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Education

- 2001 **Cornell University** Ithaca, NY
Ph. D. Astronomy.
Thesis Advisor: James R. Houck
The Wolf-Rayet Phenomenon in the Infrared: Massive Stars Probing Stellar Formation
- 1998 **Cornell University** Ithaca, NY
M. S. Astronomy.
- 1995 **Massachusetts Institute of Technology** Cambridge, MA
S. B. Physics.

Fellowships and Awards

- 2003 Lucas Junior Faculty Research Award
- 1995–1998 National Science Foundation Graduate Research Fellowship, Cornell University
- 1995–present Phi Beta Kappa National Honors Society
- 1995–present Sigma Pi Sigma National Physics Honor Society
- 1993–1995 John V. and Anna G. Wills Memorial Scholar, MIT
- 1994 D. Severance Scholar, MIT
- 1991 National Merit Scholar

Research Interests

Star Formation in the Nearby Universe: Embedded star formation. Mid-infrared signatures of star-formation in the high-redshift context: quantifying variations in the PAH emission spectrum. Metallicity dependence of infrared star-formation tracers. Infrared line diagnostics tracing AGN and very massive stars. Constraining models of deep infrared survey results.

Low-mass AGN and Dust: The impact of AGN on traditional infrared star formation probes, with applications to AGN feedback in early star-forming galaxies.

Massive Stars: Wolf-Rayet, LBV and other massive stars in young starburst populations. Dust production and enhanced nucleosynthesis abundances in massive stellar winds and supernovae.

First Objects: Ly- α searches at extremely high redshifts employing novel instrumentation.

Instrumentation: Near- and mid-infrared wide spectral coverage spectrographs. Wide-field narrow-band and tunable NIR imaging technologies. Integral field infrared spectro-imaging.

Algorithms: Optimal algorithm design for processing and interpreting spectroscopic and spectro-imaging data. Teaching methodology for data interpretation.

Professional Experience

- 2005– **Assistant Astronomer** Steward Observatory
- 2002–2005 **Research Associate** Steward Observatory
Contact: Prof. Robert Kennicutt, Jr.

<i>2002–present</i>	SINGS Spitzer Space Telescope Legacy Project Team member and IRS sub-team technical lead	Steward Observatory
<i>2001–present</i>	Spitzer IRS Instrument Team Team member	Cornell
<i>2000</i>	Cornell Atacama Telescope Project Site Survey Field Studies	Atacama Plateau, Chile
<i>1998–2000</i>	SCORE Instrument Project Project lead for 10 μ m ground-based spectrograph	Cornell
<i>1996–2001</i>	Astronomy Infrared Group Graduate research fellow: infrared instrumentation and studies of massive stars	Cornell
<i>1994–1995</i>	Earth and Planetary Sciences IRTF/UKIRT research	MIT
<i>1994</i>	Wallace Observatory Optical spectrograph development and research	MIT
<i>1993</i>	MPD – CMI, Inc. Infrared breath–alcohol spectrometer design	Owensboro, KY
<i>1992–1994</i>	Center for Space Research Accreting X-ray binary theory and population synthesis undergraduate research	MIT

Professional Activities

<i>2006–</i>	SPICA Bliss Science Working Group member
<i>2005–</i>	Gemini Flamingos-2 Tunable NIR Filter Group
<i>2004</i>	Member, Gemini Ground Layer Adaptive Optics Science Working Group
<i>2004</i>	Proposing Team, ORACLE: The Origins Advanced Cosmic Ly- α Explorer
<i>2004–</i>	Gemini First-Light Detection Steering Group
<i>2003–2005</i>	Member, IRS Interest Group
<i>1998–</i>	Spitzer Science Center IRS Instrument Support Team Consultant
<i>2001–</i>	Referee for numerous papers in ApJ, AJ, etc.
<i>1997–2006</i>	Colloquia and Invited Seminars at Cornell University; IPAC (Caltech); Spitzer Science Center; Steward Observatory; CEA Saclay, France; CESR, Toulouse, France; University of Wyoming; ESO, Garching, Germany; MPIA, Heidelberg, Germany; University of Minnesota; Indiana University; University of Hawaii (IFA); University of Virginia; University of Florida

