for day-to-night transport at low solar activity in the Venus pre-dawn ionosphere, *Geophys. Res. Lett.*, *20*, 2739, 1993.
- Fox, J. L., The rate coefficient for the reaction  $N + NO$ , *J. Geophys. Res.*, *99*, 6273–6276, 1994. Correction in: *J. Geophys. Res.*, *101*, 7987, 1996.
- Jakosky, B. M., R. O. Pepin, R. E. Johnson, and J. L. Fox, Mars atmospheric loss and isotopic fractionation by solar-wind-induced sputtering and photochemical escape, *Icarus*, *111*, 271–288, 1994.
- Kim, Y. H., and J. L. Fox, The chemistry of hydrocarbon ions in the Jovian ionosphere, *Icarus*, *112*, 310–325, 1994.
- Brannon, J. F., and J. L. Fox, The downward flux of  $O^+$  over the nightside of Venus, *Icarus*, *112*, 396–404, 1994.
- Victor, G. A., J. C. Raymond and J. L. Fox, Electron energy loss in oxygen plasmas, *Astrophys. J.*, *435*, 864, 1994.
- Dobe, Z., A. F. Nagy, and J. L. Fox, A theoretical study concerning the solar cycle dependence of the nightside ionosphere of Venus, *J. Geophys. Res.*, *100*, 14,507, 1995.
- Kim, Y. H., J. J. Caldwell, and J. L. Fox, High resolution ultraviolet spectroscopy of the Jovian aurora, *Astrophys. J.*, *447*, 906–914, 1995.
- Fox, J. L., P. Zhou, and S. W. Bougher, The thermosphere/ionosphere of Mars at high and low solar activities, *Adv. Space Res.*, *17*, (11)203–(11)218, 1995.
- Fox, J. L., and A. Hać,  $^{15}N/^{14}N$  Isotope fractionation in  $N_2^+$  dissociative recombination, *J. Geophys. Res.*, *102*, 9191–9204, 1997.
- Kim, Y. H., J. L. Fox and J. J. Caldwell, Temperatures and altitudes of Jupiter's ultraviolet aurora inferred from GHRS observations with the Hubble Space Telescope, *Icarus*, *128*, 189–201, 1997.
- Fox, J. L., and A. Hać, The spectrum of hot O at the exobases of the terrestrial planets, *J. Geophys. Res.* *102*, 24,005–24,011, 1997.
- Fox, J. L., and R. V. Yelle, Hydrocarbon ions in the ionosphere of Titan, *Geophys. Res. Lett.*, *24*, 2179-2182, 1997.
- Fox, J. L., Upper limits to the outflow of ions at Mars: Implications for atmospheric evolution, *Geophys. Res. Lett.*, *24*, 2901–2904, 1997.

