

## Curriculum Vitae: Bruce T. Draine

- Address:** 108 Peyton Hall, Princeton University, Princeton, NJ 08544-1001  
tel: (609) 258-3810 email: draine@astro.princeton.edu
- Born:** Calcutta, India; 1947 November 19
- Citizenship:** U.S.A.
- Degrees:** B.A., physics (high honors), Swarthmore College (1969)  
M.Sc., experimental physics, Cornell University (1975)  
Ph.D., theoretical physics, Cornell University (1978)
- Positions:** U.S. Peace Corps Volunteer, Nkwatia-Kwahu, Ghana (1969-71)  
graduate student, Physics Dept., Cornell University (1971-77)  
Center Fellow, Center for Astrophysics, Harvard Univ. (1977-79)  
Member, Institute for Advanced Study (1979-80)  
Long-term Member, Institute for Advanced Study (1980-82)  
Assistant Professor, Dept. of Astrophysical Sciences, Princeton Univ. (1981-84).  
Associate Professor, Dept. of Astrophysical Sciences, Princeton Univ. (1984-90).  
Professor, Dept. of Astrophysical Sciences, Princeton Univ. (1990– )  
Chair, Dept. of Astrophysical Sciences (1996–98)  
Director, Princeton University Observatory (1996–98)  
sabbatical leave, Arcetri Observatory, Florence (fall 1998)  
W.M. Keck Distinguished Visiting Prof., Inst. for Advanced Study (fall 2004)  
sabbatical leave, Arcetri Observatory, Florence (fall 2005)  
Oort Professorship, Leiden University, Leiden (spring 2009)  
sabbatical leave, Arcetri Observatory, Florence (fall 2012)
- Awards:** Alfred P. Sloan Research Fellowship (1982-86)  
Dannie Heineman Prize for Astrophysics (2004)  
Elected to U.S. National Academy of Sciences (2007)  
Oort Lecturer, Leiden University (April 2009)  
Rossi Lectures, Arcetri Observatory (November 2012)  
Cecilia Payne-Gaposchkin Lecturer, Harvard University (April 2014)  
Thomas Gold Lecturer, Cornell University (April 2019)  
Fellow of the American Astronomical Society (2020)

### Professional Associations:

American Astronomical Society  
International Astronomical Union

**Publications:** 2 books, 300+ articles; 42000+ citations

### National and International Teams and Committees (2010- ):

co-I, Key Insights on Nearby Galaxies: A Far-Infrared Survey with Herschel  
(KINGFISH), Herschel Space Observatory Key Program, 2008–2017  
Astro 2010 Survey: Galactic Neighborhood Science Frontier Panel, 2009–2010  
Annual Review of Astronomy & Astrophysics Editorial Committee, 2015-2019  
Breakthrough Starshot Advisory Committee, 2016-  
Astro 2020 Survey: Interstellar Medium, Star, and Planet Formation Panel, 2019–2020

**Field of Research:** Theoretical Astrophysics

*Heating, Cooling, and Chemistry of Interstellar Gas*

*Interstellar Gas Dynamics; Shock Waves*

*Radiative Transfer*

*Optics of Small Particles*

*Methods for Computing Light Scattering from Arbitrarily-Shaped Targets*

*Physics of Interstellar Grains*

*Nucleation and Growth of Circumstellar and Interstellar Grains*

**Bibliography: Bruce T. Draine** (as of 2021.11.10)ORCID: <http://orcid.org/0000-0002-0846-936X>**Books:**

- Draine, B.T.** 2011, *Physics of the Interstellar and Intergalactic Medium*. (Princeton: Princeton University Press) 568 pp. ISBN 978-0-691-12213-7
- Blain, A, Combes, F., & **Draine, B.T.** 2004, *The Cold Universe*, Saas-Fee Advanced Course 32 (2002). Swiss Society for Astrophysics and Astronomy. Edited by D. Pfenninger and Y. Revaz. (Berlin: Springer) 308 pp. ISBN 3-540-40838-X

**Research Articles:**

- Draine, B.T.** 2021, “On Far-Infrared and Submm Circular Polarization”, submitted to *Ap. J.*, 2021.08.20 resubmitted 2021.11.07
- Draine, B.T.** & Hensley, B.S. 2021c, “Using the Starlight Polarization Efficiency Integral to Constrain Shapes and Porosities of Interstellar Grains”, *Ap. J.*, **919**:65. doi:10.3847/1538-4357/ac0050
- Draine, B.T.**, Li, A., Hensley, B.S., Hunt, L.K., Sandstrom, K., & Smith, J.-D.T. 2021, “Excitation of Polycyclic Aromatic Hydrocarbon (PAH) Emission: Dependence on Starlight Spectrum, Intensity, PAH Size Distribution, and PAH Ionization”, *Ap. J.*, **917**:3. doi:10.3847/1538-4357/abff51  
Online data: <https://doi.org/10.7910/DVN/LPUHIQ>
- Chastenet, J., Sandstrom, K., Chiang, I.-D., Hensley, B.S., **Draine, B.T.**, Gordon, K.D., Koch, E.W., et al. 2021, “Benchmarking Dust Emission Models in M101”, *Ap. J.*, 912:103. doi:10.3847/1538-4357/abe942
- Draine, B.T.** & Hensley, B.S. 2021b, “On the Shapes of Interstellar Grains: Modeling Extinction and Polarization by Spheroids and Continuous Distributions of Ellipsoids”, *Ap. J.*, 910:47. doi:10.3847/1538-4357/abddb7
- Draine, B.T.** & Hensley, B.S. 2021a, “The Dielectric Function of ‘Astrodust’ and Predictions for Polarization in the 3.4 $\mu$ m and 10 $\mu$ m Features”, *Ap. J.*, 909:94. doi:10.3847/1538-4357/abd6c6. Online data: <https://doi.org/10.34770/9ypp-dv78>
- Hensley, B.S., & **Draine, B.T.** 2021, “Observational Constraints on the Physical Properties of Interstellar Dust in the Post-*Planck* Era”, *Ap. J.*, 906:73. doi:10.3847/1538-4357/abc8f1
- Murphy, E.J., Hensley, B.S., Linden, S.T., **Draine, B.T.**, Dong, D., Momjian, E., Helou, G., & Evans, A.S. 2020, “Where’s the Dust?: The Deepening Anomaly of Microwave Emission in NGC 4725 B”, *Ap. J. Lett.*, 905, L23. doi:10.3847/2041-8213/abc7c8
- Moseley, E.R., **Draine, B.T.**, Tomida, K., & Stone, J.M. 2021, “Turbulent dissipation, CH<sup>+</sup> abundance, H<sub>2</sub> line luminosities, and polarization in the cold neutral medium”, *M.N.R.A.S.*, 500, 3290. doi:10.1093/mnras/staa3384
- Hensley, B.S. & **Draine, B.T.** 2020, “Detection of PAH Absorption and Determination of the Mid-Infrared Diffuse Interstellar Extinction Curve from the Sightline Toward Cyg OB2-12”, *Ap. J.*, 895:38. doi:10.3847/1538-4357/ab8cc3
- Aniano, G., **Draine, B.T.**, Hunt, L.K., Sandstrom, K., Calzetti, D., Kennicutt, R.C., Dale, D., et al. 2020, “Modeling Dust and Starlight in Galaxies Observed by *Spitzer* and *Herschel*: The KINGFISH Sample”, *Ap. J.*, 889:150. doi:10.3847/1538-4357/ab5fdb. Online data: <https://doi.org/10.34770/kyb8-bw61>
- Crocker, A.F., Pellegrini, E., Smith, J.-D.T., **Draine, B.T.**, Wilson, C.D., Wolfire, M., Armus, L., et al. 2019, “[CI](1-0) and [CI](2-1) in Resolved Local Galaxies”, *Ap. J.*, 887:105. doi:10.3847/1538-4357/ab4196
- Sutter, J., Dale, D.A., Croxall, K.V., Pellegrini, E.W., Smith, J.D.T., Appleton, P.N., Beirão, P., et al. 2019, “Using [CII]158 $\mu$ m Emission from Isolated ISM Phases as a Star Formation Rate Indicator”, *Ap. J.*, **886**:60. doi:10.3847/1538-4357/ab4da5
- Chastenet, J., Sandstrom, K., Chiang, I.-D., Leroy, A.K., Utomu, D., Bot, C., Gordon, K.D., et al. 2019, “The Polycyclic Aromatic Hydrocarbon Fraction at  $\sim 10$  pc scale in the Magellanic Clouds”, *Ap. J.*, 876:62. doi:10.3847/1538-4357/ab16cf