Teaching, Outreach and Student Research

<i>2003–2006</i>	Steward Observatory Supervising continuing focused research program for undergraduate astronomy majors and BS-level research associate	University of Arizona
<i>2004</i>	Steward Astronomy Camp Involvement with high-school astronomy summer research program	Tucson, AZ
<i>1997–2000</i>	Dept. of Astronomy Teaching: Knight Foundation Writing Topics in Astronomy; Stars, Galaxies & Cosmology	Cornell
<i>1996–1998</i>	Dept. of Astronomy Focus for Teens summer astronomy outreach program	Cornell
<i>1994–1995</i>	Dept. of Physics Junior Physics Lab instructor	MIT

Publications

- The Mid-Infrared Spectrum of Star-Forming Galaxies: Global Properties of PAH Emission*, **Smith, J. D. T.**, Draine, B. T., Dale, D. A., Moustakas, J., Kennicutt, R. C., Jr., Helou, G., Armus, L., Roussel, H., Sheth, K., Bendo, G.J., Buckalew, B.A., Calzetti, D., Engelbracht, C. W., Gordon, K.D., Hollenbach, D. J., Li, A., Malhotra, S., Murphy, E. J. & Walter, F., *ApJ* (2006), accepted
- An Ultraviolet-to-Radio Broadband Spectral Atlas of Nearby Galaxies*, Dale, D. A., Gil de Paz, A., Gordon, K. D., Hanson, H. M., Armus, L., Bendo, G. J., Bianchi, L., Block, M., Boissier, S., Boselli, A., Buckalew, B. A., Buat, V., Burgarella, D., Calzetti, D., Cannon, J. M., Engelbracht, C. W., Helou, G., Hollenbach, D. J., Jarrett, T. H., Kennicutt, R. C., Leitherer, C., Li, A., Madore, B. F., Meyer, M. J., Murphy, E. J., Regan, M. W., Roussel, H., **Smith, J. D. T.**, Sosey, M. L., Thilker, D. A., & Walter, F., *ApJ* (2006), accepted
- Discovery of a Young Substellar Companion in Chamaeleon*, Luhman, K. L., Wilson, J. C., Brandner, W., Skrutskie, M. F., Nelson, M. J., **Smith, J. D.**, Peterson, D. E., Cushing, M. C., Young, E., *ApJ* **649** 894 (2006)
- The Effect of Star Formation on the Far-Infrared–Radio Correlation within Galaxies*, Murphy, E. J., Helou, G., Braun, R., Kenney, J. D. P., Armus, L., Calzetti, D., Draine, B. T., Kennicutt, R. C., Jr., Roussel, H., Walter, F., Bendo, G. J., Buckalew, B., Dale, D. A., Engelbracht, C. W., **Smith, J. D. T.**, Thornley, M. D., *ApJL* (2006), accepted
- Far-infrared characterization of an ultra-luminous starburst associated with a massively-accreting black hole at $z=1.15$* , Le Floch, E., Willmer, C. N. A., Noeske, K., Konidaris, N. P., Laird, E. S., Koo, D. C., Nandra, K., Bundy, K., Salim, S., Maiolino, R., Conselice, C. J., Lotz, J. M., Papovich, C., **Smith, J. D.**, Bai, L., Coil, A. L., Barmby, P., Ashby, M. L. N., Huang, J. -S., Blaylock, M., Rieke, G., Newman, J. A., Ivison, R., Chapman, S., Dole, H., Egami, E. & Elbaz, D., *ApJL* (2006), accepted