- Kim, J., A. F. Nagy, J. L. Fox, and T. E. Cravens, Solar cycle variation of hot oxygen atoms in the Martian upper atmosphere, *J. Geophys. Res.*, *103*, 29,339–29,342, 1998.
- Perry, J. J., Y. H. Kim, J. L. Fox, and H. S. Porter, Chemistry of the Jovian auroral ionosphere, *J. Geophys. Res.*, *104*, 16,541–16,565, 1999.
- Fox, J. L., and A. Hać, Velocity distributions of C atoms in CO<sup>+</sup> dissociative recombination: Implications for atmospheric evolution, *J. Geophys. Res.*, *104*, 24,729–24,737, 1999.
- Kim, Y. H., W. D. Pesnell, J. M. Grebowsky, and J. L. Fox, Meteoric ions in the ionosphere of Jupiter, *Icarus*, *150*, 261–178, 2001.
- Nagy, A., M. Liemohn, J. L. Fox, and J. Kim, Hot carbon in the atmosphere of Mars, *J. Geophys. Res.*, *106*, 21,565–21,568, 2001.
- Fox, J. L. and K. Y. Sung, Solar activity variations in the Venus ionosphere/thermosphere, *J. Geophys. Res.*, *106*, 21,305–21,335, 2001.
- Fox, J. L., and F. B. Bakalian, Photochemical escape of atomic carbon from Mars, *J. Geophys. Res.*, *106*, 28,785–28,791, 2001.
- Fox, J. L., The effect of H<sub>2</sub> on the Martian ionosphere: Implications for atmospheric evolution, *J. Geophys. Res.*, *108*(A6),1223, doi:10.1029/2001JA000203, 2003.
- Liemohn, M. W., D. L. Mitchell, A. F. Nagy, J. L. Fox, T. W. Riemer, and Y. Ma, Comparisons of electron fluxes measured in the crustal fields at Mars by the MGS MAG/ER instrument with a B-field dependent transport code, *J. Geophys. Res.*, *108*(E12), 5134, doi:10.1029/2003JE002158, 2003.
- Fox, J. L., Advances in the aeronomy of Venus and Mars, *Adv. Space Res.*, *33*(02), 132–139, 2004.
- Stewart, A. I. F., J. L. Fox, W. R. Pryor, and W. E. McClintock, Cassini UVIS measurements of the Venus Dayglow: CO Fourth Positive Bands, (in preparation, 2000–2006).
- Fox, J. L., CO<sub>2</sub><sup>+</sup> dissociative recombination: A source of thermal and non-thermal C on Mars, *J. Geophys. Res.*, *109*, A08306, doi: 10.1029/2004JA010514, 2004.
- Liemohn, M. W., J. L. Fox, A. F. Nagy, and X. Fang, Hot carbon densities in the exosphere of Venus, *J. Geophys. Res.*, *109*, A10307, doi:10.1029/2004JA010643, 2004.
- Fox, J. L., The effects of enhanced fluxes of soft xrays on the Martian ionosphere, *J. Geophys. Res.*, *109*, A11310, doi:10.1029/2004JA010380, 2004.
- Fox, J. L., and L. J. Paxton, C and C<sup>+</sup> in the Venusian thermosphere/ionosphere *J. Geophys. Res.*, *11000*,A01311, doi:10.1029/2004JA0108183, 2005.
- Russell, C. T., J.S. Leisner, K. K. Khurana, M. K. Doherty, X. G. Blanco-Cano, and J. L. Fox, Ion cyclotron waves in the Saturnian magnetosphere associated with Cassini’s engine exhaust, *Geophys. Res. Lett.* (*32*) (14), L14S01, doi:10.1029/2005GL022672, 2005.
- Kharchenko, V., A. Dalgarno, and J. L. Fox, Thermospheric distribution of fast O(<sup>1</sup>D) atoms, *J. Geophys. Res.*, *110*, A12305, doi:10.1029/2005JA011232, 2005.
- Fox, J. L., and K. E. Yeager, Morphology of the near-terminator ionosphere: A comparison of models and data, *J. Geophys. Res.* (*submitted*), 2006.

#### *Monograph chapters*

- Fox, J. L., Dissociative recombination in aeronomy, in *Dissociative Recombination: Theory*,

*Experiment and Applications* edited by J. B. A. Mitchell and S. L. Guberman, World Scientific, Singapore, 1989, p. 264–285.

Fox, J. L., Airglow and aurora in the atmospheres of Venus and Mars, in *Venus and Mars: Atmospheres, Ionospheres and Solar Wind Interaction (Geophysical Monograph 66)*, ed. J. G. Luhmann, M. Tatrallyay, and R. Pepin, AGU Press, 1992, pp. 191–222 (refereed).

Fox, J. L., Dissociative recombination in planetary ionospheres, *Dissociative Recombination: Theory, Experiment and Applications* edited by B. R. Rowe and J. B. A. Mitchell, Plenum, New York, 1993, pp. 219–242.

Dalgarno, A. and J. L. Fox, Ion chemistry in atmospheric and astrophysical plasmas, *Unimolecular and Bimolecular Reaction Dynamics*, edited by C. Y. Ng, T. Baer, and I. Powis, Wiley, New York, 1994, pp.1–85.

Fox, J. L., Aeronomy, in *Atomic, Molecular and Optical Physics Handbook*, edited by G. W. F. Drake, American Institute of Physics Press, Woodbury, NY, pp. 940–968 (refereed) First edition, 1996. Second edition, 2005.

Fox, J. L., Hydrocarbon ions in the ionospheres of Titan and Jupiter, in *Dissociative Recombination: Theory, Experiment and Applications III*, edited by D. Zajfman, J. B. A. Mitchell, and B. Rowe, World Scientific, New Jersey, 1996, pp. 40–46.