- Hunt, L.K., De Looze, I., Boquien, M., Nikutta, R., Rossi, A., Bianchi, S., Dale, D.A., et al. 2019, “Comprehensive comparison of models for spectral energy distributions from 0.1 micron to 1 mm of nearby star-forming galaxies”, *A&A*, **621**, A51. doi:10.1051/0004-6361/201834212
- Draine, B.T.** & Kreisch, C.D. 2018, “Electron Energy Distributions in H II Regions and Planetary Nebulae:  $\kappa$ -Distributions Do Not Apply”, *Ap. J.*, **862**:30. doi:10.3847/1538-4357/aac891
- Draine, B.T.** & Miralda-Escudé, J. 2018, “Absorption by Spinning Dust: a Contaminant for High-Redshift 21 cm Observations”, *Ap. J. Lett.*, **858**:L10. doi:10.3847/2041-8213/aac08a
- Smercina, A., Smith, J.D.T., Dale, D.A., French, K.D., Croxall, K.V., Zhukovksa, S., Togi, A., et al. 2018, “After the Fall: The Dust and Gas in E+A Post-Starburst Galaxies”, *Ap. J.*, **855**:51. doi:10.3847/1538-4357/aaafcd
- Dickinson, C., Ali-Haïmoud, Y., Barr, A., Battistelli, E.S., Bell, A., Bernstein, L., Casassus, S., et al. 2018, “The State-of-Play of Anomalous Microwave Emission (AME) Research”, *New Astron. Revs.*, **80**, 1. doi:10.1016/j.newar.2018.02.001
- Calzetti, D., Wilson, G.W., **Draine, B.T.**, Roussel, H., Johnson, K.E., Heyer, M.H., Wall, W.F., et al. 2018, “Spatially Resolved Dust, Gas and Star Formation in the Dwarf Magellanic Irregular NGC 4449”, *Ap. J.*, **852**:25. doi:10.3847/1538-4357/aaale2
- Croxall, K.V., Smith, J.D., Pellegrini, E., Groves, B., Bolatto, A., Herrera-Camus, R., Sandstrom, K.M., et al. 2017, “The Origins of [CII] Emission in Local Star-Forming Galaxies”, *Ap. J.*, **845**:96. doi:10.3847/1538-4357/aa8035
- Kapala, M.J., Groves, B., Sandstrom, K., Jarrett, T., da Cunha, E., Croxall, K., Dalcanton, J., et al. 2017, “The Survey of Lines in M 31 (SLIM): The Drivers of the [CII]/TIR Variation”, *Ap. J.*, **842**:128.. doi:10.3847/1538-4357/aa7265
- Hensley, B.S., & **Draine, B.T.** 2017b, “Modeling the Anomalous Microwave Emission with Spinning Nanoparticles: No PAHs Required”, *Ap. J.*, **836**:179. doi:10.3847/1538-4357/aa5c37
- Herrera-Camus, R., Bolatto, A., Wolfire, M., Ostriker, E., **Draine, B.**, Leroy, A., Sandstrom, K., et al. 2017, “Thermal Pressure in the Cold Neutral Medium of Nearby Galaxies”, *Ap. J.*, **835**:201. doi:10.3847/1538-4357/835/2/201
- Hensley, B.S. & **Draine, B.T.** 2017a, “Thermodynamics and Charging of Interstellar Iron Nanoparticles”, *Ap. J.*, **834**:134. doi:10.3847/1538-4357/834/2/134
- Smith, J.D.T., Croxall, K., **Draine, B.**, De Looze, I., Sandstrom, K., Armus, L., Bolatto, A., et al. 2017, “The Spatially Resolved [CII] Cooling Line Deficit in Galaxies”, *Ap. J.*, **834**:5. doi:10.3847/1538-4357/834/1/5
- Seon, K.-I., & **Draine, B.T.** 2016, “Radiative Transfer Model of Dust Attenuation Curves in Clumpy Galactic Environments”, *Ap. J.*, **833**:201. doi:10.3847/1538-4357/833/2/201
- Draine, B.T.** 2016, “Graphite Revisited”, *Ap. J.*, **831**:109. doi:10.3847/0004-637X/831/1/109. Online data: <http://arks.princeton.edu/ark:/88435/dsp01nc580q118>
- Draine, B.T.** & Hensley, B.S. 2016, “Quantum Suppression of Alignment in Ultrasmall Grains: Microwave Emission from Spinning Dust Will Be Negligibly Polarized”, *Ap. J.*, **831**:59. doi:10.3847/0004-637X/831/1/59
- Hensley, B.S., **Draine, B.T.**, & Meisner, A. 2016, “A Case Against Spinning PAHs as the Source of the Anomalous Microwave Emission”, *Ap. J.*, **827**:45. doi:10.3847/0004-637X/827/1/45
- Herrera-Camus, R., Bolatto, A., Smith, J.D., **Draine, B.**, Pellegrini, E., Wolfire, M., Croxall, K., et al. 2016, “The Ionized Gas in Nearby Galaxies as Traced by the [NII]122 and 205 $\mu$ m Transitions”, *Ap. J.*, **826**:175. doi:10.3847/0004-637X/826/2/175
- Boquien, M., Kennicutt, R., Calzetti, D., Dale, D., Galametz, M., Sauvage, M., Croxall, K., et al. 2016, “Toward universal hybrid star formation rate estimators”, *Astr. Astrophys.*, **591**, A6. doi:10.1051/0004-6361/201527759
- Silsbee, K., & **Draine, B.T.** 2016, “Radiation Pressure on Fluffy Submicron-sized Grains”, *Ap. J.*, **818**:133. doi:10.3847/0004-637X/818/2/133
- Hoffman, J., & **Draine, B.T.** 2016, “Accurate Modeling of X-ray Extinction by Interstellar Grains”, *Ap. J.*,

- 817**:139. doi:10.3847/0004-637X/817/2/139.  
 N.B.: The General Geometry Anomalous Diffraction Theory code (GGADT), written in Fortran 95, has been made publicly available at <http://ggadt.org>.
- Planck Collaboration, Ade, P.A.R., Aghanim, N., Alves, M.I.R., Aniano, G., Arnaud, M., Ashdown, M., et al. 2016, “Planck Intermediate Results. XXIX. All-sky dust modelling with Planck, IRAS, and WISE observations”, *Astr. Astrophys.*, **586**, A132. doi:10.1051/0004-6361/201424945
- Beirão, P., Armus, L., Lehnert, M.D., Guillard, P., Heckman, T., **Draine, B.**, Hollenbach, D., et al. 2015, “Spatially Resolved *Spitzer-IRS* Spectral Maps of the Superwind in M82”, *M.N.R.A.S.*, **451**, 2640-2655. doi:10.1093/mnras/stv1101
- Hunt, L.K., **Draine, B.T.**, Bianchi, S., Gordon, K.D., Aniano, G., Calzetti, D., Dale, D.A., et al. 2015, “Cool dust heating and temperature mixing in nearby star-forming galaxies”, *Astr. Astrophys.*, **576**, A33. doi:10.1051/0004-6361/201424734
- van der Laan, T.P.R., Armus, L., Beirao, P., Sandstrom, K., Groves, B., Schinnerer, E., **Draine, B.T.**, et al. 2015, “Heating and cooling of the neutral ISM in the NGC 4736 circumnuclear ring”, *Astr. Astrophys.*, **575**, 83. doi:10.1051/0004-6361/201425402
- Poteet, C.A., Whittet, D.C.B., & **Draine, B.T.** 2015, “The Composition of Interstellar Grains toward  $\zeta$  Ophiuchi: Constraining the Elemental Budget near the Diffuse-Dense Cloud Transition”, *Ap. J.*, **801**:110. doi:10.1088/0004-637X/801/2/110
- Herrera-Camus, R., Bolatto, A.D., Wolfire, M.G., Smith, J.D., Croxall, K.V., Kennicutt, R.C., Calzetti, D., et al. 2015, “[C II] 158 $\mu$ m Emission as a Star Formation Tracer”, *Ap. J.*, **800**:1. doi:10.1088/0004-637X/800/1/1
- Gnedin, N.Y., & **Draine, B.T.** 2014, “Line Overlap and Self-Shielding of Molecular Hydrogen in Galaxies”, *Ap. J.*, **795**:37. doi:10.1088/0004-637X/795/1/37
- Planck Collaboration, Abergel, A., Ade, P.A.R., Aghanim, N., Alina, D., Alves, M.I.R., Aniano, G., et al. 2014, “Planck 2013 results. XI. All-sky model of thermal dust emission”, *Astr. Astrophys.*, **517**, A11. doi:10.1051/0004-6361/201323195
- Flatau, P.J., & **Draine, B.T.** 2014, “Light scattering by hexagonal columns in the discrete dipole approximation”, *Optics Express*, **22**, 21834-21846. doi:10.1364/OE.22.021834
- Kreckel, K., Armus, L., Groves, B., Lyubenova, M., Diaz-Santos, T., Schinnerer, E., Appleton, P., et al. 2014, “A far-IR view of the starburst driven superwind in NGC 2146”, *Ap. J.*, **790**:26. doi:10.1088/0004-637X/790/1/26
- Calapa, M.D., Calzetti, D., **Draine, B.T.**, Boquien, M., Kramer, M., Xilouris, M., Verley, S., et al. 2014, “The Heating of Mid-Infrared Dust in the Nearby Galaxy M33: A Testbed for Tracing Galaxy Evolution”, *Ap. J.*, **784**:130. doi:10.1088/0004-637X/784/2/130
- Galametz, M., Albrecht, M., Kennicutt, R., Aniano, G., Bertoldi, F., Calzetti, D., Dale, D., et al. 2014, “Dissecting the origin of the submillimeter emission in nearby galaxies with Herschel and LABOCA”, *M.N.R.A.S.*, **439**, 2542. doi:10.1093/mnras/stu113
- Draine, B.T.**, Aniano, G., Krause, O., Groves, B., Sandstrom, K., Braun, R., Leroy, A., et al. 2014, “Andromeda’s Dust”, *Ap. J.*, **780**, 172. doi:10.1088/0004-637X/780/2/172
- Fisher, D.B., Bolatto, A.D., Herrera-Camus, R., **Draine, B.T.**, Donaldson, J., Walter, F., Sandstrom, K., et al. 2014, “The rarity of dust in metal-poor galaxies”, *Nature*, **505**, 186-189. doi:10.1038/nature12765.
- Pellegrini, E.W., Smith, J.D., Wolfire, M.G., **Draine, B.T.**, Crocker, A.F., Croxall, K.V., van der Werf, P., et al. 2013, “Shock Excited Molecules in NGC 1266: ULIRG Conditions at the Center of a Bulge-Dominated Galaxy?”, *Ap. J. Lett.*, **779**, L19. doi:10.1088/2041-8205/779/2/L19
- Sandstrom, K.M., Leroy, A.K., Walter, F., Bolatto, A.D., Croxall, K.V., **Draine, B.T.**, Wilson, C.D., et al. 2013, “The CO-to-H<sub>2</sub> Conversion Factor and Dust-to-Gas Ratio on Kiloparsec Scales in Nearby Galaxies”, *Ap. J.*, **777**, 5. doi:10.1088/0004-637X/777/1/5
- Kreckel, K., Groves, B., Schinnerer, E., Johnson, B.D., Aniano, G., Calzetti, D., Croxall, K.V., et al. 2013, “Mapping Dust Through Emission and Absorption in Nearby Galaxies”, *Ap. J.*, **771**, 62.

