

Stephen C. Foster

Associate Professor of Chemistry

EDUCATION

- B.Sc.(honors), Chemistry, Manchester University, Manchester, U.K., 1978
- Ph.D., Physical Chemistry, Dalhousie University, Halifax, N.S., Canada, 1982

PROFESSIONAL EXPERIENCE

- July 1994 - present, Associate Professor, The Mississippi State University
- September 1989 - June 1994, Assistant Professor, The Florida State University.
- January 1988 - August 1989, Visiting Professor, The Florida State University.
- October 1985 - December 1987, Postdoctoral Fellow, The Ohio State University.
- October 1982 - September 1985, Research Associate, Herzberg Institute, NRC Canada.

HONORS

- Cited by "Who's Who Among America's Teachers" for excellence in teaching, 1994.
- Florida State University, Undergraduate Teaching Award, 1991-1992.
- National Research Council of Canada, Research Associate, 1982-1985.
- Izaak Walton Killam Memorial Scholar, Dalhousie University, 1979-1982.

PROFESSIONAL ACTIVITIES

- Member, American Chemical Society
- Reviewer for the National Science Foundation, American Chemical Society, Research Corporation, International Science Foundation, Los Alamos National Labs and the Louisiana Board of Regents.
- Review manuscripts for the Journal of Chemical Physics, Journal of Molecular Spectroscopy, Canadian Journal of Physics and the Journal of Chemical Education.

PUBLICATIONS

1. Diode laser spectroscopy of the n_1 and n_3 bands of SD_3^+ , C. Xia, M. M. Sanz, and S.C. Foster, *J. Mol. Spectrosc.* **188**, 175-181 (1998).
2. Structures and vibrational spectra for protonated carbonyl sulfide, S. Saebo, M. M. Sanz, and S. C. Foster, *Theoretical Chemistry Accounts*, **97**, 271-276 (1997).
3. The n_4 band of ammonium, NH_4^+ , J. Park, C. Xia, S. Selby and S.C. Foster, *J. Mol. Spectrosc.* **179**, 150 (1996).
4. Rotationally resolved electronic excitation spectra of the ethoxy B-X transition, X.Q. Tan, J.M. Williamson, S.C. Foster and T.A. Miller, *J. Phys. Chem.* **97**, 9311-9316 (1993).

5. Infrared spectroscopy of the products of a corona excited supersonic expansion, K.R. Comer and S.C. Foster, *Chem. Phys. Lett.* **202**,216-218 (1993).
6. High resolution laser spectroscopy of free-radical inert-gas complexes: C₅H₅-He, C₅H₅-He₂, C₅H₅-Ne, CH₃C₅H₄-He₂, L. Yu, J.M. Williamson, S.C. Foster and T.A. Miller, *J. Chem. Phys.* **97**, 5273-5282 (1992).
7. Laser-induced voltages in room-temperature polycrystalline wafers of YBa₂Cu₃O₇, K.L. Tate, E.F. Hilinski and S.C. Foster, *Appl. Phys. Lett.* **57**, 2407-2409 (1990).
8. Transient laser-induced voltages in room-temperature films of YBa₂Cu₃O₇, K.L. Tate, R.D. Johnson, C.L. Chang, E.F. Hilinski and S.C. Foster, *J. Applied Phys.* **67**, 4375-4376(1990).
9. High resolution electronic spectroscopy of jet-cooled hexafluorobenzene and 1,3,5-trifluorobenzene cations, C₆F₆⁺ and C₆F₃H₃⁺, L. Yu, S.C. Foster, J.M. Williamson and T.A. Miller, *J. Chem. Phys.* **92**, 5794-5800 (1990).
10. The spin-rotation interactions in the methoxy radical, X. Liu, S.C. Foster, J.M. Williamson, L. Yu and T.A. Miller, *Molec. Phys.* **69**, 357-367 (1990).
11. The vibronic structure of the SiN Radical, S.C. Foster, *J. Mol. Spectrosc.* **137**, 430-431(1989).
12. Spectra and structure of gaseous organic free radicals: a status report, S.C. Foster and T.A. Miller, *J. Phys. Chem.* **89**, 5986-5999 (1989) (An invited feature article).
13. The spectroscopy of transient species in supersonic free jet expansions, S.C. Foster and T.A. Miller, chapter 7, in *Laser applications in physical chemistry*, (ed. D.K. Evans) Marcel Dekker (1989). Vol. 20 of the Series Optical Engineering (ed. B.J. Thompson).
14. Free-jet cooled laser induced fluorescence spectrum of methoxy. Part II: Rotational analysis of the A²A-X²E system, X. Liu, C.P. Damo, T.-Y.D. Lin, S.C. Foster, P. Misra, L. Yu and T.A. Miller, *J. Phys. Chem.* **93**, 2266-2275(1989).
15. Free-jet cooled laser induced fluorescence spectrum of methoxy. Part I: Vibronic analysis of the A and X states, S.C. Foster, P. Misra, T.-Y.D. Lin, C.P. Damo, C.C. Carter and T.A. Miller, *J. Phys. Chem.* **92**, 5914-5921 (1988).
16. Rotationally resolved electronic spectrum of the jet-cooled cyclopentadienyl radical, L. Yu, S.C. Foster, J.M. Williamson, M.C. Heaven and T.A. Miller, *J. Phys. Chem.* **92**, 4263-4266 (1988).
17. Laser spectroscopy of chemical intermediates in supersonic free jet expansions, S.C. Foster, R.A. Kennedy and T.A. Miller, in *Proc. NATO-ASI, Frontiers of Laser Spectroscopy of Gases* (eds. P. Alves et al.), pp.421-449, Kluwer (1988).
18. High-resolution 3-micron spectroscopy of extreme carbon stars, J.P. Maillard, S.C. Foster, T. Amano and P. Feldman, in *Proc. I. A. U. symposium 120, Astrochemistry* (eds. Tarafdon and Vardya), pp. 387-390, Reidel (1987).
19. The infrared spectrum of the n₂ fundamental band of the D₃⁺ molecular ion, J.K.G. Watson, S.C. Foster and A.R.W. McKellar, *Canad. J. Phys.* **65**,38-46 (1987).
20. Implications of the rotationally resolved spectra of the alkoxy radicals for their electronic structure, S.C. Foster, Y.C. Hsu, C.P. Damo, X. Liu, C.Y. Kung and T.A. Miller, *J. Phys. Chem.* **90**, 6766-6769 (1986).
21. Fourier-transform ion cyclotron resonance mass spectroscopy of trapped carbon clusters, R.D. Knight, R.A. Walch, S.C. Foster, T.A. Miller, S.L. Mullen and A.G. Marshall, *Chem. Phys. Lett.* **129**, 331-335 (1986).