- The Spectral Energy Distribution of Dust Emission in the Edge-on Spiral Galaxy NGC 4631 as seen with Spitzer and JCMT*, Bendo, G. J., Dale, D. A., Draine, B. T., Engelbracht, C. W., K., Robert C., Jr., Calzetti, D., Gordon, K. D., Helou, G., Hollenbach, D., Li, A., Murphy, E. J., Prescott, M. K. M. & **Smith, J. D. T.**, *ApJ* (2006), accepted
- The opaque nascent starburst in NGC 1377: Spitzer SINGS observations*, Roussel, H., Helou, G., Kennicutt, R., **Smith, J. D. T.**, Moustakas, J., Draine, B., Hollenbach, D., Spoon, H., Walter, F., Rieke, G., Sheth, K., Armus, L., Dale, D., Bendo, G., Gordon, K., Engelbracht, C., Meyer, M., Regan, M. & Murphy, E., *ApJ* **646** 841 (2006)
- Warm Dust and Variable PAH Emission in the Dwarf Starburst Galaxy NGC 1705*, Cannon, J. M, **Smith, J. D. T.**, & Walter, F., Bendo, G., Calzetti, D, Dale, D. Draine, B., Engelbracht, C, Gordon, K., Helou, G., Kennicutt, R., Leitherer, C., Armus, L, Buckalew, B., Hollenbach, D., Jarrett, T., Li, A., Meyer, M. Murphy, E., Regan, M., Rieke, G., Rieke, M, Roussel, H., Sheth, K. & Thornley, M., *ApJ*, **647** 293 (2006)
- Mid-Infrared Diagnostics of Nuclear and Extra-Nuclear Regions in Nearby Galaxies*, Dale, D. A, **Smith, J. D. T.**, Armus, L., Buckalew, B., Helou, G., Kennicutt, R., Moustakas, J., Roussel, H., Sheth, K., Bendo, G., Calzetti, D., Draine, B., Engelbracht, C., Gordon, K., Hollenbach, D., Jarrett, T., Kewley, L, Leitherer, C., Malhotra, S., Murphy, E., & Walter, F., *ApJ* **646** 161 (2006)
- Spatially Resolved Spitzer Spectroscopy of the Starburst Nucleus in NGC 5253*, Beirao, P, Brandl, B., Devost, D, **Smith, J. D.**, Hao, L., & Houck, J., *ApJL* **643** 1 (2006)
- Extended Mid-Infrared Aromatic Feature Emission in M82*, Engelbracht, C. W., Kundurthy, P., Gordon, K. D., Rieke, G. H., Kennicutt, R. C., **Smith, J.-D. T.**, Regan, M. W., Makovoz, D., Sosey, M., Draine, B. T., Helou, G., Armus, L., Calzetti, D., Meyer, M., Bendo, G. J., Walter, F., Hollenbach, D., Cannon, J. M., Murphy, E. J., Dale, D. A., Buckalew, B. A. & Sheth, K., *ApJL* **642** 127 (2006)
- Discovery of a 500 pc Shell in the Nucleus of Centaurus A*, Quillen, A., Bland-Hawthorn, J., Brookes, M., Werner, M., **Smith, J. D. T.**, Stern, D., Keene, J, & Lawrence, C., *ApJL* **641** 29 (2006)
- A MMT/Hectospec Redshift Survey of 24 Micron Sources in the Spitzer First Look Survey*, Papovich, C., Cool, R., Eisenstein, D, Le Floch, E., Fan, X., Kennicutt, R., **Smith, J. D.**, Rieke, G., & Vestergaard, M. *AJ* **132** 231 (2006)