doi:10.1088/0004-637X/771/1/62

- Li, Y., Crocker, A.F., Calzetti, D., Wilson, C.D., Kennicutt, R.C., Murphy, E.J., Brandl, B.R., *et al.* 2013, “Star Formation Rates in Resolved Galaxies: Calibrations with Near and Far Infrared Data for NGC 5055 and NGC 6946”, *Ap. J.*, **768**, 180. doi:10.1088/0004-637X/768/2/180
- Galametz, M., Kennicutt, R.C., Calzetti, D., Aniano, G., **Draine, B.T.**, Boquiem, M., Brandl, B., *et al.* 2013, “Calibration of the total infrared luminosity of nearby galaxies from Spitzer and Herschel bands”, *M.N.R.A.S.*, **431**, 1956-1986. doi:10.1093/mnras/stt313
- Tabatabaei, F. S., Schinnerer, E., Murphy, E. J., Beck, R., Groves, B., Meidt, S., Krause, M., *et al.* 2013, “A Detailed Study of the Radio–FIR Correlation in NGC6946 with Herschel-PACS/SPIRE from KINGFISH”, *Astr. Astrophys.*, **552**, A19. doi:10.1051/0004-6361/201220249
- Draine, B.T.** & Hensley, B. 2013, “Magnetic Nanoparticles in the Interstellar Medium: Emission Spectrum and Polarization”, *Ap. J.*, **765**, 159. doi:10.1088/0004-637X/765/2/159
- Crocker, A.F., Calzetti, D., Thilker, D.A., Aniano, G., **Draine, B.T.**, Hunt, L., Kennicutt, R.C., *et al.* 2013, “Quantifying Non-Star Formation Associated  $8\mu\text{m}$  Dust Emission in NGC 628”, *Ap. J.*, **762**, 79. doi:10.1088/0004-637X/762/2/79
- Li, A. & **Draine, B.T.** 2012, “The Carriers of the Interstellar Unidentified Emission Features: Aromatic or Aliphatic?”, *Ap. J. Lett.*, **760**, L35. doi:10.1088/2041-8205/760/2/L35
- Draine, B.T.** & Hensley, B. 2012, “The Submm and mm Excess of the SMC: Magnetic Dipole Emission from Magnetic Nanoparticles?”, *Ap. J.*, **757**, 103. doi:10.1088/0004-637X/757/1/103
- Galametz, M., Kennicutt, R.C., Albrecht, M., Aniano, G., Armus, L., Bertoldi, F., Calzetti, D., *et al.* 2012, “Mapping the cold dust temperatures and masses of nearby Kingfish galaxies with Herschel”, *M.N.R.A.S.*, **425**, 763-787. doi:10.1111/j.1365-2966.2012.21667.x
- Aniano, G., **Draine, B.T.**, Calzetti, D., Dale, D.A., Engelbracht, C.W., Gordon, K.D., Hunt, L.K., *et al.* 2012, “Modeling Dust and Starlight in Galaxies Observed by Spitzer and Herschel: NGC 628 and NGC 6946”, *Ap. J.*, **756**, 138. doi:10.1088/0004-637X/756/2/138
- Hinz, J.L., Engelbracht, C.W., Skibba, R., Crocker, A., Donovan Meyer, J., Sandstrom, K., Walter, F., *et al.* 2012, “Cool Dust in the Outer Ring of NGC 1291”, *Ap. J.*, **756**, 75. doi:10.1088/0004-637X/756/1/75
- Beirão, P., Armus, L., Helou, G., Appleton, P.N., Smith, J.-D.T., Croxall, K.V., Murphy, E.J., *et al.* 2012, “A Study of Heating and Cooling of the ISM in NGC 1097 with Herschel-PACS and Spitzer-IRS”, *Ap. J.*, **751**, 144. doi:10.1088/0004-637X/751/2/144
- Croxall, K.V., Smith, J.D., Wolfire, M.G., Roussel, H., Sandstrom, K.M., **Draine, B.T.**, Aniano, G., *et al.* 2012, “Resolving the Far-IR Line Deficit: Photoelectric Heating and Far-IR Line Cooling in NGC 1097 and NGC 4559”, *Ap. J.*, **747**, 81. doi:10.1088/0004-637X/747/1/81
- Dale, D.A., Aniano, G., Engelbracht, C.W., Hinz, J.L., Krause, O., Montiel, E.J., Roussel, H., *et al.* 2012, “Herschel Far-Infrared and Sub-millimeter Photometry for the KINGFISH Sample of Nearby Galaxies”, *Ap. J.*, **745**, 95. doi:10.1088/0004-637X/745/1/95
- Brandt, T.D., & **Draine, B.T.** 2012, “The Spectrum of the Diffuse Galactic Light: The Milky Way in Scattered Light”, *Ap. J.*, **744**, 129. doi:10.1088/0004-637X/744/2/129
- Flatau, P.J., & **Draine, B.T.** 2012, “Fast near-field calculations in the discrete dipole approximation for regular rectilinear grids”, *Optics Express*, **20**, 1247-1252. doi:10.1364/OE.22.021834
- Sandstrom, K.M., Bolatto, A.D., Bot, C., **Draine, B.T.**, Ingalls, J.M., Israel, F.P., Jackson, J.M., *et al.* 2012, “The Spitzer Spectroscopic Survey of the Small Magellanic Cloud ( $S^4\text{MC}$ ): Probing the Physical State of Polycyclic Aromatic Hydrocarbons in a Low-Metallicity Environment”, *Ap. J.*, **744**, 20. doi:10.1088/0004-637X/744/1/20
- Kennicutt, R.C., Calzetti, D., Aniano, G., Appleton, P., Armus, L., Beirão, P., Bolatto, A.D., *et al.* 2012, “KINGFISH: Key Insights on Nearby Galaxies: A Far-Infrared Survey with Herschel: Survey Description and Image Atlas”, *Pub. Astr. Soc. Pac.*, **123**, 1347-1369. doi:10.1086/663818
- Ingalls, J.G., Bania, T.M., Boulanger, F., **Draine, B.T.**, Falgarone, E., & Hily-Blant, P. 2011, “Spitzer IRS Detection of Molecular Hydrogen Rotational Emission Towards Translucent Clouds”, *Ap. J.*, **743**, 174. doi:10.1088/0004-637X/743/2/174

- Hoang, T., Lazarian, A., & **Draine, B.T.** 2011, “Spinning Dust Emission: Effects of Irregular Grain Shape, Transient Heating and Comparison with WMAP Results”, *Ap. J.*, **741**, 87.  
doi:10.1088/0004-637X/741/2/87
- Aniano, G., **Draine, B.T.**, Gordon, K.D., & Sandstrom, K. 2011, “Common-Resolution Convolution Kernels for Space- and Ground-Based Telescopes”, *Pub. Astr. Soc. Pac.*, **123**, 1218-1236.  
doi:10.1086/662219
- Vahidinia, S., Cuzzi, J.N., Hedman, M., **Draine, B.**, Clark, R.N., Roush, T., Filanccchione, G., *et al.* 2011, “Saturn’s F ring grains: aggregates made of crystalline water ice”, *Icarus*, **215**, 682-694.  
doi:10.1016/j.icarus.2011.04.011
- Murphy, E.J., Condon, J.J., Schinnerer, E., Kennicutt, R.C., Calzetti, D., Armus, L., Helou, G., *et al.* 2011, “Calibrating Extinction-Free Star Formation Rate Diagnostics with 33 GHz Free-Free Emission in NGC 6946”, *Ap. J.*, **737**, 67. doi:10.1088/0004-637X/737/2/67
- Draine, B.T.** 2011, “On Radiation Pressure In Static, Dusty HII Regions”, *Ap. J.*, **732**, 100.  
doi:10.1088/0004-637X/732/2/100
- Rest, A., Foley, R.J., Gezari, S., Narayan, G., **Draine, B.**, Olsen, K., Huber, M., *et al.* 2011, “Pushing the Boundaries of Conventional Core-Collapse Supernovae: The Extremely Energetic Supernova SN 2003ma”, *Ap. J.*, **729**, 88. doi:10.1088/0004-637X/729/2/88
- Dong, R., & **Draine, B.T.** 2011, “H $\alpha$  and Free-Free Emission from the WIM”, *Ap. J.*, **727**, 35.  
doi:10.1088/0004-637X/727/1/35
- Walter, F., Sandstrom, K., Aniano, G., Calzetti, D., Croxall, K., Dale, D.A., **Draine, B.T.**, *et al.* 2011, “The Displaced Dusty ISM of NGC 3077: Tidal Stripping in the M 81 Triplet”, *Ap. J. Lett.*, **726**, L11.  
doi:10.1088/2041-8205/726/1/L11
- Wu, Y., Helou, G., Armus, L., Cormier, D., Shi, Y., Dale, D., Dasyra, K., *et al.* 2010, “Infrared Luminosities and Aromatic Features in the 24 $\mu$ m Flux Limited Sample of 5MUSES”, *Ap. J.*, **723**, 895-914.  
doi:10.1088/0004-637X/723/1/895
- Badenes, C., Maoz, D., & **Draine, B.T.** 2010, “On the size distribution of supernova remnants in the Magellanic Clouds”, *M.N.R.A.S.*, **407**, 1301-1313. doi:10.1111/j.1365-2966.2010.17023.x
- Beirão, P., Armus, L., Appleton, P.N., Smith, J.-D.T., Croxall, K.V., Murphy, E.J., Dale, D.A., *et al.* 2010, “Far-Infrared Line Imaging of the Starburst Ring in NGC 1097 with the Herschel/PACS Spectrometer”, *Astr. Astrophys.*, **518**, L60. doi:10.1051/0004-6361/201014592
- Sandstrom, K., Krause, O., Linz, H., Schinnerer, E., Dumas, G., Meidt, S., Rix, H.-W., *et al.* 2010, “Mapping far-IR emission from the central kiloparsec of NGC 1097”, *Astr. Astrophys.*, **518**, L59.  
doi:10.1051/0004-6361/201014583
- Engelbracht, C.W., Hunt, L.K., Skibba, R.A., Hinz, J.L., Calzetti, D., Gordon, K.D., Roussel, H., *et al.* 2010, “Enhanced dust heating in the bulges of early-type spiral galaxies”, *Astr. Astrophys.*, **518**, L56.  
doi:10.1051/0004-6361/201014677
- Hoang, T., **Draine, B.T.**, Lazarian, A. 2010, “Improving the Model of Emission from Spinning Dust: Effects of Grain Wobbling and Transient Spin-Up”, *Ap. J.*, **715**, 1462-1485.  
doi:10.1088/0004-637X/715/2/1462
- Sandstrom, K.M., Bolatto, A.D., **Draine, B.T.**, Bot, C., & Stanimirović, S. 2010, “The *Spitzer* Survey of the Small Magellanic Cloud (S<sup>3</sup>MC): Insights into the Life-Cycle of Polycyclic Aromatic Hydrocarbons”, *Ap. J.*, **715**, 701-723. doi:10.1088/0004-637X/715/2/701
- Calzetti, D., Wu, S.-Y., Hong, S., Kennicutt, R.C., Lee, J.C., Dale, D.A., Engelbracht, C.W., *et al.* 2010, “The Calibration of Monochromatic Far-Infrared Star Formation Rate Indicators”, *Ap. J.*, **714**, 1256-1279. doi:10.1088/0004-637X/714/2/1256
- Liu, G., Calzetti, D., Yun, M.S., Wilson, G.W., **Draine, B.T.**, Scott, K., Austermann, J., *et al.* 2010, “An Investigation of the Dust Content in the Galaxy Pair NGC 1512/1510 from Near-Infrared to Millimeter Wavelengths”, *Astr. J.*, **139**, 1190-1198. doi:10.1088/0004-6256/139/3/1190
- Johnson, W.L., Kim, S.A., Utegulov, Z.N., Shaw, J.M., & **Draine, B.T.** 2009, “Optimization of arrays of gold nanodisks for plasmon-mediated Brillouin light scattering”, *J. Phys. Chem. C*, **113**, 14651-14657.

