Doran I. G. Bennett, Ph.D.

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www.mesosciencelab.com • Google Scholar • GitHub

Education

2015 - 2019	**Harvard University**, Post-Doctoral Fellow
2008 - 2013	**UC Berkeley**, Ph.D., Chemistry
2003 - 2007	**University of Chicago**, B.A./M.S. Chemistry, B.S. Applied Mathematics

Research and Professional Experience

2019 -	**Assistant Professor**, Southern Methodist University, Dept. of Chemistry
2015 -2019	**Post-Doctoral Fellow**, Harvard University, Dept. of Chemistry & Chemical Biology Advisor: Alan Aspuru-Guzik
2013 - 2015	**Senior Chemist**, Dow Chemical Co., Inorganic Materials & Heterogeneous Catalysis
2008 - 2013	**Graduate Student**, UC Berkeley, Dept. of Chemistry Advisor: Graham Fleming
2007 - 2008	**Research Assistant**, University of Maryland, Dept. of Chemistry Advisor: Millard Alexander
2003 - 2007	**Research Assistant**, University of Chicago, Dept. of Chemistry Advisor: Laurie Butler

Honors and Awards

Fellowships

Visiting Scholar, Max Plank Institute for the Physics of Complex Systems	2019
CIFAR - Bio-Inspired Light Harvesting Post-Doctoral Fellow	2016-2019
Dow Chemical Rotational Fellow	2013-2015
NSF Graduate Research Fellowship: Physical Chemistry	2007-2011
DAAD RISE Professional	2007
Goldwater Scholar	2006
Beckman Scholar	2005-2007

Academic Recognition

International Conference on Microbial Photosynthesis Travel Award	2018
Biophysical Society Travel Award	2018
Clean Energy Poster Prize: Excited State Process Conference	2016
Dan Lucas Memorial Prize: UC Berkeley	2009
Outstanding Graduate Student Instructor: UC Berkeley	2009
Student Marshal: University of Chicago	2007
Phi Beta Kappa	2007
Chemical Industry Council of Illinois Scholar	2007
Physical Chemistry Poster Prize: ACS Fall Meeting	2006

Mesoscience Lab at 25 Months

External Funding Received

Number of Grants	4
Total Budget for Mesoscience Lab	$791,466
Total Amount	$2,311,466

Adaptation of photosynthetic membranes to environmental change

PI	Bennett
co-PI	Roberta Croce, Ben Engel
Source of Support	Human Frontiers Science Program (HFSP)
Total award amount	$1,095,000 (Mesoscience Budget $365,000)
Total award period	Dec. 1, 2021 – Nov. 31, 2024
Award Number	RGP0005/2021

Start-up Grant: Cyanobacteria light harvesting when iron is scarce

PI	Bennett
co-PI	Nir Keren, WE Moerner
Source of Support	Binational Science Foundation (BSF)
Total award amount	$75,000
Total award period	Oct. 1, 2020 – Sept. 30, 2022
Award Number	2019330

Mesoscale quantum dynamics in new semiconductor materials

PI	Bennett
co-PI	–
Source of Support	Welch Foundation
Total award amount	$240,000
Total award period	June 1, 2020 – May 31, 2023
Award Number	N-2026-20200401

NSF-BSF: High-resolution mapping of the protein landscape in plant photosynthetic membranes

PI	Helmut Kirchoff
co-PI	Bennett
Source of Support	National Science Foundation (NSF-MCB)
Total award amount	$901,466 (Mesoscience Budget $111,466)
Total award period	May 1, 2020–April 30, 2023
Award Number	1953570

External Funding Pending

CAREER: Simulating mesoscale quantum dynamics and non-linear microscopy

PI	Bennett
co-PI	–
Source of Support	National Science Foundation (NSF-CHEM)
Total requested amount	$732,175
Total period	June 1, 2022 – May 31, 2027

Current Lab Members

Postdocs	3
2nd year graduate students	3
1st year graduate students	2
Undergraduates	2
Total	**10**

Grad students personally recruited to SMU	3/5
Total URM and Women	4/10

2021 Student Award and Honors

- Moody Fellowship (five years full funding: $150,000) [Jacob Lynd]
- SMU Chemistry Dept Outstanding Teaching Assistant Award [Bailey Raber]
- 2nd place Physical/Computational talk at ACS DFW Meeting in Miniature [Leo Varvelo]
- Undergraduate Speaking Prize at ACS DFW Meeting in Miniature [Jacob Lynd]

Publications

20. W. Nawrocki, X. Liu, B. Raber, C. Hu, C. de Vitry, **D. I. G. Bennett**, R. Croce
The rise and fall of the photoinhibition-related energy dissipation.
bioRxiv, 2021.03.10.434601 (2021)

19. L. Varvelo, J. K. Lynd, **D. I. G. Bennett**
Simulating mesoscale quantum dynamics with an adaptive hierarchy of pure states.
Chemical Science, *12*, 9704-9711 (2021)