Fox, J. L. and A. J. Kliore, Ionosphere: Solar activity variations, in *Venus II*, edited by S. Bougher, D. Hunten, and R. Phillips, University of Arizona Press, Tucson, 1997, pp. 161–188 (refereed).

Fox, J. L., Applications of velocity distributions of atomic products in dissociative recombination, in *Dissociative Recombination: Theory, Experiment, and Applications IV*, edited by M. Larsson, J. B. A. Mitchell, and I. F. Schneider, World Scientific, Singapore, 2000, pp. 25–30.

Fox, J. L., Effects of dissociative recombination on the composition of planetary atmospheres, *Journal of Physics: Conference Series, 4*, Sixth International Conference on Dissociative Recombination, IOPP, doi:10.1088/1742-6596/4/1/005, 32–37, 2005.

*Other publications:*

“Airglow”, entry for *Encyclopedia of Planetary Science*, edited by J. H. Shirley and R. W. Fairbridge, Chapman and Hall, London; New York, 1997, pp. 4–10 (refereed).

“Chemistry of the atmosphere: Ion Chemistry”, entry for *Encyclopedia of Atmospheric Sciences*, eds. J. R. Holton, J. Pyle, and J. A. Curry, Elsevier, London, 2002, pp. 359–375 (refereed).

**Abstracts and presentations at meetings (not complete) (since 1984):**

The vibrational distribution of  $O_2^+$  in the Venusian ionosphere, Bi-annual meeting of CO-SPAR, Graz, Austria, July, 1984.

$Ar^+$  in the terrestrial atmosphere, Fall meeting of the American Geophysical Union (AGU), San Francisco, Dec. 1984.

Models for aurora and airglow emissions from other planetary atmospheres, INVITED talk at the 1985 meeting of the International Association of Geomagnetism and Aeronomy (IAGA), Prague, August 1985.

The aurora on Venus, Fall meeting of the AGU, San Francisco, Dec. 1985.

Electron energy deposition in N<sub>2</sub> gas, Fall meeting of the AGU, San Francisco, Dec. 1986.

The aurora on Venus. Presented to the Pioneer Venus Science Steering Group. March 1985, Oct. 1985, April 1986, May 1987, Nov. 1987.

Heating efficiencies on Venus. Presented at meeting of the Pioneer Venus Science Steering Group, Oct. 1986.

Heating efficiencies in the thermosphere of Venus reconsidered, AGU Spring meeting, Baltimore, May 1987.

Particle precipitation and odd nitrogen in the nighttime thermosphere of Venus, AGU fall meeting, San Francisco, Dec. 1987.

Dissociative recombination in aeronomy, INVITED talk at the International Symposium on Dissociative recombination: Theory, Experiment, and Applications, Lake Louise, Canada, May 1988.

Excited states in aeronomy, INVITED talk at the Symposium on Atomic and Molecular Processes, with Application to Aeronomy and Astrophysics in honor of Alexander Dalgarno's 60th birthday, Cambridge MA, June 1988.

The red and green lines of atomic oxygen in the Venus nightglow, Committee on Space Research (COSPAR) plenary meeting, Helsinki, July 1988.

Solar photodissociation of CO in planetary atmospheres, AGU Fall Meeting, San Francisco, Dec. 1988.

The neutral thermospheres of Mars and Venus, INVITED talk presented at the AGU Spring Meeting, Baltimore, May 1989.

G. A. Victor, J. Raymond, and J. L. Fox, Electron energy deposition in oxygen plasmas, DAMOP meeting of the American Physical Society, May, 1989.

A. I. F. Stewart and J. L. Fox, The Venusian aurora, abstract for the biannual meeting of the International Association of Geomagnetism and Aeronomy, Exeter, England, July, 1989.

Production of hot oxygen at the Venus exobase, presented to the Pioneer Venus Science Steering Group, Sept. 1989.

A signature of auroral activity in the nightside ionosphere of Venus, AGU Fall Meeting, San Francisco, Dec. 1989.

Airglow and auroral emission features on Mars and Venus, INVITED talk at the Chapman Conference on the Comparative Study of Venus and Mars: Atmospheres, Ionospheres and Solar Wind Interactions, Lake Balaton, Hungary, June 1990.

S. W. Bougher and J. L. Fox, Comparative thermospheres: Venus and Mars, talk presented by S. W. Bougher at the Chapman Conference on the Comparative Study of Venus and Mars: Atmospheres, Ionospheres and Solar Wind Interactions, Lake Balaton, Hungary, June 1990.