doi:10.1021/jp903965d

- Socrates, A., & **Draine, B.T.** 2009, “Brilliant Pebbles: A Method for Detection of Very Large Interstellar Grains”, *Ap. J. Lett.*, **702**, L77-L81. doi:10.1088/0004-637X/702/1/L77
- Sheffer, Y., Prochaska, J.X., **Draine, B.T.**, Perley, D.A., & Bloom, J.S. 2009, “The Discovery of Vibrationally-Excited H<sub>2</sub> in the Molecular Cloud near GRB 080607”, *Ap. J. Lett.*, **701**, L63-L67. doi:10.1088/0004-637X/701/2/L63
- Dasyra, K.M., Yan, L., Helou, G., Sajina, A., Fadda, D., Zamojski, M., Armus, L., *et al.* 2009, “The  $\sim 0.9$  mJy sample: A mid-infrared spectroscopic catalog of 150 infrared-luminous, 24 micron selected galaxies at  $0.3 \leq z \leq 3.5$ ”, *Ap. J.*, **701**, 1123-1146. doi:10.1088/0004-637X/701/2/1123
- Muñoz-Mateos, J.C., Gil de Paz, A., Boissier, S., Zamorano, J., Dale, D.A., Pérez-González, P.G., Gallego, J., *et al.* 2009, “Radial distribution of stars, gas and dust in the SINGS galaxies: II. Derived dust properties”, *Ap. J.*, **701**, 1965-1991. doi:10.1088/0004-637X/701/2/1965
- Dobler, G., **Draine, B.T.**, & Finkbeiner, D.P. 2009, “Constraining Spinning Dust Parameters with the WMAP Five-Year Data”, *Ap. J.*, **699**, 1374-1388. doi:10.1088/0004-637X/699/2/1374
- Sironi, L., & **Draine, B.T.** 2009, “Polarized Emission from Polycyclic Aromatic Hydrocarbons Resulting from Anisotropic Illumination”, *Ap. J.*, **698**, 1292-1300. doi:10.1088/0004-637X/698/2/1292
- Shen, Y., **Draine, B.T.**, & Johnson, E.T. 2009, “Modeling Porous Dust Grains with Ballistic Aggregates II: Light Scattering Properties”, *Ap. J.*, **696**, 2126-2137. doi:10.1088/0004-637X/696/2/2126
- Draine, B.T.**, & Fraisse, A. 2009, “Polarized Far-Infrared and Submillimeter Emission from Interstellar Dust”, *Ap. J.*, **696**, 1-11. doi:10.1088/0004-637X/696/1/1
- Bot, C., Helou, G., Boulanger, F., Lagache, G., Miville-Deschenes, M.-C., **Draine, B.T.**, & Martin, P. 2009, “Serendipity observations of far infrared cirrus emission in the Spitzer Infrared Nearby Galaxies Survey: Analysis of far-infrared correlations”, *Ap. J.*, **695**, 469-478. doi:10.1088/0004-637X/695/1/469
- Boulanger, F., Maillard, J.P., Appleton, P., Falgarone, E., Lagache, G., Schulz, B., Wakker, B.P., *et al.* 2009, “The molecular hydrogen explorer H2EX”, *Experimental Astron.*, **23**, 277-302. doi:10.1007/s10686-008-9108-7
- Draine, B.T.** 2009, “Perspectives on Interstellar Dust Inside and Outside of the Heliosphere”, *Space Science Reviews*, **143**, 333-345. doi:10.1007/s11214-008-9411-7
- Draine, B.T.**, & Flatau, P.J. 2008, “Discrete-dipole approximation for periodic targets: theory and tests”, *J. Opt. Soc. Am. A*, **25**, 2693-2703. doi:10.1364/OE.20.001247
- Johnson, W.L., Kim, S.A., Utegulov, Z.N., & **Draine, B.T.** 2008, “Surface-plasmon fields in two-dimensional arrays of gold nanodisks”, *Plasmonics: Metallic Nanostructures and Their Optical Properties VI.*, ed. Mark I. Stockman, Proc. of SPIE, **7032**, 70321S-1 – 70321S-11. doi:10.1117/12.795608
- Shen, Y., **Draine, B.T.**, & Johnson, E.T. 2008, “Modeling Porous Dust Grains with Ballistic Aggregates I: Geometry and Optical Properties”, *Ap. J.*, **689**, 260-275.
- Wood, K., Whitney, B.A., Robitaille, T., & **Draine, B.T.** 2008, “Emission from Very Small Grains and PAH Molecules in Monte Carlo Radiation Transfer Codes: Application to the Edge-On Disk of Gomez’s Hamburger”, *Ap. J.*, **688**, 1118-1123.
- Bendo, G.J., **Draine, B.T.**, Engelbracht, C.W., Helou, G., Thornley, M.D., Bot, C., Buckalew, B.A., *et al.* 2008, “The relations among 8, 24, and 160  $\mu$ m dust emission within nearby spiral galaxies”, *M.N.R.A.S.*, **389**, 629-650.
- Holwerda, B.W., **Draine, B.T.**, Gordon, K.D., González, R.A., Calzetti, D., Thornley, M., Buckalew, B., *et al.* 2007, “The Opacity of Spiral Disks VIII: Structure of the Cold ISM”, *Astr. J.*, **134**, 2226-2235.
- Kennicutt, R.C., Calzetti, D., Walter, F., Helou, G., Hollenbach, D.J., Armus, L., Bendo, G., *et al.* 2007, “Star Formation in NGC 5194 (M51a). II. The Spatially-Resolved Star Formation Law”, *Ap. J.*, **671**, 333-348.
- Roussel, H., Helou, G., Hollenbach, D.J., **Draine, B.T.**, Smith, J. D., Armus, L., Schinnerer, E., *et al.* 2007, “Warm Molecular Hydrogen in the Spitzer SINGS Galaxy Sample”, *Ap. J.*, **669**, 959-981.
- Calzetti, D., Kennicutt, R.C., Engelbracht, C.W., Leitherer, C., **Draine, B.T.**, Kewley, L., Moustakas, J., *et al.* 2007, “The Calibration of Mid-Infrared Star Formation Rate Indicators”, *Ap. J.*, **666**, 870-895.



- Utegulov, Z.N., Shaw, J.M., **Draine, B.T.**, Kim, S.A., & Johnson, W.L. 2007, “Surface-plasmon enhancement of Brillouin light scattering from gold-nanodisk arrays on glass”, in *Plasmonics: Metallic Nanostructures and Their Optical Properties V*, ed. Mark I. Stockman, Proc. of SPIE, **6641**, 66411M-1 - 66411M-10.
- Draine, B.T.**, Dale, D.A., Bendo, G., Gordon, K.D., Smith, J.D.T., Armus, L., Engelbracht, C.W., *et al.* 2007, “Dust Masses, PAH Abundances, and Starlight Intensities in the SINGS Galaxy Sample”, *Ap. J.*, **663**, 866-894.
- Walter, F., Cannon, J.M., Roussel, H., Bendo, G.J., Calzetti, D., Dale, D.A., **Draine, B.T.**, *et al.* 2007, “Dust and Atomic Gas in Dwarf Irregular Galaxies of the M 81 Group: The SINGS and THINGS View”, *Ap. J.*, **661**, 102-114.
- Penttilä, A., Zubko, E., Lumme, K., Muinonen, K., Yurkin, M.A., **Draine, B.T.**, Rahola, J., *et al.* 2007, “Comparison between discrete dipole implementations and exact techniques”, *J. Quant. Spectr. Rad. Trans.*, **106**, 417-436
- Draine, B.T.**, & Li, A. 2007, “Infrared Emission from Interstellar Dust. IV. The Silicate-Graphite-PAH Model in the Post-Spitzer Era”, *Ap. J.*, **657**, 810-837.
- Smith, J.D.T., **Draine, B.T.**, Dale, D.A., Moustakas, J., Kennicutt, R.C., Helou, G., Armus, L., *et al.* 2007, “The Mid-Infrared Spectrum of Star-Forming Galaxies: Global Properties of PAH Emission”, *Ap. J.*, **656**, 770-791.
- Draine, B.T.**, & Allaf-Akbari, K. 2006, “X-Ray Scattering by Nonspherical Grains. I. Oblate Spheroids”, *Ap. J.*, **652**, 1318-1330.
- Cannon, J.M., Walter, F., Armus, L., Bendo, G.J., Calzetti, D., **Draine, B.T.**, Engelbracht, C.W., *et al.* 2006, “The Nature of Infrared Emission in the Local Group Dwarf Galaxy NGC 6822 as Revealed by *Spitzer*”, *Ap. J.*, **652**, 1170-1187.
- Regan, M.W., Thornley, M.D., Vogel, S.N., Sheth, K., **Draine, B.T.**, Hollenbach, D.J., Meyer, M., *et al.* 2006, “The Radial Distribution of the ISM in Disk Galaxies: Evidence for Secular Evolution”, *Ap. J.*, **652**, 1112-1128.
- Bendo, G.J., Dale, D.A., **Draine, B.T.**, Engelbracht, C.W., Kennicutt, R.C., Calzetti, D., Gordon, K.D., *et al.* 2006, “The Spectral Energy Distribution of Dust Emission in the Edge-On Spiral Galaxy NGC 4631 as seen with *Spitzer* and JCMT”, *Ap. J.*, **652**, 283-305.
- Murphy, E.J., Helou, G., Braun, R., Kenney, J.D.P., Armus, L., Calzetti, D., **Draine, B.T.**, *et al.* 2006, “The Effect of Star Formation on the Far-Infrared-Radio Correlation within Galaxies”, *Ap. J. Lett.*, **651**, L111-L115.
- Pérez-González, P.G., Kennicutt, R.C., Gordon, K.D., Misselt, K.A., Gil de Paz, A., Engelbracht, C.W., Rieke, G.H., *et al.* 2006, “Ultraviolet Through Far-Infrared Spatially Resolved Analysis of the Recent Star Formation in M81 (NGC 3031)”, *Ap. J.*, **648**, 987-1006.
- Linsky, J.L., **Draine, B.T.**, Moos, H.W., Jenkins, E.B., Wood, B.E., Oliveira, C., Blair, W.P., *et al.* 2006, “What is the Total Deuterium Abundance in the Local Galactic Disk?” *Ap. J.*, **647**, 1106-1124.
- Cannon, J.M., Smith, J.D.T., Walter, F., Bendo, G.J., Calzetti, D., Dale, D.A., **Draine, B.T.**, *et al.* 2006, “Warm Dust and Spatially Variable PAH Emission in the Dwarf Starburst Galaxy NGC 1705”, *Ap. J.*, **647**, 293-302.
- Roussel, H., Helou, G., Smith, J.D.T., **Draine, B.T.**, Hollenbach, D.J., Moustakas, J., Spoon, H.W., *et al.* 2006, “The Opaque Nascent Starburst in NGC 1377: *Spitzer* SINGS Observations”, *Ap. J.*, **646**, 841-857.
- Dale, D.A., Smith, J.D.T., Armus, L., Buckalew, B.A., Helou, G., Kennicutt, R.C., Moustakas, J., *et al.* 2006, “Mid-Infrared Spectral Diagnostics of Nuclear and Extra-Nuclear Regions in Nearby Galaxies”, *Ap. J.*, **646**, 161-173.
- Weingartner, J.C., **Draine, B.T.**, & Barr, D.K. 2006, “Photoelectric Emission from Dust Grains Exposed to Extreme Ultraviolet and X-Ray Radiation”, *Ap. J.*, **645**, 1188-1197.
- Bendo, G.J., Buckalew, B.A., Dale, D.A., **Draine, B.T.**, Joseph, R.D., Kennicutt, R.C., Sheth, K., *et al.* 2006, “*Spitzer* and JCMT Observations of the Active Galactic Nucleus in the Sombrero Galaxy (NGC