18. J.C. Dean, **D. I. G. Bennett**, M. Saniforth, M. Maiuri
Editorial: Vibrationally-mediated chemical dynamics
Frontiers in Chemistry, *9*, 681457 (2021)

17. H. Zhou, F. Wang, **D. I. G. Bennett**, P. Tao
Directed kinetic transition network model.
J. Chemical Physics, *151* 144112 (2019)

Prior to SMU

*** - Corresponding Author, † - Equal Contribution, # - First Theory Author**

16. **D. I. G. Bennett**, K. Amarnath, S. Park, C. J. Steen, J. Morris, G. R. Fleming
Models and Mechanisms of the Rapidly Reversible Regulation of Photosynthetic Light harvesting
Open Biology, *9* 190043 (2019)

15. C. Chuang, **D.I.G. Bennett**, J. R. Caram, A. Aspuru-Guzik, M. G. Bawendi, J. Cao
Generalized Kasha's Model: T-Dependent Spectroscopy Reveals Short-Range Structures of 2D Excitonic Systems
Chem, *12* 3135 (2019)

14. **D.I.G. Bennett***, G. R. Fleming*, K. Amarnath*
Energy-dependent quenching adjusts the excitation diffusion length to regulate photosynthetic light harvesting.
PNAS, *115* E9523 (2018)

13. **D.I.G. Bennett***, P. Maly, C. Kreisbeck, R. van Grondelle, A. Aspuru-Guzik
Mechanistic regimes of vibronic transport in a heterodimer and the design principle of incoherent vibronic transport in phycobiliproteins
J. Physical Chemistry Letters, 10 2665 (2018)

12. S. Blau†, **D.I.G. Bennett†**, C. Kreisbeck, G. Scholes, A. Aspuru-Guzik
Local protein solvation drives direct down-conversion in phycobiliprotein PC645 via incoherent vibronic transport
PNAS, *115* E3342 (2018)

11. S. Doria, J. R. Caram, T. S. Sinclair, **D.I.G. Bennett**, C. Chuang, F. Freyria, C. P. Steiner, P. Foggi, K. Nelson, J. Cao, A. Aspuru-Guzik, S. Lloyd, M. G. Bawendi
Photochemical Control of Exciton Superradiance in Light Harvesting Nanotubes
ACS Nano, *12* 4556 (2018)

10. K. Amarnath*, **D.I.G. Bennett***, A. Schneider, G. R. Fleming*
Multiscale Model of Light Harvesting by Photosystem II in Plants
PNAS, *113* 1156 (2016)

9. J.J.J. Roden, **D.I.G. Bennett**, K. B. Whaley
Long Range Energy Transport in Photosystem II
J. Chemical Physics, *144* 245101 (2016)

8. **D.I.G. Bennett**, K. Amarnath, G. R. Fleming

A structure based model of energy transfer reveals the principles of light harvesting in photosystem II supercomplex
JACS, *135*, 9164 (2013)

7. S. J. McGurk, M. L. McKendrick, M. L. Costen, **D.I.G. Bennett**, J. Klos, M. H. Alexander, P. J. Dagdigian
Depolarization of Rotational Angular Momentum in CN+Ar Collisions
J. Chemical Physics, *136*, 164306 (2012)

6. J. M. Dawlaty, **D.I.G. Bennett**, V. M. Huxter, G. R. Fleming
Mapping the spatial overlap of excitons in a photosynthetic complex via coherent nonlinear frequency generation.
J. Chemical Physics, *135*, 044201 (2011)

5. A. Khachatrian, P. J. Dagdigian, **D.I.G. Bennett**$^{\#}$, F. Lique, J. Klos, M. H. Alexander
Experimental and Theoretical Study of Rotationally Inelastic Collisions of CN with N_2.
J. Physical Chemistry A, *113*, 3922 (2009)

4. B. L. J. Poad, P. J. Wearne, E. J. Bieske, A. A. Buchachenko, **D.I.G. Bennett**$^{\#}$, J. Klos, M. H. Alexander
The $Na^{(+)}$–H_2 cation complex: Rotationally resolved infrared spectrum, potential energy surface, and rovibrational calculations.
J. Chemical Physics, *129*, 184306 (2008)

3. **D.I.G. Bennett**, L. J. Butler, H.-J. Werner
Comparing Electronic Structure Predictions for the Ground State Dissociation of the Vinoxy Radical
J. Chemical Physics, *127*, 094309 (2007)

2. M. J. Bell, K.-C. Lau, M. J. Krisch, **D.I.G. Bennett**, L. J. Butler, F. Weinhold
Characterization of the Methoxy Carbonyl Radical Formed via Photolysis of Methyl Chloroformate at 193 nm.
J. Physical Chemistry A, *111*, 1762 (2007)

1. L. R. McCunn, **D.I.G. Bennett**, L. J. Butler, H. Fan, F. Aguirre, and S. T. Pratt
Photodissociation of Propargyl Chloride at 193 nm
J. Physical Chemistry A, *110*, 843 (2006)