Chemistry of the nightside ionosphere of Venus, presented to the Pioneer Venus Science Steering Group, Sept. 1990.

Chemistry of the nightside ionosphere of Venus, Annual Meeting of the Division of Planetary Sciences, American Astronomical Society, Charlottesville, Oct. 1990.

The production of hot oxygen at the exobases of the terrestrial planets, AGU Fall Meeting, Dec. 1990.

Particle precipitation in the atmospheres of Venus and Mars, INVITED talk presented at the biannual meeting of the International Union of Geodesy and Geophysics, Vienna, August, 1991.

Nitrogen escape from Mars, presented at the Meeting of the Martian Surface and Atmosphere Through Time Program, Boulder, CO, September, 1991.

The reaction  $O^+ + CO_2 \rightarrow O_2^+ + CO$  in the Venus ionosphere, presented at the Pioneer Venus Science Steering Group, Ames Research Center, Mountain View, CA, October, 1991.

Heating efficiencies in the thermosphere of Titan, J. L. Fox and R. V. Yelle, Presented at the annual Meeting of the Division of Planetary Sciences of the AAS, Palo Alto, CA, November, 1991.

Dissociative recombination in planetary ionospheres, Invited presentation at the Second International Symposium on "Dissociative Recombination: Theory, Experiment and Applications" held in St. Jacut, France, May, 1992.

Models of the Venus nightside ionosphere, presented at the Spring Meeting of the American Geophysical Union, Montreal, May, 1992.

Production and escape of nitrogen atoms from Mars, presented at the Workshop on the Evolution of the Martian atmosphere, Kona, July, 1992.

On  $H_3^+$  density profiles in the Jovian auroral ionosphere, Y. H. Kim and J. L. Fox, (presented by Y. H. Kim) Workshop on Time Variable Phenomena in the Jovian Atmosphere, Annapolis, MD, July, 1992.

Model calculations of the nightside ionospheres of Venus and Mars, Presented at the Second International Planetary Science Conference, (and Annual Meeting of the Division for Planetary Sciences, American Astronomical Society), Munich, October, 1992.

The downward flux of  $O^+$  over the nightside of Venus, Pioneer Venus Science Steering Group, Mountain View CA, March, 1993; September, 1993.

On the escape of O and H from Mars, presented at the Spring 1993 Meeting of the AGU, Baltimore, May, 1993.

Photochemistry of the atmospheres of Venus and Mars, or What we have learned about the atmosphere of the earth from studying other planets, presented at the annual CEDAR (Coupling, Energetics and Dynamics of Atmospheric Regions) meeting, Boulder, CO, June, 1993 (INVITED).

Requirements for the early atmosphere of Mars from the nitrogen isotope ratios, presented at the Workshop on Early Mars: How Warm and How Wet?, Breckenridge, CO, July, 1993.

Nightward Fluxes of  $O^+$  in the Venus Ionosphere, (J. F. Brannon and J. L. Fox), presented at the Seventh Scientific Assembly of the International Association of Geomagnetism and Aeronomy, Buenos Aires, August, 1993.

Nightward Fluxes of  $O^+$  in the Venus Ionosphere, (J. F. Brannon and J. L. Fox), presented at the final meeting of the Pioneer Venus Science Steering Group, September, 1993.

Chemistry of the auroral Venus nightside ionosphere, (abstract only), AGU Fall Meeting, December, 1993.

Anomalous mass-28 ion densities in the Venus nightside ionosphere, (J. L. Fox, J. F. Brannon, J. Grebowsky, and H. S. Porter) Presented at the 1994 Spring Meeting of the American Geophysical Union, Baltimore, May, 1994.