- 4594)", *Ap. J.*, **645**, 134-147.
- Engelbracht, C.W., Kundurthy, P., Gordon, K.D., Rieke, G.H., Kennicutt, R.C., Smith, J.-D.T., Regan, M.W., *et al.* 2006, "Extended Mid-Infrared Aromatic Feature Emission in M82", *Ap. J.*, **642**, L127-L132.
- Murphy, E.J., Braun, R., Helou, G., Armus, L., Kenney, J. D. P., Gordon, K. D., Bendo, G. J., *et al.* 2006, "An Initial Look at the Far Infrared-Radio Correlation within Nearby Star-forming Galaxies using the Spitzer Space Telescope", *Ap. J.*, **638**, 157-175.
- Draine, B.T.** 2006, "On the Submillimeter Opacity of Protoplanetary Disks", *Ap. J.*, **636**, 1114-1120.
- Calzetti, D., Kennicutt, R.C., Bianchi, L., Thilker, D.A., Dale, D.A., Engelbrach, C.W., Leitherer, C., *et al.* 2005, "Star Formation in NGC 5194 (M51a): The Panchromatic View from GALEX to Spitzer", *Ap. J.*, **633**, 871-893.
- Dale, D.A., Bendo, G.J., Engelbracht, C.W., Gordon, K.D., Regan, M.W., Armus, L., Cannon, J.M., *et al.* 2005, "Infrared Spectral Energy Distributions of Nearby Galaxies", *Ap. J.*, **633**, 857-870.
- Cannon, J.M., Fabian, W., Bendo, G.J., Calzetti, D., Dale, D.A., **Draine, B.T.**, Engelbracht, C.W., *et al.* 2005, "Spitzer Observations of the Supergiant Shell Region in IC 2574", *Ap. J.*, **630**, L37-40.
- Allers, K.N., Jaffe, D.T., Lacy, J.H., **Draine, B.T.**, & Richter, M.J. 2005, "H<sub>2</sub> Pure Rotational Lines in the Orion Bar", *Ap. J.*, **630**, 368-380.
- Cartledge, S.I.B., Clayton, G.C., Gordon, K.D., Rachford, B.L., **Draine, B.T.**, Martin, P.G., Mathis, J.S., *et al.* 2005, "Fuse Measurements of Far Ultraviolet Extinction. II. Magellanic Cloud Sight Lines", *Ap. J.*, **630**, 355-367.
- Bland-Hawthorn, J., Vlajić, M., Freeman, K.C., & **Draine, B.T.** 2005, "NGC 300: an Extremely Faint, Outer Stellar disk Observed to 10 Scale Lengths", *Ap. J.*, **629**, 239-249.
- Sofia, U.J., Wolff, M.J., Rachford, B., Gordon, K.D., Clayton, G.C., Cartledge, S.I.B., Martin, P.G., *et al.* 2005, "FUSE Measurements of Far Ultraviolet Extinction. I. Galactic Sight Lines", *Ap. J.*, **625**, 167-180.
- Draine, B.T.**, & Bond, N.A. 2004, "Direct Extragalactic Distance Determination Using X-Ray Scattering", *Ap. J.*, **617**, 987-1003.
- Yan, H., Lazarian, A., & **Draine, B.T.** 2004, "Dust Dynamics in MHD Turbulence", *Ap. J.*, **616**, 895-911.
- Gordon, K.D., Pérez-González, P.G., Misselt, K.A., Murphy, E.J., Bendo, G.J., Walter, F., Thornley, M.D., *et al.* 2004, "Spatially-Resolved Ultraviolet, H $\alpha$ , Infrared, and Radio Star Formation in M81", *Ap. J. Suppl.*, **154**, 215-221.
- Willner, S.P., Ashby, M.L.N., Barmby, P., Fazio, G.G., Pahre, M., Smith, H.A., Kennicutt, R.C., *et al.* 2004, "IRAC Observations of M81", *Ap. J. Suppl.*, **154**, 222-228.
- Regan, M.W., Thornley, M.D., Bendo, G., **Draine, B.T.**, Li, A., Dale, D.A., Engelbracht, C.W., *et al.* 2004, "SINGS Imaging of NGC 7331: A Panchromatic View of a Ringed Galaxy", *Ap. J. Suppl.*, **154**, 199-203.
- Smith, J.D.T., Dale, D.A., Armus, L., **Draine, B.T.**, Hollenbach, D.J., Roussel, H., Helou, G., *et al.* 2004, "Mid-Infrared IRS Spectroscopy of NGC 7331: A First Look at the SINGS Legacy", *Ap. J. Suppl.*, **154**, 204-210.
- Gutkowicz-Krusin, D., & **Draine, B.T.** 2004, "Propagation of Electromagnetic Waves on a Rectangular Lattice of Polarizable Points", <http://arXiv.org/abs/astro-ph/0403082>
- Collinge, M.J., & **Draine, B.T.** 2004, "Discrete dipole approximation with polarizabilities that account for both finite wavelength and target geometry", *J. Opt. Soc. Am.*, **A**, **21**, 2023-2028
- Tan, J.C., & **Draine, B.T.** 2004, "X-Ray Scattering Halos from the Galactic Center: Implications for Diffuse Emission Around Sgr A\*", *Ap. J.*, **606**, 296-305.
- Geballe, T.R., Rigaut, F., Roy, J.-R., & **Draine, B.T.** 2004, "A Bow Shock of Heated Dust Surrounding Galactic Center Source IRS 8", *Ap. J.*, **602**, 770-775.
- Draine, B.T.** 2003, "Scattering by Interstellar Dust Grains. II. X-Rays" *Ap. J.*, **598**, 1026-1037.
- Draine, B.T.** 2003, "Scattering by Interstellar Dust Grains. I. Optical and Ultraviolet" *Ap. J.*, **598**, 1017-1025.
- Draine, B.T.**, & Tan, J.C. 2003, "The X-Ray Scattering Halo Around Nova Cygni 1992: Testing a Model

- for Interstellar Dust”, *Ap. J.*, **594**, 347-362.
- Kennicutt, R.C., Armus, L., Bendo, G., Calzetti, D., Dale, D.A., **Draine, B.T.**, Engelbracht, C.W., *et al.* 2003, “SINGS: The SIRTf Nearby Galaxies Survey”, *Pub. Astr. Soc. Pac.*, **115**, 928-952.
- Weingartner, J.C., & **Draine, B.T.** 2003, “Radiative Torques on Interstellar Grains. III. Dynamics with Thermal Relaxations”, *Ap. J.*, **589**, 289-318.
- Li, A., & **Draine, B.T.** 2002, “Infrared Emission from Interstellar Dust. III. The Small Magellanic Cloud”, *Ap. J.*, **576**, 762-777.
- Li, A., & **Draine, B.T.** 2002, “Do the Infrared Emission Features Need Ultraviolet Excitation? The PAH Model in UV-Poor Reflection Nebulae”, *Ap. J.*, **572**, 232-237.
- Draine, B.T.**, and Hao, L. 2002, “Gamma Ray Burst in a Molecular Cloud: Destruction of Dust and H<sub>2</sub> and Emergent Spectrum”, *Ap. J.*, **569**, 780-791.
- Li, A., & **Draine, B.T.** 2002, “Are Silicon Nanoparticles an Interstellar Dust Component?”, *Ap. J.*, **564**, 803-812.
- Weingartner, J.C., & **Draine, B.T.** 2001d, “Electron-Ion Recombination on Grains and Polycyclic Aromatic Hydrocarbons”, *Ap. J.*, **563**, 842-852.
- Padoan, P., Goodman, A., **Draine, B.T.**, Juvela, M., Nordlund, A., & Rögnvaldsson, Ö.E. 2001, “Theoretical Models of Polarized Dust Emission from Protostellar Cores”, *Ap. J.*, **559**, 1005-1018.
- Li, A., & **Draine, B.T.** 2001, “Infrared Emission from Interstellar Dust. II. The Diffuse Interstellar Medium”, *Ap. J.*, **554**, 778-802.
- Weingartner, J.C., & **Draine, B.T.** 2001c, “Photoelectric Emission from Interstellar Dust: Grain Charging and Gas Heating”, *Ap. J. Suppl.*, **134**, 263-281.
- Weingartner, J.C., & **Draine, B.T.** 2001b, “Forces on Dust Grains Exposed to Anisotropic Radiation Fields”. *Ap. J.*, **553**, 581-594.
- Meyer, D.M., Lauroesch, J.T., Sofia, U.J., **Draine, B.T.**, & Bertoldi, F. 2001, “The Rich Ultraviolet Spectrum of Vibrationally-Excited Interstellar H<sub>2</sub> Toward HD 37903”, *Ap. J. Lett.*, **553**, L59-62.
- Draine, B.T.**, & Li, A. 2001, “Infrared Emission from Interstellar Dust. I. Stochastic Heating of Small Grains”, *Ap. J.*, **551**, 807-824.
- Li, A., & **Draine, B.T.** 2001, “On Ultrasmall Silicate Grains in the Diffuse Interstellar Medium”, *Ap. J. Lett.*, **550**, L213-217.
- Weingartner, J.C., & **Draine, B.T.** 2001a, “Dust Grain Size Distributions and Extinction in the Milky Way, LMC, and SMC”, *Ap. J.*, **548**, 296-309.
- Rafikov, R.R., & **Draine, B.T.** 2001, “Constraints on Cold H<sub>2</sub> Clouds from Gravitational Microlensing Searches”, *Ap. J.*, **547**, 207-216.
- Waxman, E., & **Draine, B.T.** 2000, “Dust Sublimation by GRBs and its Implications”, *Ap. J.*, **537**, 796-802.
- Lazarian, A., & **Draine, B.T.** 2000, “Resonance Paramagnetic Relaxation and Alignment of Small Grains”, *Ap. J. Lett.*, **536**, L15-L18.
- Draine, B.T.** 2000a, “Gamma Ray Bursts in Molecular Clouds: H<sub>2</sub> Absorption and Fluorescence”, *Ap. J.*, **532**, 273-280.
- Lazarian, A., & **Draine, B.T.** 1999b, “Nuclear Spin Relaxation Within Interstellar Grains”, *Ap. J. Lett.*, **520**, L67-L70.
- Weingartner, J.C., & **Draine, B.T.** 1999, “Interstellar Depletion onto Very Small Dust Grains”, *Ap. J.*, **517**, 292-298.
- Lazarian, A., & **Draine, B.T.** 1999a, “Thermal Flipping and Thermal Trapping – New Elements in Grain Dynamics”, *Ap. J. Lett.*, **516**, L37-L40.
- Vicini, B., Natta, A., Marconi, A., Testi, L., Hollenbach, D., & **Draine, B.T.** 1999, “A Near-Infrared Study of the Planetary Nebula NGC 2346”, *Astr. Astrophys.*, **342**, 823-830.
- Draine, B.T.**, & Lazarian, A. 1999a, “Magnetic Dipole Microwave Emission from Dust Grains”, *Ap. J.*, **512**, 740-754.
- Draine, B.T.** 1998, “Lensing of Stars by Spherical Gas Clouds”, *Ap. J. Lett.*, **509**, L41-L44.
- Draine, B.T.**, & Lazarian, A. 1998b, “Electric Dipole Radiation from Spinning Dust Grains”, *Ap. J.*, **508**,

157-179.