- The Radial Distribution of the ISM in Disk Galaxies: Evidence for Secular Evolution*, Regan, M., Thornley, M., Vogel, S., Sheth, K., Draine, B., Hollenbach, D., Meyer, M., Dale, D., Engelbracht, C., Kennicutt, R., Armus, L., Buckalew, B., Calzetti, D., Gordon, K., Helou, G., Leitherer, C., Malhotra, S., Rieke, G., Rieke, M., **Smith, J. D. T.**, *ApJ* (2006), accepted
- Spitzer and JCMT Observations of the Active Galactic Nucleus in the Sombrero Galaxy (NGC 4594)*, Bendo, G., Buckalew, B., Dale, D., Draine, B., Joseph, R., Kennicutt, R., Sheth, K., **Smith, J. D. T.**, Walter, F., Calzetti, D., Cannon, J., Engelbracht, C., Gordon, K., Helou, G., Hollenbach, D., Murphy, E., & Roussel, H., *ApJ* **645** 134 (2006)
- An Ultraviolet to Mid-Infrared Study of the Physical and Wind Properties of HD 164270 (WC9) and Comparison to BD+30 3639 ([WC9])*, Crowther, P., Morris, P., **Smith, J. D.**, *ApJ*, **636** 1033 (2006)
- The $1 < z < 5$ Infrared Luminosity Function of Type I Quasars*, Brown, M. J. I., Brand, K., Dey, A., Jannuzi, B. T., Cool, R., Le Floch, E., Kochanek, C. S., Armus, L., Bian, C., Higdon, J., Higdon, S., Papovich, C., Rieke, G., Rieke, M., **Smith, J. D.**, Soifer, B. T. & Weedman, D., *ApJ*, **638** 88 (2005)
- An Initial Look at the Far Infrared-Radio Correlation within Nearby Star-forming Galaxies using the Spitzer Space Telescope*, Murphy, E. J., Braun, R., Helou, G., Armus, L., Kenney, J. D. P., Gordon, K. D., Bendo, G. J., Dale, D. A., Walter, F., Oosterloo, T. A., Kennicutt, R. C., Calzetti, D., Cannon, J. M., Draine, B. T., Engelbracht, C. W., Hollenbach, D. J., Jarrett, T. H., Kewley, L. J., Leitherer, C., Li, A., Meyer, M. J., Regan, M. W., Rieke, G. H., Rieke, M. J., Roussel, H., Sheth, K., **Smith, J. D. T.**, Thornley, M. D. *ApJ*, **638** 157 (2005)
- Infrared Spectral Energy Distributions of Nearby Galaxies*, Dale, D. A., Bendo, G. J., Engelbracht, C. W., Gordon, K. D., Regan, M. W., Armus, L., Cannon, J. M., Calzetti, D., Draine, B. T., Helou, G., Joseph, R. D., Kennicutt, R. C., Li, A., Murphy, E. J., Roussel, H., Walter, F., Hanson, H. M., Hollenbach, D. J., Jarrett, T. H., Kewley, L. J., Lamanna, C. A., Leitherer, C., Meyer, M. J., Rieke, G. H., Rieke, M. J., Sheth, K., **Smith, J. D. T.**, & Thornley, M. D. *ApJ*, **633** 857 (2005)
- Star Formation in NGC5194 (M51a): The Panchromatic View from GALEX to Spitzer*, Calzetti, D., Kennicutt, R. C., Bianchi, L., Thilker, D. A., Dale, D. A., Engelbracht, C. W., Leitherer, C., Meyer, M. J., Sosey, M. L., Mutchler, M., Regan, M. W., Thornley, M. D., Armus, L., Bendo, G. J., Boissier, S., Boselli, A., Draine, B. T., Gordon, K. D., Helou, G., Hollenbach, D. J., Kewley, L., Madore, B. F., Martin, D. C., Murphy, E. J., Rieke, G. H., Rieke, M. J., Roussel, H., Sheth, K., **Smith, J. D.**, Walter, F., White, B. A., Yi, S., Scoville, N. Z., Polletta, M., & Lindler, D. *ApJ*, **633** 871 (2005)
- The Neon Abundance of Galactic Wolf-Rayet Stars*, **Smith, J. D. T.** & Houck, J. R. *ApJ*, **622** 1044 (2005)
- Mid-Infrared IRS Spectroscopy of NGC 7331: A First Look at the SINGS Legacy*, **Smith, J. D. T.**, Dale, D. A., Armus, L., Draine, B. T., Hollenbach, D. J., Roussel, H., Helou, G., Kennicutt, R. C., Li, A., Bendo, G. J., Calzetti, D., Engelbracht, C. W., Gordon, K. D., Jarrett, T. H., Kewley, L., Leitherer, C., Malhotra, S., Meyer, M. J., Murphy, E. J., Regan, M. W., Rieke, G. H., Rieke, M. J., Thornley, M. D., Walter, F., & Wolfire, M. G. *ApJS Spitzer Special Issue*, **154** 199 (2004)
- Spatially Resolved Ultraviolet, H α , Infrared, and Radio Star Formation in M81*, Gordon, K. D., Pérez-González, P. G., Misselt, K. A., Murphy, E. J., Bendo, G. J., Walter, F., Thornley, M. D., Kennicutt, R. C., Rieke, G. H., Engelbracht, C. W., **Smith, J.-D. T.**, Alonso-Herrero, A., Appleton, P. N., Calzetti, D., Dale, D. A., Draine, B. T., Frayer, D. T., Helou, G., Hinz, J. L., Hines, D. C., Kelly, D. M., Morrison, J. E., Muzerolle, J., Regan, M. W., Stansberry, J. A., Stolovy, S. R., Storrie-Lombardi, L. J., Su, K. Y. L., & Young, E. T. *ApJS Spitzer Special Issue*, **154** 215 (2004)
- Spitzer Infrared Nearby Galaxies Survey (SINGS) Imaging of NGC 7331: A Panchromatic View of a Ringed Galaxy*, Regan, M. W., Thornley, M. D., Bendo, G. J., Draine, B. T., Li, A., Dale, D. A., Engelbracht, C. W., Kennicutt, R. C., Armus, L., Calzetti, D., Gordon, K. D., Helou, G., Hollenbach, D. J., Jarrett, T. H., Kewley, L. J., Leitherer, C., Malhotra, S., Meyer, M., Misselt, K. A., Morrison, J. E., Murphy, E. J., Muzerolle, J., Rieke, G. H., Rieke, M. J., Roussel, H., **Smith, J. D. T.**, & Walter, F. *ApJS Spitzer Special Issue*, **154** 204 (2004)
- Infrared Observations of Candidate LBV 1806-20 & Nearby Cluster Stars*, Eikenberry, S. S., Mathews, K., Lavine, J., Garske, J., Hu, D., Jackson, M. A., Patel, S. G., Barry, D. J., Houck, J. R., Wilson, J. C., Corbel, S. & **Smith, J. D. T.** *ApJ*, **616** 506 (2004)

