

Susanna L. Widicus Weaver

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Education and Professional Experience

Emory University	Assistant Professor, 2008 - present Department of Chemistry
University of Illinois at Urbana-Champaign	Postdoctoral Scholar, 2005 - 2008 Departments of Chemistry and Astronomy Professor Benjamin J. McCall, Adviser
California Institute of Technology	Ph.D. in Chemistry, June 2005 <i>Rotational Spectroscopy and Observational Astronomy of Prebiotic Molecules</i> Professor Geoffrey A. Blake, Adviser
Illinois Wesleyan University	B. S. in Chemistry, May 2000 Chemistry research honors; Physics minor Professor Wendy S. Wolbach, Adviser

Teaching and Mentoring Experience

Emory

Instructor, Chemistry 535: Experimental Methods in Physical Chemistry	2008 - present
Research advisor to five undergraduate and three graduate students	2008 - present
Faculty Mentor, Summer Undergraduate Research Program at Emory (SURE)	2009

UIUC

Mentor to five undergraduate and nine graduate research students	2005 - 2008
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Caltech

Teaching assistant in undergraduate physical chemistry	2000 - 2005
Teaching assistant in graduate cosmochemistry and astrochemistry	2000 - 2005
Mentor to three Summer Undergraduate Research Fellowship (SURF) students	2001 - 2004

IWU

Teaching assistant in undergraduate laboratory chemistry and geology	1997 - 2000
Department tutor for chemistry undergraduate courses	1997 - 2000

Professional Service and Affiliations

Member, Graduate Committee, Department of Chemistry, Emory University	2008 - present
Member, Curriculum Committee, Department of Chemistry, Emory University	2008 - present
Member, National Science Foundation Center for Chemical Evolution	2008 - present
Co-organizer, Atlanta Area Chemical Physics Seminar Series	2008 - present
Peer Reviewer, Astrophysical Journal	2006 - present
Book Reviewer, Journal of the American Chemical Society	2007
Grant Proposal Reviewer, U. S. Civilian Research and Development Foundation	2006
Member, Local Organizing Committee, International Astronomical Union Symposium 231: Astrochemistry Throughout the Universe: Recent Successes and Current Challenges	2005
Member, Organizing Committee, Caltech Chemical Physics Seminar Series	2001 - 2004
Member, Phi Kappa Phi Honors Society	2000 - 2008
Member, Sigma Xi Research Society	1999 - 2008
Member, Alpha Lambda Delta Honors Society	1996 - 2008
Member, American Chemical Society	1996 - 2008

Honors and Awards

International Union of Pure and Applied Chemistry Young Chemist Award	2009
Green Bank Telescope Student Fellowship	2004
American Chemical Society Peoria Local Section Collegiate Scholar Award	2000
Illinois Wesleyan University Chemistry Department Mortimer Award	2000
Eugene M. Shoemaker Impact Cratering Award	1999
American Chemical Society Undergraduate Award in Analytical Chemistry	1999
Aileen S. Andrew Foundation Scholarship	1998
CRC Press LLC Freshman Chemistry Achievement Award	1997
Scottish Rites Scholarship	1996 - 2000
Robert C. Byrd Honors Scholarship	1996 - 2000
United Methodist Foundation Annual Conference Scholarship	1996

Refereed Publications

13. Friedel D. N. & Widicus Weaver S. L. "The spatial scale of complex organic molecules in Orion-KL." *Astrophys. J. Suppl.*, in preparation.
12. Widicus Weaver S. L., Woon D. E., Ruscic B., & McCall B. J. "Is HO₂⁺ a detectable interstellar molecule?" *Astrophys. J.*, **697**, 601-609.
11. Garrod R. T., Widicus Weaver S. L., & Herbst E. "Chemistry during the warm-up phase of a hot core: A new grain/gas chemical model." *Astrophys. J.*, **682**, 283-304, 2008.
10. Dypvik H., Wolbach W. S., Shuvalov V., & Widicus Weaver S., "Did the Mjøltnir asteroid impact ignite Barents Sea hydrocarbon source rocks?" *Geological Society of America Special Paper* **437**, 65-72, 2008.