- Draine, B.T.**, & Lazarian, A. 1998a, “Diffuse Galactic Emission from Spinning Dust Grains”, *Ap. J. Lett.*, **494**, L19-L22.
- Lazarian, A., & **Draine, B.T.** 1997, “Disorientation of Suprathermally Rotating Grains and the Grain Alignment Problem”, *Ap. J.*, **487**, 248-258.
- Draine, B.T.**, & Weingartner, J.C. 1997, “Radiative Torques on Interstellar Grains: II. Grain Alignment”, *Ap. J.*, **480**, 633-646.
- Timmermann, R., Bertoldi, F., Wright, C.M., Drapatz, S., **Draine, B.T.**, Haser, L., & Sternberg, A. 1996, “H<sub>2</sub> infrared line emission from S140: a warm PDR”, *Astr. Ap.*, **315**, L281-284.
- Draine, B.T.**, & Weingartner, J.C. 1996, “Radiative Torques on Interstellar Grains: I. Superthermal Spin-Up”, *Ap. J.*, **470**, 551-565.
- Draine, B.T.**, & Bertoldi, F. 1996, “Structure of Stationary Photodissociation Fronts”, *Ap. J.*, **468**, 269-289.
- Bertoldi, F., & **Draine, B.T.** 1996, “Non-Equilibrium Photodissociation Regions: I. Ionization – Dissociation Fronts”, *Ap. J.*, **458**, 222-232.
- Draine, B.T.**, & Flatau, P.J. 1994, “Discrete dipole approximation for scattering calculations”, *J. Opt. Soc. Am.*, **A**, **11**, 1491-1499.
- Draine, B.T.**, & Malhotra, S. 1993, “On Graphite and the 2175Å Extinction Profile”, *Ap. J.*, **414**, 632-645.
- Tóth, G., & **Draine, B.T.** 1993, “Oscillatory Instability of Radiative Shocks with Transverse Magnetic Field: Linear Analysis and Nonlinear Simulations”, *Ap. J.*, **413**, 176-189.
- Draine, B.T.**, & Goodman, J. 1993, “Beyond Clausius-Mossotti: Wave Propagation on a Polarizable Point Lattice and the Discrete Dipole Approximation”, *Ap. J.*, **405**, 685-697.
- Laor, A., & **Draine, B.T.** 1993, “Spectroscopic Constraints on the Properties of Dust in Active Galactic Nuclei”, *Ap. J.*, **402**, 441-468.
- Draine, B.T.**, & Woods, D.T. 1991, “Supernova Remnants in Dense Clouds: I. Blastwave Dynamics and X-Ray Irradiation”, *Ap. J.*, **383**, 621-638.
- Goodman, J.J., **Draine, B.T.**, & Flatau, P.J. 1991, “Application of FFT Techniques to the Discrete Dipole Approximation”, *Optics Letters*, **16**, 1198-1200.
- Draine, B.T.**, & Woods, D.T. 1990, “On the Intense H<sub>2</sub> Line Emission from NGC6240 and Other Starburst Galaxies”, *Ap. J.*, **363**, 464-479. (erratum: *Ap. J.*, **387**, 732).
- Gould, A., **Draine, B.T.**, Romani, R.W., & Nussinov, S. 1990, “Neutron Stars: Graveyard of Charged Dark Matter”, *Phys. Lett. B*, **238**, 337-343.
- Flatau, P.J., Stephens, G.L., & **Draine, B.T.** 1990, “Light Scattering by Rectangular Solids in the Discrete Dipole Approximation: A New Algorithm Exploiting the Block-Toeplitz Structure”, *J. Opt. Soc. Am. A*, **7**, 593-600.
- Roberge, W.G., & **Draine, B.T.** 1990, “A New Class of Solutions for Interstellar MHD Shock Waves”, *Ap. J.*, **350**, 700-721.
- Guhathakurta, P. & **Draine, B.T.** 1989, “Temperature Fluctuations in Interstellar Grains: I. Computational Method and Sublimation of Small Grains”, *Ap. J.*, **345**, 230-244.
- Draine, B.T.**, & Shapiro, P.R. 1989, “On the Dust Grain Origin of the Cosmic Submillimeter Background”, *Ap. J. Lett.*, **344**, L45-L48.
- West, R.A., Orton, G.S., **Draine, B.T.**, & Hubbell, E.A. 1989, “Infrared Absorption Features for Tetrahedral Ammonia Ice Crystals”, *Icarus*, **80**, 220-223.
- Lewis, R.S., Anders, E., & **Draine, B.T.** 1989, “Properties, detectability, and origin of interstellar diamonds in meteorites”, *Nature*, **339**, 117-121.
- Draine, B.T.** 1988, “The Discrete-Dipole Approximation and its Application to Interstellar Graphite Grains”, *Ap. J.*, **333**, 848-872.
- Wardle, M., & **Draine, B.T.** 1987, “Oblique Magnetohydrodynamic Shock Waves in Molecular Clouds”, *Ap. J.*, **321**, 321-333.
- Draine, B.T.**, & Sutin, B. 1987, “Collisional Charging of Interstellar Grains”, *Ap. J.*, **320**, 803-817.
- Draine, B.T.** 1986, “MHD Shocks in Diffuse Clouds III: The Line-of-Sight Toward ζOph”, *Ap. J.*, **310**,

408-418.

**Draine, B.T.**, & Katz, N.S. 1986, "MHD Shocks in Diffuse Clouds II: Formation of CH<sup>+</sup>, OH, CH, and Other Species", *Ap. J.*, **310**, 392-407.

**Draine, B.T.**, & Katz, N.S. 1986, "MHD Shocks in Diffuse Clouds I: Chemical Processes", *Ap. J.*, **306**, 655-666.

**Draine, B.T.** 1986, "Multicomponent, Reacting MHD Flows", *M.N.R.A.S.*, **220**, 133-148.

**Draine, B.T.**, & Anderson, N. 1985, "Temperature Fluctuations and Infrared Emission from Interstellar Dust", *Ap. J.*, **292**, 494-499.

Lee, H.M., & **Draine, B.T.** 1985, "Infrared Extinction and Polarization Due to Partially-Aligned Spheroidal Grains: Models for the Dust Toward the BN Object", *Ap. J.*, **290**, 211-228.

**Draine, B.T.** 1985, "Tabulated Optical Properties of Graphite and Silicate Grains", *Ap. J. Suppl.*, **57**, 587-594.

**Draine, B.T.**, & Lee, H.M. 1984, "Optical Properties of Interstellar Graphite and Silicate Grains", *Ap. J.*, **285**, 89-108 (erratum: *Ap. J.*, **318**, 485 [1987]).

**Draine, B.T.**, & Roberge, W.G. 1984, "CO Line Emission from Shock Waves in Molecular Clouds", *Ap. J.*, **282**, 491-507.

**Draine, B.T.**, & Giuliani, J.L. 1984, "Thermal Evaporation of Spherical Clouds: Effects of Viscous Stresses", *Ap. J.*, **281**, 690-701.

**Draine, B.T.** 1984, "The Infrared Signature of Graphite Grains", *Ap. J. Lett.*, **277**, L71-L74.

**Draine, B.T.** 1983, "Magnetic Bubbles and High Velocity Outflows in Molecular Clouds", *Ap. J.*, **270**, 519-536.

**Draine, B.T.**, Roberge, W.G., & Dalgarno, A. 1983, "Magnetohydrodynamic Shock Waves in Molecular Clouds", *Ap. J.*, **264**, 485-507.

**Draine, B.T.**, & Roberge, W.G. 1982, "Origin of the Intense Molecular Line Emission from OMC-1", *Ap. J. Lett.*, **259**, L91-L96.

**Draine, B.T.**, & Bahcall, J.N. 1981, "Dust-Sensitive Forbidden Line Ratios", *Ap. J.*, **250**, 579-589.

**Draine, B.T.** 1981, "Infrared Emission from Dust in Shocked Gas", *Ap. J.*, **245**, 880-890.

**Draine, B.T.** 1980, "Interstellar Shock Waves with Magnetic Precursors", *Ap. J.*, **241**, 1021-1038 (erratum: *Ap. J.*, **246**, 1045).

**Draine, B.T.** 1979, "Time-Dependent Nucleation Theory and the Formation of Interstellar Grains", *Ap. Sp. Sci.*, **65**, 313-335.

**Draine, B.T.**, & Salpeter, E.E. 1979b, "Destruction Mechanisms for Interstellar Dust", *Ap. J.*, **231**, 438-455.

**Draine, B.T.**, & Salpeter, E.E. 1979a, "On the Physics of Dust Grains in Hot Gas", *Ap. J.*, **231**, 77-94.

**Draine, B.T.** 1979, "On the Chemisputtering of Interstellar Graphite Grains", *Ap. J.*, **230**, 106-115.

**Draine, B.T.** 1978, "Photoelectric Heating of Interstellar Gas", *Ap. J. Suppl.*, **36**, 595-619.

**Draine, B.T.**, & Salpeter, E.E. 1978, "Intensity of Interstellar Lyman Alpha", *Nature*, **271**, 730-731.

**Draine, B.T.**, & Salpeter, E.E. 1977, "Time-Dependent Nucleation Theory", *J. Chem. Phys.*, **67**, 2230-2235.

**Draine, B.T.**, & Sievers, A.J. 1976, "A High Responsivity, Low Noise Germanium Bolometer for the Far Infrared", *Opt. Comm.*, **16**, 425-428.