- The SMART Data Analysis Package for the Infrared Spectrograph on the Spitzer Space Telescope*, Higdon, S. J. U., Devost, D., Higdon, J. L., Brandl, B. R., Houck, J. R., Hall, P., Barry, D., Charmandaris, V., **Smith, J. D. T.**, Sloan, G. C., & Green, J. *PASP*, **116** 975 (2004)
- Searching for Star Formation Beyond Reionization*, Barton, E. J., Davé, R., **Smith, J. D. T.**, Papovich, C., Hernquist, L., & Springel, V. *ApJL*, **604** L1 (2004)
- SINGS: The SIRTf Nearby Galaxies Survey*, Kennicutt, R. C., Armus, L., Bendo, G., Calzetti, D., Dale, D. A., Draine, B. T., Engelbracht, C. W., Gordon, K. D., Grauer, A. D., Helou, G., Hollenbach, D. J., Jarrett, T. H., Kewley, L. J., Leitherer, C., Li, A., Malhotra, S., Regan, M. W., Rieke, G. H., Rieke, M. J., Roussel, H., **Smith, J. D. T.**, Thornley, M. D. & Walter, F. *PASP*, **115** 928 (2003)
- An Atlas of Mid-Infrared Spectra of Proto-Planetary and Planetary Nebulae*, Rinehart, S. A., Houck, J. R., **Smith, J. D. T.** & Wilson, J. C. *MNRAS*, **336** 66 (2002)
- A Mid-Infrared Spectral Survey of Galactic Wolf-Rayet Stars*, **Smith, J. D. T.** & Houck, J. R. *AJ*, **121** 2115 (2001)
- The Optical/Infrared Astronomical Quality of High Atacama Sites. II. Infrared Characteristics*, Giovanelli, R., Darling, J., Henderson, C., Hoffman, W., Barry, D., Cordes, J., Eikenberry, S., Gull, G., Keller, L., **Smith, J. D.** & Stacey, G., *PASP*, **113** 803 (2001)
- The Optical/Infrared Astronomical Quality of High Atacama Sites. I. Preliminary Results of Optical Seeing*, Giovanelli, R., Darling, J., Sarazin, M., Yu, J., Harvey, P., Henderson, C., Hoffman, W., Keller, L., Barry, D., Cordes, J., Eikenberry, S., Gull, G., Harrington, J., **Smith, J. D.**, Stacey, G. & Swain, M., *PASP*, **113** 789 (2001)
- CORMASS: A Compact and Efficient NIR Spectrograph for Studying Low-Mass Objects*, Wilson, J. C., Skrutskie, M. F., Colonna, M. R., Enos, A. T., **Smith, J. D.**, Henderson, C. P., Gizis, J. E., Monet, D. G. & Houck, J. R. *PASP*, **113** 227 (2001)
- Discovery of a Bright Field Methane (T-Type) Brown Dwarf by 2MASS*, Burgasser, A. J., Wilson, J. C., Kirkpatrick, J. D., Skrutskie, M. F., Colonna, M. R., Enos, A. T., **Smith, J. D.**, Henderson, C. P., Gizis, J. E., Brown, M. E. & Houck, J. R. *AJ*, **120** 1100 (2000)
- Mid-Infrared Spectra of Be Stars*, Rinehart, S. A., Houck, J. R. & **Smith, J. D.** *AJ*, **118** 2974 (1999)
- SCORE: A Mid-Infrared Echelle Format Spectrograph with No Moving Parts*, Van Cleve, J., Gull, G. E., Rinehart, S. A., **Smith, J. D.**, Wilson, J. C., Houck, J. R., Colonna, M., Brown, R. & Blalock, W. *PASP*, **110** 1479–1486 (1998)
- Formation and Evolution of Luminous Supersoft X-Ray Sources*, Rappaport, S., di Stefano, R. & **Smith, J. D.** *ApJ*, **426** 692 (1994)