9. Widicus Weaver S. L., Wiczer M. B., Negru B., DiGangi J. P., Tom B. A., & McCall B. J. "Continuous-wave cavity ringdown spectroscopy of the N₂⁺ Meinel System (2,1) band." *J. Mol. Spectrosc.*, **249**, 14-22, 2008.
8. Widicus Weaver S. L., Remijan A. J., McMahon R. J., & McCall B. J. "A search for *ortho*-benzynes (*o*-C₆H₄) in CRL 618." *Astrophys. J.*, **671**, L153-L156, 2007.
7. Widicus Weaver S. L. & Blake G. A. "1,3-Dihydroxyacetone in Sagittarius B2(N-LMH): The first interstellar ketose." *Astrophys. J.* **624**, L33-L36, 2005.
6. Widicus Weaver S. L., Butler R. A. H., Drouin B. J., Petkie D. T., Dyl K. A., De Lucia F. C., & Blake G. A. "Millimeter-wave and vibrational state assignments for the rotational spectrum of glycolaldehyde." *Astrophys. J. Suppl.* **158**, 188-192, 2005.
5. Feldman M. T., Widicus S. L., Blake G. A., Kent D. R., & Goddard W. A. "Aminomethanol water elimination: Theoretical examination." *J. Chem. Phys.* **123**, 034304, 2005.
4. Widicus S. L., Braakman R., Kent D. R., & Blake G. A. "The millimeter and submillimeter rotational spectrum of 1,3-dihydroxyacetone." *J. Mol. Spectrosc.* **224**, 101-106, 2004.
3. Kent D. R., Widicus S. L., Blake G. A., & Goddard W. A. "A theoretical study of the conversion of gas phase methanediol to formaldehyde." *J. Chem. Phys.* **119**, 5117-5120, 2003.
2. Widicus S. L., Drouin B. J., Dyl K. A., & Blake G. A. "Millimeter wavelength measurements of the rotational spectrum of 2-aminoethanol." *J. Mol. Spectrosc.* **217**, 278-281, 2003.
1. Wolbach W. S., Widicus S., & KYTE F. T. "A search for soot from global wildfires in Central Pacific Cretaceous-Tertiary boundary and other extinction and impact horizon sediments." *Astrobiology* **3**, 91-97, 2003.

Conference Proceedings and Other Publications

7. Widicus Weaver S. L., Brumfield B. E., Howard S., Gmachl C., & McCall B. J. "A laboratory and observational search for the vibrational spectrum of C₆₀." *Proc. of: International Conference on Molecules in Space and Laboratory*, 53, 2007.
6. Garrod R. T., Widicus Weaver S. L., & Herbst E. "Complex molecules in star-forming regions - A (more) comprehensive gas-grain model." *Proc. of: International Conference on Molecules in Space and Laboratory*, 99, 2007.
5. Widicus Weaver S. L. & McCall B. J. "Natural Fullerenes and Related Structures of Elemental Carbon" *J. Am. Chem. Soc.* (book review), **129**, 724, 2007.
4. Widicus S. L., Drouin B. J., Dyl K. A., & Blake G. A. "Rotational spectroscopy and hot core observational astronomy of prebiotic molecules." *Proc. of SFChem 2002: Chemistry as a Diagnostic of Star Formation*, 449-451, 2003.
3. Wolbach W. S., Widicus S., & Dypvik H. "A preliminary search for evidence of impact-related burning near the Mjølner Impact Structure, Barents Sea." *Lunar and Planetary Science Conference XXXII*, 1332, 2001.
2. Wolbach W. S., Widicus S., & French B. M. "Carbon-bearing impactites from the Gardnos Impact Structure, Norway: No evidence for soot." *Lunar and Planetary Science Conference XXX*, 1043, 1999.
1. Wolbach W. S., Widicus S., Moecker S. & KYTE F. T. "Is the soot layer at the KT boundary really global?" *Lunar and Planetary Science Conference XXIX*, 1309, 1998.