#### Invited Review Articles:

Sandstrom, K.M., Bolatto, A.D., **Draine, B.T.**, Bot, C., & Stanimirovic, S. 2011, "The Spitzer Surveys of the Small Magellanic Cloud: Insights into the Life-Cycle of Polycyclic Aromatic Hydrocarbons", in *PAHs and the Universe*, ed. C. Joblin & A.G.G.M. Tielens, EAS Publications Series, Vol. **46**, 215-221

**Draine, B.T.** 2011, "Astronomical Models of PAHs and Dust", in *PAHs and the Universe*, ed. C. Joblin & A.G.G.M. Tielens, EAS Publications Series, Vol. **46**, 29-42

Calzetti, D., Kennicutt, R.C., Dale, D.A., **Draine, B.T.**, Engelbracht, C.W., Gil de Paz, A., Gordon, K.D., *et al.* 2010, "Nearby Galaxies with Spitzer", <http://arxiv.org/abs/1005.4644>

**Draine, B.T.** 2009, "Interstellar Dust Models and Evolutionary Implications", in *Cosmic Dust – Near and*

- Far*, ed. Th. Henning, E. Grün, & J. Steinacker, ASP Conference Series, **414**, 435-454 (San Francisco: Astronomical Society of the Pacific)
- Draine, B.T.** 2009, “Interstellar Dust Models: Extinction, Absorption, and Emission”, in *Interstellar Dust from Astronomical Observations to Fundamental Studies* (Les Houches, May 2006), EAS Publication Series, Vol. **35**, 245-268
- Draine, B.T.** 2008, “Dust in the SINGS Galaxy Sample”, in *Far-Infrared and Submillimeter Emission of the Interstellar Medium* (Bad Honnef, November 2007), Eds. C. Kramer, S. Aalto, R. Simon, EAS Publication Series, Vol. **31**, 137-142.
- Huss, G.R., & **Draine, B.T.** 2007, “What can pre-solar grains tell us about the solar nebula?”, in *Highlights of Astronomy*, **14**, 353-356.
- Benjamin, R.A., **Draine, B.T.**, Indebetouw, R., Lada, C.J., Majewski, S.R., Reid, I.N., & Skrutskie, M.F. 2007, “The Warm Spitzer Mission: Opportunities to Study Galactic Structure and the Interstellar Medium”, in *The Science Opportunities for the Warm Spitzer Mission Workshop*, AIP Conf. Proc., **943**, 101-121.
- Regan, M., Thornley, M.D., Vogel, S.N., Sheth, K. **Draine, B.T.**, Hollenbach, D.J., Meyer, M., *et al.* 2007, “SINGS Observations of Spiral Galaxies”, in *Island Universes*, 341-346 (Springer)
- Draine, B.T.** 2006, “Spitzer Space Telescope and the Physics of Interstellar Matter”, in *Spitzer Space Telescope: New Views of the Cosmos*, ed. L. Armus & W.T. Reach, ASP Conference Series, **357**, 305-312 (San Francisco: Astronomical Society of the Pacific)
- Draine, B.T.** 2006, “Can Dust Explain Variations in D/H?”, in *Astrophysics in the Far Ultraviolet*, ed. G. Sonneborn, H.W. Moos, & B.-G. Andersson, ASP Conference Series, **348**, 58-69 (San Francisco: Astronomical Society of the Pacific)
- Draine, B.T.** 2005, “Infrared emission and models of interstellar dust”, in *Proceedings of the dusty and molecular universe: a prelude to Herschel and ALMA*, ed. A. Wilson, ESA SP-577 (Noordwijk: ESA Publications Div.)
- Draine, B.T.** 2004, “Interstellar Dust Models”, in *Astrophysics of Dust*, ed. A.N. Witt, G. Clayton, & B.T. Draine, ASP Conference Series, **309**, 691-708. San Francisco: Astronomical Society of the Pacific.
- Draine, B.T.** 2004, “Astrophysics of Dust in Cold Clouds”, in *The Cold Universe, Saas-Fee Advanced Course 32*, ed D. Pfenniger and Y. Revaz, (Berlin: Springer-Verlag), 213-303
- Draine, B.T.** 2004, “Interstellar Dust”, in *Carnegie Observatories Astrophysics Series, Vol. 4: Origin and Evolution of the Elements*, ed. A. McWilliams and M. Rauch, (Cambridge: Cambridge Univ. Press), 317-335
- Draine, B.T.** 2003, “Interstellar Dust Grains”, *Ann. Rev. Astr. Ap.*, **41**, 241-289 [<http://arXiv.org/abs/astro-ph/0304489>]
- Draine, B.T.** 2001, “Interstellar Grains”, in *Encyclopedia of Astronomy and Astrophysics*, (IOP Publishing and Macmillan), 1266-1273.
- Draine, B.T.**, & Bertoldi, F. 2000, “Theoretical Models of Photodissociation Fronts”, in *H<sub>2</sub> in Space*, ed. F. Combes & G. Pineau des Forêts, (Cambridge: Cambridge Univ. Press), 131-138.
- Bertoldi, F., **Draine, B.T.**, Rosenthal, D., Timmermann, R., Ramsay Howat, S.K., Geballe, T., Feuchtgruber, H., & Drapatz, S. 2000, “Excitation of H<sub>2</sub> and HD in shocks and PDRs”, in *IAU Symposium 197: Astrochemistry*, ed. Y.C. Minh & E.F. van Dishoeck, (San Francisco: Astr. Soc. Pac.), 191-201
- Draine, B.T.** 2000b, “The Discrete Dipole Approximation for Light Scattering by Irregular Targets”, in *Light Scattering by Nonspherical Particles: Theory, Measurements, and Applications*, ed. M. I. Mishchenko, J. W. Hovenier, & L. D’Travis (N.Y.: Academic Press), 131-145.
- Draine, B.T.**, & Lazarian, A. 1999b, “Microwave Emission from Galactic Dust Grains”, in *Microwave Foregrounds* eds. A. de Oliveira-Costa & M. Tegmark, *Astr. Soc. Pacific Conf. Series*, **181**, 133-149 (San Francisco: Astr. Soc. Pacific)
- Bertoldi, F., **Draine, B.T.**, Drapatz, S., Rosenthal, D., Timmermann, R., Wright, C.M. 1999, “ISO looks at shocks and photodissociation regions”, in *The Physics and Chemistry of the Interstellar Medium, Proceedings of the 3rd Cologne-Zermatt Symposium*, ed. V. Ossenkopf, J. Stutzki, & G. Winnewisser

- (Herdecke: GCA-Verlag), 120-127.
- Draine, B.T.**, & Bertoldi, F. 1999, "Heating the Gas in Photodissociation Fronts", in *The Universe as seen by ISO*, ed. P. Cox & M.F. Kessler, (Noordwijk: ESA), 553-559.
- Draine, B.T.** 1999, "Diffuse Galactic Emission from Dust Grains", in *3K Cosmology*, ed. L. Maiani, F. Melchiorri, & N. Vittorio AIP Conf. Proceedings 476 (Woodbury, NY: American Inst. of Physics), 283-292.
- Draine, B.T.** 1997, "Interstellar Medium", in *Encyclopedia of Planetary Sciences*, ed. J.H. Shirley & R.W. Fairbridge, (London: Chapman & Hall), 344-345.
- Draine, B.T.** 1996, "Optical and Magnetic Properties of Dust Grains", in *Polarimetry of the Interstellar Medium*, ed. W.G. Roberge & D.C.B. Whittet, Astr. Soc. Pacific Conf. Series, **97**, 16-28 (San Francisco: Astr. Soc. Pacific)
- Draine, B.T.** 1995, "Grain Destruction in Interstellar Shock Waves", in *Shocks in Astrophysics*, ed. T.J. Millar, *Ap. Sp. Sci.*, **233**, 111-123 .
- Draine, B.T.** 1995, "Properties of Dust in Diffuse Clouds", in *Physics of the Interstellar Medium and Intergalactic Medium*, ed. A. Ferrara, C. Heiles, C.F. McKee, & P.R. Shapiro, Astr. Soc. Pacific Conf. Series, **80**, 133-147. (San Francisco: Astr. Soc. Pacific).
- Draine, B.T.** 1994, "Dust in Diffuse Interstellar Clouds", in *The Infrared Cirrus and Diffuse Interstellar Clouds*, ed. R.M. Cutri & W.B. Latter, Astr. Soc. Pacific Conf. Series, **58**, 227-242 (San Francisco: Astr. Soc. Pacific).
- Draine, B.T.**, & McKee, C.F. 1993, "Theory of Interstellar Shocks", *Ann. Rev. Astr. Ap.*, **31**, 373-432.
- Van Dishoeck, E.F., Blake, G.A., **Draine, B.T.**, & Lunine, J.I. 1993, "The Chemical Evolution of Protostellar and Protoplanetary Matter", in *Protostars and Planets III*, ed. E.H. Levy & J.I. Lunine, (Tucson: Univ. of Arizona), 163-241.
- Draine, B.T.** 1991, "Magnetohydrodynamic Shock Waves in Molecular Clouds", in *Proceedings of IAU Symp. 147: Fragmentation of Molecular Clouds and Star Formation*, ed. E. Falgarone, F. Boulanger, & G. Duvert (Dordrecht: Kluwer Acad. Pub.), 185-196.
- McKee, C.F., & **Draine, B.T.** 1991, "Interstellar Shock Waves", *Science*, **252**, 397-403.
- Draine, B.T.** 1990, "Evolution of Interstellar Dust", in *The Evolution of the Interstellar Medium*, ed. L. Blitz, Astr. Soc. Pacific Conf. Series, **12**, 193-205.
- Draine, B.T.** 1990, "Mass Determinations from Far-Infrared Observations", in *The Interstellar Medium in Galaxies*, ed. H.A. Thronson & J.M. Shull (Dordrecht: Kluwer), 483-492.
- Draine, B.T.** 1989, "Destruction Processes for Interstellar Dust", in *Evolution of Interstellar Dust and Related Topics*, ed. A. Bonetti, J.M. Greenberg, & S. Aiello (Amsterdam: North Holland), 103-119.
- Draine, B.T.** 1989, "Charging Processes for Interstellar Dust", in *Evolution of Interstellar Dust and Related Topics*, ed. A. Bonetti, J.M. Greenberg, & S. Aiello (Amsterdam: North Holland), 91-101.
- Draine, B.T.** 1989, "Optical Properties of Interstellar Dust Grains", in *Evolution of Interstellar Dust and Related Topics*, ed. A. Bonetti, J.M. Greenberg, & S. Aiello (Amsterdam: North Holland), 77-89.
- Draine, B.T.** 1989, "Interstellar Extinction in the Infrared", in *Infrared Spectroscopy in Astronomy* (Proceedings of 22nd Eslab Symposium), ESA SP-290, ed. B.H. Kaldeich (Noordwijk: ESA), 93-98
- Draine, B.T.** 1989, "On the Interpretation of the  $\lambda 2175\text{\AA}$  Feature", in *Interstellar Dust* (Proceedings of IAU Symposium 135), ed. L.J. Allamandola & A.G.G.M. Tielens (Dordrecht: Kluwer), 313-327.
- Draine, B.T.** 1987, "MHD Shock Waves in Diffuse Clouds", in *Physical Processes in Interstellar Clouds*, ed. G.E. Morfill & M. Scholer, (Dordrecht: Reidel), 423-428.
- Shull, J.M., & **Draine, B.T.** 1987, "The Physics of Interstellar Shock Waves", in *Interstellar Processes*, ed. D. Hollenbach & H. Thronson (Dordrecht: Reidel), 283-319.
- Draine, B.T.** 1985, "Circumstellar Grain Formation", in *Inter-relationships Among Circumstellar, Interstellar and Interplanetary Dust* (Proceedings of a Workshop), ed. J.A. Nuth III & R.E. Stencel (Washington: NASA), 18-27.
- Draine, B.T.** 1985, "Theoretical Models of Shock Waves in Molecular Clouds", in *Molecular Astrophysics*, ed. G.H.F. Dierksen, W.F. Huebner, & P.W. Langhoff (Dordrecht: Reidel), 295-310.