- Chemistry of the auroral Venus nightside ionosphere (J. F. Brannon, J. L. Fox, and H. S. Porter), Presented at the 30th Scientific Assembly of COSPAR, Hamburg, Germany, July, 1994.
- The Martian thermosphere-ionosphere at high and low solar activities, (J. L. Fox, S. W. Bougher, and P. Zhou), INVITED Talk presented at the 30th Scientific Assembly of COSPAR, Hamburg, Germany, July, 1994.
- Sources of Planetary Ionospheres, INVITED talk presented in special session on Comparative Planetary Aeronomy organized by R. Strangeway at Fall, 1994, meeting of the AGU, San Francisco, December, 1994.
- The ionosphere of Venus: Solar cycle variations and nightside maintenance, INVITED presentation at "Venus II", Tucson, January, 1995.
- Chemistry of the Titan ionosphere, INVITED presentation at the Third International Conference on Dissociative Recombination: Theory, Experiment and Applications, Ein Gedi, Israel, May, 1995.
- A new model of the Titan ionosphere, (J. L. Fox and R. V. Yelle) presented at the 27th Annual Meeting of the Division for Planetary Sciences of the American Astronomical Society, Kona, October, 1995.
- Temperatures and altitudes of Jovian UV aurora inferred from the GHRs observations with the Hubble Space Telescope, (Y.-H. Kim, J. L. Fox, and J. Caldwell) presented at the 27th Annual Meeting of the Division for Planetary Sciences of the American Astronomical Society, Kona, October, 1995.
- Isotope differentiation in  $N_2^+$  dissociative recombination, (J. L. Fox and A. Hać), presented at the 1995 Fall Meeting of the American Geophysical Union, San Francisco, December, 1995.
- The Ancient Mars Thermosphere, (S. W. Bougher and J. L. Fox, presented by S. W. Bougher), and The Ancient Mars Ionosphere, (J. L. Fox and S. W. Bougher), both presented at the Workshop on Evolution of Martian Volatiles, Houston, February, 1996.
- Quasiclassical trajectory study of the rate coefficient of the  $N(^2D) + NO(^2\Pi) \rightarrow N_2(^1\Pi_g^+) + O(^3P)$  reaction. J. Duff, R. D. Sharma, A. Dalgarno and J. L. Fox, Presented by J. Duff at the Spring Meeting of the AGU, Baltimore, May, 1996.
- Solar Cycle Variations of the Thermospheres/Ionospheres of Venus and Mars (INVITED), presented at the bi-annual meeting of COSPAR, Birmingham, England, July, 1996.
- The spectrum of hot O at the exobases of the terrestrial planets, presented at the Spring Meeting of the AGU, Baltimore, May, 1997.
- The spectrum of hot O at the exobases of the terrestrial planets, presented at the NSF CEDAR meeting, Boulder, June, 1997.
- Upper limits to the ion outflow at Mars: Implications for atmospheric evolution, presented at the Meeting of the Division of Planetary Sciences of the AAS, Cambridge, MA, June 1997.
- The ionospheres of Venus and Mars (INVITED), presented at the bi-annual meeting of IAGA, Uppsala, August, 1997.
- The ancient Martian ionosphere, J. L. Fox and S. W. Bougher, Fall meeting of the AGU, December, 1997 (abstract only).

Models of the Martian thermosphere/ionosphere, J. L. Fox, (INVITED) keynote address for the Workshop “Energetic neutral atom imaging of the Martian environment” for the Mars Express mission, September 2, 1998, Kiruna, Sweden.

Chemistry of the Jovian auroral ionosphere, J. J. Perry, Y. H. Kim, J. L. Fox, and H. S. Porter, Fall meeting of the American Geophysical Union, December, 1998, San Francisco.

Metal ions in the Jovian ionosphere, Y. H. Kim, J. Grebowsky, D. Pesnell, and J. L. Fox, Fall meeting of the American Geophysical Union, December, 1998, San Francisco.

The Martian thermosphere/ionosphere, ancient and modern, J. L. Fox, Spring meeting of the American Geophysical Union, Boston, June, 1999 (Invited).

Critical reactions in modeling the Jovian ionosphere, Y. H. Kim and J. L. Fox, Spring meeting of the American Geophysical Union, Boston, June, 1999 (Invited).

Applications to aeronomy of velocity distributions in dissociative recombination, Spring meeting of the American Geophysical Union, Boston, June, 1999 (Invited).

Applications to aeronomy of velocity distributions in dissociative recombination, International meeting on dissociative recombination: Experiment, theory and applications, Näslingen, Sweden, June, 1999 (Invited).

Photochemical escape of C from Mars, 31st Annual Meeting of the Division of Planetary Sciences of the American Astronomical Society, Padova, Italy, October, 1999.

Photochemical escape of C from Mars, Fall Meeting of the Ohio Section of the American Physical Society, Dayton, October, 1999.