Invited Seminars

- American Chemical Society Georgia Local Section Meeting, May 12, 2009.
Georgia Institute of Technology Physical Chemistry Colloquium, April 14, 2009.
Georgia State University Astronomy Colloquium, March 24, 2009.
Atlanta Astronomy Club, February 6, 2009.
Meteorite Association of Georgia, January 29, 2009.
University of Georgia Physical Chemistry Colloquium, January 30, 2009.
Emory University Environmental Studies Guest Lecture, January 27, 2009.
Meteorite Association of Georgia, January 25, 2009.
Indiana University Physical Chemistry Colloquium, December 6, 2007.
Emory University Physical Chemistry Colloquium, November 26, 2007.
University of Virginia/NRAO Astronomy Colloquium, November 15, 2007.
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Conference Presentations

45. Widicus Weaver S. L. “New THz spectroscopic tools for tracing prebiotic interstellar chemistry.” *42nd International Union of Applied Chemistry Congress*, 2009.
44. Friedel D. N. & Widicus Weaver S. L. “High resolution $\lambda = 3$ mm studies of organic molecules in Orion-KL.” *American Chemical Society National Meeting 238*, 2009.
43. Widicus Weaver S. L., Sumner M. C., Rice F., Zmuidzinas J. & Blake G. A. “High-sensitivity, broadband spectral line surveys of star forming regions with the CSO.” *64th Ohio State University International Symposium on Molecular Spectroscopy*, 2009.
42. Friedel D. N. & Widicus Weaver S. L. “The origins of ethyl cyanide and dimethyl ether in the interstellar medium.” *64th Ohio State University International Symposium on Molecular Spectroscopy*, 2009.
41. Radhuber M. L., Kroll J. A., Laas J. C., Anderson T. A., Sumner M. C., Rice F., Zmuidzinas J., Blake G. A., & Widicus Weaver S. L. “Submillimeter Spectral Line Survey of Orion (poster).” *Advancing Chemical Understanding through Astronomical Observations, Center for Chemistry of the Universe Workshop*, 2009.
40. Anderson T. A., Kroll J. A., & Widicus Weaver S. L. “Spectroscopy of prebiotic molecules formed from O(¹D) insertion reactions (poster).” *Advancing Chemical Understanding through Astronomical Observations, Center for Chemistry of the Universe Workshop*, 2009.
39. Laas J. C., Radhuber M. L., Garrod, R. T. & Widicus Weaver S. L. “Methanol photodissociation and its role in the complex chemistry of the interstellar medium (poster).” *Advancing Chemical Understanding through Astronomical Observations, Center for Chemistry of the Universe Workshop*, 2009.
38. Carroll P. B. & Widicus Weaver S. L. “Laboratory spectroscopy of ‘interstellar weeds’ and other complex organic molecules (poster).” *Advancing Chemical Understanding through Astronomical Observations, Center for Chemistry of the Universe Workshop*, 2009.
37. Widicus Weaver S. L. “New THz spectroscopic tools for laboratory astrochemistry” *Advancing Chemical Understanding through Astronomical Observations, Center for Chemistry of the Universe Workshop*, 2009.
36. Friedel D. N. & Widicus Weaver S. L. “High resolution observations of Orion-KL: Insight into its chemical complexity.” *Midwest Astrochemistry Meeting*, 2008.