**Draine, B.T.** 1985, “Grain Evolution in Dark Clouds”, in *Protostars and Planets II*, ed. D.C. Black & M.S. Matthews (Tucson: Univ. of Arizona Press), 621-640.

**Draine, B.T.** 1981, “Dust Formation Processes Around Red Giants and Supergiants”, in *Physical Processes in Red Giants*, ed. I. Iben & A. Renzini (Dordrecht: Reidel), 317-333.

#### **Book Edited:**

*Astrophysics of Dust*, Proceedings of the conference held 26-30 May, 2003 at Estes Park, Colorado. Edited by A.N. Witt, G.C. Clayton, and **B.T. Draine**, ASP Conference Series, **309**. 812 pp. (San Francisco: Astronomical Society of the Pacific, 2004).

#### **General Public:**

**Draine, B.T.** 1999, “The View Out the Window”, in *Centennial Lectures of the Graduate School of The University of Southwestern Louisiana* (Publications of the Graduate School, Volume Six) ed. L. Pyenson, 65-81.

#### **Publicly Available Software and Data:**

**Draine, B.T.**, Li, A., Hensley, B.S., Hunt, L.K., Sandstrom, K., & Smith, J.-D.T. 2021, “Excitation of Polycyclic Aromatic Hydrocarbon (PAH) Emission: Dependence on Starlight Spectrum, Intensity, PAH Size Distribution, and PAH Ionization”, *Ap. J.*, **917**:13. article: doi:10.3847/1538-4357/abff51  
Online data: <https://doi.org/10.7910/DVN/LPUHIQ>

**Draine, B.T.** & Hensley, B.S. 2021a, “The Dielectric Function of “Astrodust”, and Scattering and Absorption Cross Sections for Spheroids”, Online data: <https://doi.org/10.34770/9ypp-dv78>

Aniano, G., **Draine, B.T.**, Hunt, L.K., Sandstrom, K., Calzetti, D., Kennicutt, R.C., Dale, D., et al. 2020, “Modeling Dust and Starlight in Galaxies Observed by *Spitzer* and *Herschel*: The KINGFISH Sample”, article: *Ap. J.*, **889**:150. doi:10.3487/1538-4357/ab5fdb .  
Online data: <https://doi.org/10.34770/kyb8-bw61>

**Draine, B.T.** 2016, “Graphite Revisited”, *Ap. J.*, **831**:109. article: doi:10.3847/0004-637X/831/1/109 .  
Online data: <http://arks.princeton.edu/ark:/88435/dsp01nc580q118>

**Draine, B.T.**, Hoffman, J., Tarczon, M., & **Draine, B.T.** 2015, “GGADT: General Geometry Anomalous Diffraction Theory”, Astrophysics Source Code Library, record ascl:1510.001, <http://ggadt.org>

**Draine, B.T.**, & Flatau, P.J. 2013, “User Guide for the Discrete Dipole Approximation Code DDSCAT 7.3” (102 pages), <http://arXiv.org/abs/1305.6497>

**Draine, B.T.**, & Flatau, P.J. 2012, DDSCAT 7.2: A Fortran program to calculate scattering and absorption of electromagnetic radiation by arbitrary targets, including periodic structures, using the discrete dipole approximation. Complete source code and documentation at <http://code.google.com/p/ddscat>

**Draine, B.T.**, & Flatau, P.J. 2012, “User Guide for the Discrete Dipole Approximation Code DDSCAT 7.2” (93 pages), <http://arXiv.org/abs/1202.3424>

**Draine, B.T.**, & Flatau, P.J. 2010, DDSCAT 7.1: A Fortran program to calculate scattering and absorption of electromagnetic radiation by arbitrary targets, including periodic structures, using the discrete dipole approximation. Complete source code and documentation at <http://code.google.com/p/ddscat>

**Draine, B.T.**, & Flatau, P.J. 2010, “User Guide for the Discrete Dipole Approximation Code DDSCAT 7.1” (83 pages), <http://arXiv.org/abs/1002.1505>

**Draine, B.T.**, & Flatau, P.J. 2008, “User Guide for the Discrete Dipole Approximation Code DDSCAT 7.0” (78 pages), <http://arXiv.org/abs/0809.0337>

**Draine, B.T.**, & Flatau, P.J. 2008, DDSCAT 7.0: A Fortran program to calculate scattering and absorption of electromagnetic radiation by arbitrary targets, including periodic structures, using the discrete dipole approximation. <http://www.astro.princeton.edu/~draine/DDSCAT.html>

**Draine, B.T.**, & Flatau, P.J. 2004, “User Guide for the Discrete Dipole Approximation Code DDSCAT.6.1” (57 pages), <http://arXiv.org/abs/astro-ph/0409262>

**Draine, B.T.**, & Flatau, P.J. 2004, DDSCAT 6.1: A Fortran program to calculate scattering and absorption of electromagnetic radiation by arbitrary targets using the discrete dipole approximation.



<http://www.astro.princeton.edu/~draine/DDSCAT.html>

- Draine, B.T.**, & Flatau, P.J. 2003, “User Guide for the Discrete Dipole Approximation Code DDSCAT.6.0” (46 pages) <http://arXiv.org/abs/astro-ph/0309069>
- Draine, B.T.**, & Flatau, P.J. 2003, DDSCAT 6.0: A Fortran program to calculate scattering and absorption of electromagnetic radiation by arbitrary targets using the discrete dipole approximation. <http://www.astro.princeton.edu/~draine/DDSCAT.html> (removed 2008 September).
- Draine, B.T.**, & Flatau, P.J. 2000, “User Guide for the Discrete Dipole Approximation Code DDSCAT (Version 5a10)” (39 pages) [POPe-841] <http://arXiv.org/abs/astro-ph/0008151>
- Draine, B.T.**, & Flatau, P.J. 1998, “User Guide for DDSCAT.5a9” (41 pages) [Princeton Obs. Preprint POPe-785]. <ftp://astro.princeton.edu/draine/scat/ddscat/ver5a9/UserGuide.ps>
- Draine, B.T.**, & Flatau, P.J. 1997, “User Guide for DDSCAT.5a” (39 pages) [Princeton Obs. Preprint POPe-695]. <ftp://astro.princeton.edu/draine/scat/ddscat/ver5a8/UserGuide.ps>
- Draine, B.T.**, & Flatau, P.J. 1996, “DDSCAT Version 5a: A FORTRAN Program to Calculate Scattering and Absorption of Electromagnetic Radiation by Arbitrary Targets Using the Discrete Dipole Approximation”. Available by anonymous ftp at [astro.princeton.edu](http://astro.princeton.edu), in directory /draine/scat/ddscat/ver5a.
- Draine, B.T.**, & Flatau, P.J. 1995, “DDSCAT Version 4c: A FORTRAN Program to Calculate Scattering and Absorption of Electromagnetic Radiation by Arbitrary Targets Using the Discrete Dipole Approximation”. Available by anonymous ftp at [astro.princeton.edu](http://astro.princeton.edu), in directory /draine/scat/ddscat/ver4c.
- Draine, B.T.** 1993, “Optical Properties of Graphite, Silicate, and Silicon Carbide Grains”. Dielectric functions for graphite, “astronomical silicate”, and SiC, at wavelengths  $10\text{\AA}$ –1mm. Scattering and absorption cross sections for spheres with radii .001– $10\mu\text{m}$ , at wavelengths  $10\text{\AA}$ –1mm, calculated using methods described in Laor & Draine (1993). Available by anonymous ftp at [astro.princeton.edu](http://astro.princeton.edu), in directory /draine/dust.
- Draine, B.T.**, & Flatau, P.J. 1993, “DDSCAT Version 4b: A FORTRAN Program to Calculate Scattering and Absorption of Electromagnetic Radiation by Arbitrary Targets Using the Discrete Dipole Approximation”. Available by anonymous ftp at [astro.princeton.edu](http://astro.princeton.edu), in directory /draine/scat/ddscat/ver4b.

#### Conference Proceedings and White Papers:

- Dickinson, C., Ali-Haïmoud, Y., Beswick, R.J., Casassus, S., Cleary, K., **Draine, B.T.**, Genova-Santos, R., *et al.* 2014, “Studies of Anomalous Microwave Emission (AME) with the SKA”, in *Advancing Astrophysics with the Square Kilometre Array*, Proceedings of Science, submitted
- Flatau, P.J., Stephens, G.L., & **Draine, B.T.** 1988a, “Radiative Properties of Visible and Subvisible Cirrus: Scattering on Hexagonal Ice Crystals”, in *FIRE (First International Satellite Cloud Climatology (ISCCP) Regional Experiment) Science Team Meeting*, July 1988, pp. 77-82.
- Draine, B.T.**, & Woods, D.T. 1989, “IR Line Emission from Supernovae in Molecular Clouds”, in *Infrared Spectroscopy in Astronomy*, ed. B.H. Kaldeich, ESA SP-290, 155-159.
- Weingartner, J.C., & **Draine, B.T.** 1999, “Grain Dynamics in Photodissociation Regions”, in *The Universe as seen By ISO*, ed. P. Cox & M.F. Kessler, (Nordwijk: ESA), 783-786. [<http://arXiv.org/abs/astro-ph/9812468>]
- Rigaut, F., Geballe, T.R., Roy, J.-R., & **Draine, B.T.** 2003, “A Bow Shock of Heated Dust Surrounding IRS 8”, in *Proceedings of the Galactic Center Workshop 2002 – The central 300 parsecs of the Milky Way*, *Astron. Nachr.*, **324**, No. S1, 551-555

#### Unpublished Reports:

- Draine, B.T.** 1974, “A High Responsivity, Low Noise Germanium Bolometer for the Far Infrared”, Materials Science Center Report No. 2331 (Cornell University).
- Draine, B.T.** 1977, “Sputtering”, Center for Radiophysics and Space Research Report No. 669 (Cornell University).
- Draine, B.T.** 1987, “Tabulated Optical Properties of Graphite and Silicate Grains”, POP-213 (Princeton University).