Solar activity variations of the Venus Thermosphere/Ionosphere, K. Sung and J. L. Fox, Fall Meeting of the American Geophysical Union, San Francisco, December, 1999.

Exospheres and Planetary Escape, Yosemite 2000: Comparative aeronomy in the solar system, Yosemite National Park, February, 2000 (INVITED).

Cameron band emission of CO on Venus and Mars, W. Pryor, C. Barth, A. I. Stewart, W. McClintock, J. Fox, M. Festou, D. Shemansky, J. Colwell, and A. Hedrix, presented by W. Pryor at Yosemite 2000: Comparative aeronomy in the solar system, Yosemite National Park, February, 2000 (contributed).

Vibrational distribution of the  $N_2^+(A)$  and  $N_2^+(B)$  states in the terrestrial midlatitude and auroral ionospheres, J. L. Fox and T. E. Skinner, presented at the 15th NSF CEDAR (Coupling Energetics and Dynamics of Atmospheric Regions) meeting, Boulder Colorado, June, 2000 (contributed).

Models of the ionospheres of Venus and Mars, Solicited keynote paper presented to the Planetary Ionospheres Session C3.2, at biannual meeting of the Committee on Space Research, COSPAR 2000, Warsaw, July, 2000 (Invited).

Spectrum of atomic carbon produced in photodissociation of CO on Mars: Implications for atmospheric evolution, presented at the DPS (Division of Planetary Sciences of the American Astronomical Society) 2000 meeting, Pasadena, October, 2000.

Venus’s airglow as observed by the Cassini Ultraviolet Imaging Spectrometer, A. I. F. Stewart, L. W. Esposito, W. R. Pryor, J. L. Fox, UVIS Team, presented at the DPS (Division of Planetary Sciences of the American Astronomical Society) 2000 meeting, Pasadena, October, 2000.

Electron impact cross sections for use in modeling the ionospheres/thermospheres of the

- earth and planets, K. Sung and J. L. Fox, presented at the Fall Meeting of the American Geophysical Union, San Francisco, December, 2000 (contributed).
- Vibrational distributions of the  $N_2^+$  A and B states with comparison to Atlas data of the first negative bands, J. L. Fox and T. E. Skinner, presented at the Fall Meeting of the American Geophysical Union, San Francisco, December, 2000 (contributed).
- Hot carbon densities and escape fluxes at Mars, A. F. Nagy, M. W. Liehmohn, J. L. Fox, and J. Kim, presented (by A. Nagy) at the Fall Meeting of the American Geophysical Union, San Francisco, December, 2000 (contributed).
- Venus thermospheric CO and temperatures deduced from Cassini UVIS airglow measurements, A. I. Stewart, L. W. Esposito, W. R. Pryor, J. L. Fox, and the Cassini UVIS Team, presented (by Ian Stewart) at the Fall Meeting of the American Geophysical Union, San Francisco, December, 2000 (contributed).
- The effect of enhanced hydrogen on non-thermal escape of atoms. J. L. Fox, Presented at the Spring Meeting of the American Geophysical Union, Boston, June, 2001.
- A comparison of escape fluxes of C computed using the exobase approximation to that using a Monte Carlo calculation, presented at the conference “Exploring Thin Air”, a celebration of Andy Nagy’s 70th birthday, Ann Arbor, May, 2002 (Invited).
- A comparison of escape fluxes of C computed using the exobase approximation to that using a Monte Carlo calculation, F. M. Bakalian and J. L. Fox, presented by F. Bakalian at the Spring AGU, May 2002.
- Recent advances in the aeronomy of Mars and Venus, presented at Session C3.1-0003 of the 34th COSPAR Assembly, Houston, October, 2002 (INVITED).
- Response of the Martian thermosphere/ionosphere to enhanced fluxes of soft xrays, presented at the Fall Meeting of the American Geophysical Union, San Francisco, December, 2002.
- Escape measurements and needs, presented at the SWiM Mars Aeronomy Workshop (a workshop to determine instrumentation needs for a Martian aeronomy mission), (INVITED), April 2003.
- The Effect of Enhanced Fluxes of Soft Xrays on the Ionospheres and Thermospheres of Venus and Mars, Presented at the Fall Meeting of the American Geophysical Union, December, 2003 (INVITED) *EOS Trans. AGU*, 84(46), Fall Meet. Suppl., Abstract A12A-70, 2003.
- Model studies of the structure of the Martian ionosphere for various solar fluxes in both the EUV and soft xray regions, INVITED talk presented at the Spring Meeting of the AGU (Joint with the CGU), Montreal, May, 2004.
- Effects of DR on the Composition of Planetary Atmospheres, INVITED talk presented at the Sixth International Conference on Dissociative Recombination: Theory, Experiments and Applications, Mosbach, Germany, July, 2004.
- The role of ionosphere/thermosphere coupling processes in the escape of species from Mars, J. L. Fox and S. W. Bougher, INVITED talk presented at the Fall Meeting of the AGU, San Francisco, December, 2004.
- Ion cyclotron waves associated with Cassini’s engine exhaust products, C. T. Russell, J. S. Leisner, M. Dougherty, X. Blanco-Cano, and J. L. Fox, presented by C. T. Russell at the Annual Meeting of the European Geophysical Society, Nice France, April 29, 2005.
- The near-terminator ionospheres of Mars and Venus: How Chapman-esque? J. L. Fox and K. Yeager, presented at the Fall Meeting of the AGU, San Francisco, December, 2005.