35. Widicus Weaver S. L., Woon D. E., Ruscic B., & McCall B. J. "Is HO_2^+ a detectable interstellar molecule?" *63rd Ohio State University International Symposium on Molecular Spectroscopy*, 2008.
34. Woon D. E., Widicus Weaver S. L., Ruscic B., & McCall B. J. "Ab initio predictions for HO_2^+ : Theoretical guidance for an astronomical detectability study." *63rd Ohio State University International Symposium on Molecular Spectroscopy*, 2008.
33. Friedel D. N. & Widicus Weaver S. L. "Probing the chemical complexity of high mass star forming regions." *63rd Ohio State University International Symposium on Molecular Spectroscopy*, 2008.
32. McGuire, B. A., Widicus Weaver S. L., Wiczer M., Negru B., DiGangi J. P., Tom B. A., & McCall B. J. "Continuous-wave cavity ringdown study of the First Positive Band System of N_2^* ." *63rd Ohio State University International Symposium on Molecular Spectroscopy*, 2008.
31. Widicus Weaver S. L., Negru B., Wiczer M., DiGangi J. P., Tom B. A., & McCall B. J. "Continuous-wave cavity ringdown study of the $^{14}\text{N}_2^+$ Meinel System 2-1 band and the First Positive Band System of N_2^* ." *62nd Ohio State University International Symposium on Molecular Spectroscopy*, 2007.
30. Widicus Weaver S. L., Mills A. A., & McCall B. J. "Cavity Ringdown Spectroscopy of Molecular Ions in a Fast Ion Beam." *62nd Ohio State University International Symposium on Molecular Spectroscopy*, 2007.
29. Widicus Weaver S. L., Brumfield B. E., Mills A. A., Howard S. S., Gmachl C. F., & McCall B. J. "A search for the 8.5 μm Vibrational spectrum of C_{60} in the laboratory and space." *62nd Ohio State University International Symposium on Molecular Spectroscopy*, 2007.
28. Widicus Weaver S. L., Garrod R. T., & Herbst E. "A new model for complex chemistry in hot cores." *62nd Ohio State University International Symposium on Molecular Spectroscopy*, 2007.
27. Widicus Weaver S. L., Remijan A. J., McMahan R. J., & McCall B. J. "A Green Bank Telescope search for *ortho*-benzynes (*o*- C_6H_4) in CRL 618." *62nd Ohio State University International Symposium on Molecular Spectroscopy*, 2007.
26. Brumfield B. E., Widicus Weaver S. L., Howard S. S., Gmachl C. F., & McCall B. J. "Cavity ringdown spectrum of the ν_8 band of methylene bromide using a quantum cascade laser." *62nd Ohio State University International Symposium on Molecular Spectroscopy*, 2007.
25. Mills A. A., Widicus Weaver S. L., & McCall B. J. "Development of a fast ion beam spectrometer for molecular ion spectroscopy." *62nd Ohio State University International Symposium on Molecular Spectroscopy*, 2007.
24. Kuo H.-L., Friedel D. N., Looney L. W., Snyder L. E., Widicus Weaver S. L., & McCall B. J. "Preparation for the astronomical search for protonated methanol." *62nd Ohio State University International Symposium on Molecular Spectroscopy*, 2007.
23. Widicus Weaver S. L., Brumfield B. E., Howard S., Gmachl C., & McCall B. J. "A laboratory and observational search for the vibrational spectrum of C_{60} ." *International Conference on Molecules in Space and Laboratory*, 2007.
22. Garrod R. T., Widicus Weaver S. L., & Herbst E. "Complex molecules in star-forming regions - A (more) comprehensive gas-grain model." *International Conference on Molecules in Space and Laboratory*, 2007.
21. Widicus Weaver S. L., Garrod R. T., Herbst E. "A new model for complex chemistry in hot cores." *Enrico Fermi Institute Mini-Symposium on Interstellar Molecules*, 2007.
20. Negru B., Wiczer M., Widicus Weaver S. L., DiGangi J. P., Tom B. A., & McCall B. J. "Infrared absorption spectroscopy of the $^{14}\text{N}_2^+$ Meinel System 2-1 band (poster)." *American Chemical Society National Meeting 233*, 2007.