22. Observation and analysis of the n_2 and n_3 fundamental bands of D_2H^+ , S.C. Foster, A.R.W. McKellar, and J.K.G. Watson, *J. Chem. Phys.* **85**, 664-670 (1986).
23. Infrared diode laser measurements of atomic helium fine structure transitions, T.J. Sears, S.C. Foster and A.R.W. McKellar, *J. Opt. Soc. Am.* **B3**, 1037-1038 (1986).
24. Observation and analysis of the n_2 and n_3 fundamental bands of the H_2D^+ ion, S.C. Foster, A.R.W. McKellar, I.R. Peterkin, J.K.G. Watson, F.S. Pan, M.W. Crofton, R.S. Altman and T. Oka, *J. Chem. Phys.* **84**, 91-99 (1986).
25. High resolution spectroscopy of 16 bands of OCS in the 1975-2140 cm^{-1} region for diode laser calibration, N. Hunt, S.C. Foster, J.W.C. Johns and A.R.W. McKellar, *J. Mol. Spectrosc.* **111**, 42-53 (1985).
26. The 2-0 band of the $A^2P-X^2S^+$ system of SiN near 3.3 microns, S.C. Foster, K.G. Lubic and T. Amano, *J. Chem. Phys.* **82**, 709-713 (1985).
27. The infrared spectrum of the n_2 fundamental band of the H_3^+ molecular ion, J.K.G. Watson, S.C. Foster, A.R.W. McKellar, P. Bernath, T. Amano, F.S. Pan, M.W. Crofton, R.S. Altman and T. Oka, *Canad. J. Phys.* **62**, 1875-1885 (1985).
28. The n_3 fundamental bands of HN_2^+ , DN_2^+ , and DCO^+ , S.C. Foster and A.R.W. McKellar, *J. Chem. Phys.* **81**, 3424-3428 (1984).
29. The $B^2S^+ - A^2P$ system of silicon nitride, SiN, S.C. Foster, *J. Mol. Spectrosc.* **106**, 369-375 (1984).
30. Observation of the n_3 fundamental band of HCO^+ , S.C. Foster, A.R.W. McKellar and T.J. Sears, *J. Chem. Phys.* **81**, 578-579 (1984).
31. Rotational analysis of the $A^2P-X^2S^+$ visible band system of boron monoxide, BO, J.A. Coxon, S.C. Foster and S. Naxakis, *J. Mol. Spectrosc.* **105**, 465-479 (1984).
32. Rotational analysis of the A^2P-X^2S band system of the sulfur monoxide cation, SO^+ , J.A. Coxon and S.C. Foster, *J. Mol. Spectrosc.* **103**, 281-294(1984).
33. High resolution Fourier transform spectroscopy of the n_2 and n_3 fundamentals of nitrosyl fluoride, FNO, S.C. Foster and J.W.C. Johns, *J. Mol. Spectrosc.* **103**, 176-186 (1984).
34. An automated high resolution spectrometer with data system, L. Ramaley, S.C. Foster and J.A. Coxon, *Chem. Biomed. and Environ. Instrum.* **12**, 229-252 (1982-3).
35. Deperturbation analysis for the A^2P_1 state of CO^+ : $A, v - X, v$ perturbation matrix elements for $v = 0, 5, 10$ and improved RKR potential for the X^2S^+ state, J.A. Coxon and S.C. Foster, *J. Mol. Spectrosc.* **93**, 117-130 (1982).
36. Radial dependence of spin-orbit and lambda-doubling parameters in the X^2P ground state of hydroxyl, J.A. Coxon and S.C. Foster, *J. Mol. Spectrosc.* **91**, 243-254 (1982).
37. Rotational analysis of hydroxyl vibration-rotation emission bands: Molecular constants for OH X^2P , $6 < v < 10$, J.A. Coxon and S.C. Foster, *Canad. J. Phys.* **60**, 41-48 (1982).
38. Deperturbation of the 4-0 band of the $A^2P - X^2S^+$ system of ^{11}BO , J.A. Coxon and S.C. Foster, *J. Mol. Spectrosc.* **88**, 428-430 (1981).