Selected Conference Proceedings

- The SINGS Spectroscopic Legacy: PAH Variations*, **Smith, J. D.** & Kennicutt, R. C., et al. *The Spitzer Space Telescope: New Views of the Cosmos* (2005)
- Early Results from SINGS Spitzer Spectroscopy*, **Smith, J. D.** & Kennicutt, R. C. *Starbursts — from 30 Doradus to Lyman Break Galaxies* (2004)
- New Neon-Abundance Results in Galactic WN and WC Stars*, **Smith, J. D.** & Houck, J. R. *Proc. IAU Symp. 212: A Massive Star Odyssey: From Main Sequence to Supernova*, **212** 234 (2003)
- Galactic Wolf-Rayet Stars in the Mid-Infrared*, **Smith, J. D.** & Houck, J. R. *Proc. IAU Symp. 193: Wolf-Rayet Phenomena in Massive Stars and Starburst Galaxies*, **193** 107+ (1999)
- SCORE 1+: Enhancing a Unique Mid-Infrared Spectrograph*, **Smith, J. D. T.**, Rinehart, S. A., Houck, J. R., Van Cleve, J. E., Wilson, J. C., Colonna, M., Schoenwald, J., Pirger, B. & Blacken, C. *Proc. SPIE*, **3354** 798–809 (1998)
- Adaptive Optics High Spectral Resolution Imaging of the Planetary Nebula IC 418*, Brandl, B., **Smith, J. D.**, Wilson, J., Houck, J. & Eisenhauer, F. *Proc. SPIE*, **3136** 561–568 (1997)

Work in Progress

Searching for hidden Wolf-Rayet stars in the Galactic Plane – 155 new WR stars, Hadfield, L. J., Van Dyk S.D., Morriw, P.W., **Smith, J.D.**, & Marston, A. P., *MNRAS* (2006), submitted

Galactic Wolf-Rayet Stars in the Near-Infrared, Van Dyk, S. V, Morris, P. W., & **Smith, J. D. T.**, et al. *AJ* (2005), submitted

Wolf-Rayet Stars and the Distance to the Galactic Star Cluster Cl 1806-20, LaVine, J., Eikenberry, S. & **Smith, J. D. T.** *ApJ* (2005), submitted

The PAH Emission Spectrum in Low-Metallicity Starburst Galaxies, Engelbracht, C., **Smith, J. D. T.**, Gordon, K. D., et al. *ApJ* (2006), in preparation

Searching for Galactic Wolf-Rayet Stars with 2MASS, Van Dyk, S. V & **Smith, J. D. T.** (2006), in preparation

Spectral Mapping Reconstruction of Extended Sources in the Infrared, **Smith, J. D. T.** et al. (2006), in preparation

Freshly Formed Dust in the Cassiopeia A Supernova Remnant as Revealed by Spitzer, Rho, J., Kozasa, T., Reach, W. T., Rudnick, L., **Smith, J.D.**, Gomez, H., Ennis, & J. A., *ApJ*, in preparation.