19. Widicus Weaver S. L., Mills A. A., & McCall B. J. “Continuous-wave cavity ringdown spectroscopy of molecular ions in a fast ion beam (poster).” *American Chemical Society National Meeting 233*, 2007.
18. Brumfield B. E., Widicus Weaver S. L., Howard S. S., Gmachl C. F., & McCall B. J. “Continuous wave cavity ringdown spectroscopy of C₆₀ at 8.5 μm using a quantum cascade laser and a supersonic expansion source (poster).” *American Chemical Society National Meeting 233*, 2007.
17. Widicus Weaver S. L., Zwier M. C., Ding Y., & McCall B. J. “Laboratory and observational studies of C₆₀ and C₆₀⁺.” *American Chemical Society National Meeting 231*, 2006.
16. Sumner M. C., Blake G. A., Harris A. I., Leong M., Phillips T. G., Rice F., Widicus Weaver S., Yoshida H., & Zmuidzinas J. “Millimeter line surveys of Class 0 protostars and targeted searches for complex organics in high mass star-forming regions (poster).” *Protostars and Planets V*, 2005.
15. Widicus Weaver S. L., Kelley M. J., & Blake G. A. “Complex chemistry on interstellar grains (poster).” *International Astronomical Union Symposium 231: Astrochemistry - Recent Successes and Current Challenges*, 2005.
14. Widicus Weaver S. L. & Blake G. A. “The rotational spectra of the internal rotors methyl glycolate and dimethyl carbonate, structural isomers of the 3C sugars.” *60th Ohio State University International Symposium on Molecular Spectroscopy*, 2005.
13. Widicus Weaver S. L. & Blake G. A. “Reconsidering radical-radical reactions on grain surfaces: A new interstellar chemical model.” *60th Ohio State University International Symposium on Molecular Spectroscopy*, 2005.
12. Braakman R., Drouin B., Widicus S. L. & Blake G. A. “The rotational spectrum and observational study of hydroxyacetone.” *60th Ohio State University International Symposium on Molecular Spectroscopy*, 2005.
11. Widicus S. L. & Blake G. A. “Detection of dihydroxyacetone in Sgr B2(N-LMH): The first 3C interstellar sugar?” *59th Ohio State University International Symposium on Molecular Spectroscopy*, 2004.
10. Widicus S. L., Drouin B. J., & Blake G. A. “The FT-microwave spectrum of dimethyl carbonate.” *59th Ohio State University International Symposium on Molecular Spectroscopy*, 2004.
9. Widicus S. L., Braakman R., & Blake G. A. “3C sugars in interstellar hot cores? Studies of the laboratory rotational spectrum of dihydroxyacetone.” *58th Ohio State University International Symposium on Molecular Spectroscopy*, 2003.
8. Widicus S. L., Dyl K. A., & Blake G. A. “Microwave, millimeter, and submillimeter spectroscopy of prebiotic interstellar molecules (poster).” *50th Western Spectroscopy Association Conference*, 2003.
7. Widicus S. L., Drouin B. J., Dyl K. A., & Blake G. A. “Rotational spectroscopy and hot core observational astronomy of prebiotic molecules (poster).” *SFChem 2002: Chemistry as a Diagnostic of Star Formation*, 2002.
6. Widicus S. L., Drouin B. J., Dyl K. A., & Blake G. A. “Rotational spectroscopy and hot core observational searches for aminoethanol (poster).” *Astrobiology Science Conference*, 2002.
5. Widicus S. L., Drouin B. J., Dyl K. A., & Blake G. A. “The rotational spectrum of amino-ethanol.” *57th Ohio State University International Symposium on Molecular Spectroscopy*, 2002.
4. Wolbach W. S., Widicus S. & Dypvik H. “A preliminary search for evidence of impact-related burning near the Mjølnir Impact Structure, Barents Sea (poster).” *32nd Lunar & Planetary Science Conference*, 2001.
3. Widicus S., Wolbach W. S., & Nelson B. “Chemical techniques for the isolation of elemental carbon from sediments (poster).” *American Chemical Society National Meeting 220*, 2000.

2. Wolbach W. S., Widicus S., & French B. M. “Carbon-bearing impactites from the Gardnos Impact Structure, Norway: No evidence for soot (poster).” *30th Lunar & Planetary Science Conference*, 1999.
1. Wolbach W. S., Widicus S., Moecker S., & Kyte F. T. “Is the soot layer at the KT boundary really global? (poster)” *29th Lunar & Planetary Science Conference*, 1998.