The near-terminator ionosphere of Venus: How Chapman-esque? Presented at the AGU Chapman conference on Venus as a Terrestrial Planet, Key Largo, February, 2006.

**Other presentations:** (not complete)

The nitric oxide airglow in the Martian atmosphere, J. L. Fox and A. Dalgarno, Spring Meeting of the American Geophysical Union, May, 1977.

O<sup>++</sup> in the Venusian ionosphere, J. L. Fox and G. A. Victor, Spring Meeting of the American Geophysical Union, Toronto, May, 1980.

The chemistry of metastables in the Venus ionosphere, International Conference on the Venus Environment, Palo Alto, November, 1981.

A stratospheric chemical instability, invited talk to Joint Gas and Particulate Science Division and Chemical Kinetics Division Colloquium Series of the National Bureau of Standards, January, 1981.

A stratospheric chemical instability, University of Michigan, Spring, 1981 (exact date unknown).

Nitrogen escape from Mars, Second International Conference on Mars, (exact date unknown), 1981.

A stratospheric chemical instability, Washington University, St. Louis, MO, (exact date unknown) 1982.

A stratospheric chemical instability, Goddard Space Flight Center, (exact date unknown) 1982.

The escape of nitrogen from the Martian atmosphere, Center for Astrophysics Atomic and Molecular Physics Division Seminar, Cambridge, MA, February, 1982.

Nitrogen escape from Mars, LPI Planetary Volatiles Conference, Alexandria, Minnesota, October, 1982.

The O<sub>2</sub><sup>+</sup> vibrational distribution in the terrestrial atmosphere, Fall meeting of the American Geophysical Union, San Francisco, December, 1983.

Vibrational excitation in planetary upper atmospheres, (INVITED) Air Force Geophysics Laboratory, January, 1984.

Vibrational excitation in planetary upper atmospheres, (INVITED) Goddard Space Flight Center, February, 1987.

Vibrational excitation in planetary upper atmospheres, (INVITED) CONOCO lecture series, Department of Earth, Atmospheric and Planetary Sciences, Massachusetts Institute of Technology, November, 1987.

Heating efficiencies in the thermosphere of Venus, (INVITED) Air Force Geophysics Laboratory, January, 1988.

Vibrational excitation in planetary upper atmospheres, (INVITED) Physical Chemistry seminar, SUNY-Stony Brook, February, 1989.

The nightside ionosphere of Venus, (INVITED) Goddard Space Flight Center, May, 1990.

Heating efficiencies in the thermosphere of Titan, (INVITED) University of California at Berkeley, Space Sciences Laboratory, November, 1991.

The nightside ionosphere of Venus, presented to the Laboratory for Atmospheres, Goddard Space Flight Center, 1994–1995 seminar series, Feb. 14, 1995. (INVITED)

The nightside ionosphere of Venus, presented at the Southwest Research Institute, April 12, 1995. (INVITED).

Escape of species from the Martian atmosphere, presented to the Physics Department, Wright State University, April, 1996.

The nightside ionosphere of Venus, Presented to the Physics Department, Wright State University, April, 1999.