Presentations

[**scheduled**] Texas Tech University, Dept. of Chemistry, (Zoom)	Invited	2021
[**scheduled**] UT Tyler, Undergraduate ACS Chapter, Tyler, TX (USA)	Invited	2021
[**scheduled**] ISPR: Computational Methods in Photosynthesis Conference, (Zoom)	**Keynote**	2021
[**scheduled**] ACS Southwest Regional Conference, Austin, TX (USA)	Invited	2021
[**scheduled**] Loyola University of Chicago, Dept. of Chemistry, (Zoom)	Invited	2021
Telluride Workshop: Spatio-Temporal Dynamics of Excitons, (Zoom)	Invited	2021
Western Regional Photosynthesis, (Zoom)	Invited	2021
Dept. of Physics, Rostock University (DE), (Zoom)	Invited	2021
Workshop: Excitons at Different Length Scales and Dimensionality, (Zoom)	Invited	2020
Virtual Conference on Theoretical Chemistry, (Zoom)	Invited	2020
Telluride Workshop, Telluride (USA)	[Invited, Canceled]	2020
McGill MiniScience Meeting, Montreal (CA)	[Invited, Canceled]	2020
American Chemical Society Spring Meeting, Philadelphia, PA (USA)	[Canceled]	2020
Dept. of Chemistry, Midwestern State University, Wichita Falls, TX (USA)	Invited	2020
Dept. of Chemistry, University of Texas, Dallas, Dallas, TX (USA)	Invited	2019
Dept. of Biology, Southern Methodist University, Dallas, TX (USA)	Invited	2019
Dept. of Chemistry, Angelo State University, San Angelo, TX (USA)	Invited	2019
Dept. of Chemistry, LeTourneau University, Longview, TX (USA)	Invited	2019
American Chemical Society Fall Meeting, San Diego, CA (USA)		2019

Prior to SMU

Dept. of Chemistry, Southern Methodist University, Dallas (USA)	Invited	2018
Dept. of Chemistry, Duquesne University, Pittsburg (USA)	Invited	2018
Dept. of Chemistry, Colorado School of Mines, Golden (USA)	Invited	2018
Dept. of Chemistry, City University of New York, New York (USA)	Invited	2018
American Chemical Society Fall Meeting, Boston (USA)		2018
International Conference on Microbial Photosynthesis, Vancouver (CA)	Travel Award	2018
Dept. of Chemistry, University of Pennsylvania, Philadelphia (USA)	Invited	2018
Quantum Effects in Biology, Vilnus (LTU)		2018
Quantum Simulators Workshop, Eugene (USA)	Invited	2018
Eastern Regional Photosynthesis, Woods Hole (USA)		2018
Bio-Inspired Solar Energy Meeting, Toronto (CA)		2018
American Physics Society March Meeting, Los Angeles (USA)		2018
American Chemical Society Spring Meeting, New Orleans (USA)		2018
Dept. of Physics and Astronomy, VU University, Amsterdam (NL)	Invited	2017
Eastern Regional Photosynthesis, Woods Hole (USA)		2017
Dept. of Physics, University of Cyprus, Latsia (CY)	Invited	2017
Center for Quantum Bio-Sciences, Ulm (DE)	Invited	2017
Center for Excitonics, Annual meeting, Boston (USA)		2017
American Chemical Society Fall Meeting, Philadelphia (USA)		2016
Bio-Inspired Solar Energy Meeting, Vancouver (CA)		2016
Center for Excitonics, Annual meeting, Boston (USA)		2016
Quantum Simulators of Complex Molecular Networks, Oxford (UK)		2016
Bio-Inspired Solar Energy Meeting, Montreal (CA)		2016
Photosynthesis Gordon Research Conference, Boston (USA)	Invited	2015
IMHC, Dow Chemical Company, Midland (USA)	Invited	2013

SMU Courses Taught

- **Graduate Quantum Mechanics** — Fall 2020, Fall 2021
- **General Chemistry I** — Spring 2021

Conference Organization

Eastern Regional Photosynthesis Conference (2022/2023)

- Vice Chair 2022: Co-organizer with Marilyn Gunner (Chair, CUNY) of a long-standing 3-day community conference with > 50 attendees focused on research in photosynthesis, broadly conceived. In addition to developing symposium sessions and inviting speakers, we are fundraising to support reduced graduate student rates for attendance.
- Chair 2023: The following year, I will chair the conference for its 40th anniversary.

Coherent Multidimensional Spectroscopy Conference (2022)

- Local Organizing Committee: I'm serving as part of the local organizing committee for this international conference (Organizers: Sean Roberts (UT Austin) and Carlos Biaz (UT Austin)) focused on non-linear spectroscopy with approximately 200 anticipated attendees.

Service & Leadership

Guest Editor

- Frontiers in Chemistry (2020)

Reviewer

- DOE
- NSF, Panel Reviewer
- Nature Communications
- Journal of the American Chemical Society
- Journal of Physical Chemistry Letters
- Chemical Science
- Biophysical Journal
- Physical Review X
- Physical Chemistry Chemical Physics
- BBA - Bioenergetics
- Frontiers
- Quantum Science and Technology