

Nicholas J. Hestand

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[Google Scholar](#)

Education

Ph.D. Chemistry, *Temple University*, Philadelphia, PA 2017
Dissertation: Effects of Charge-Transfer Excitons on the Photophysics of Organic Semiconductors

B.S. Chemistry and Mathematics, *Evangel University*, Springfield, MO 2012
Summa Cum Laude

Employment and Research History

Evangel University, *Springfield, MO*, Associate Professor 2025 – present

Evangel University, *Springfield, MO*, Assistant Professor 2019 – 2025

Temple University, *Philadelphia, PA*, Adjunct Research Assistant Professor 2024 – present
Host: Frank C. Spano

North Carolina State University, *Raleigh, NC*, Visiting Researcher 2025 – present
Host: Raja Ghosh

University of Chicago, *Chicago, IL*, Postdoctoral Scholar 2017 – 2019
Advisor: James L. Skinner

Temple University, *Philadelphia, PA*, Graduate Research Assistant 2012 – 2017
Advisor: Frank C. Spano

Publications

1. M. B. Qarai, N. J. Hestand, F. C. Spano “Spectral Signatures of Polarons and Bipolarons in P3HT: Single Chains vs π -Stacks” *J. Phys. Chem. C*, **129** (1), 812-825, (2025).
2. M. B. Qarai, R. Ghosh, N. J. Hestand, F. C. Spano “Bound Multi-polaron Complexes in Conducting Polymers: The Importance of Hole-Hole Repulsion in Charge Delocalization” *J. Phys. Chem. C*, **127** (13), 6414-6424, (2023).
3. F. Unger, L. Moretti, J. Hausch, J. Brenderheoft, C. Zeiser, S. Haug, R. Tempelaar, N. J. Hestand, G. Cerullo, K. Broch “Modulating Singlet Fission by Scanning Through Vibronic Resonances in Pentacene-Based Blends” *J. Am. Chem. Soc.* **144** (45), 20610-20619, (2022).
4. F. Balzer, N. J. Hestand, J. Zablocki, G. Schnakenburg, A. Lutzen, and M. Schiek “Spotlight on Charge-Transfer Excitons in Crystalline Textured *n*-Alkyl Anilino Squaraine Thin Films” *J. Phys. Chem. C* **126** (32), 13802-13813, (2022).
5. S. E. Strong, N. J. Hestand, “Modeling nonlocal electron-phonon coupling in organic crystals using interpolative maps: The spectroscopy of crystalline pentacene and 7, 8, 15, 16-tetraazaterrylene” *J. Chem. Phys.* **153** (12), 124113, (2020).
6. S. E. Strong, N. J. Hestand, A. A. Kananenka, M. T. Zanni, J. L. Skinner, “IR Spectroscopy Can Reveal

- the Mechanism of K⁺ Transport in Ion Channels” *Biophys. J.* **118** (1), 254-261, (2020).
7. A. A. Kananenka, N. J. Hestand, J. L. Skinner, “OH-Stretch Raman Multivariate Curve Resolution Spectroscopy of HOD/H₂O mixtures” *J. Phys. Chem. B*, **123** (24), 5139-5146, (2019).
 8. N. J. Hestand, S. E. Strong, L. Shi, J. L. Skinner, “Mid-IR Spectroscopy of Supercritical Water: From Dilute Gas to Dense Fluid” *J. Chem. Phys.*, **150** (5), 054505, (2019).
 9. N. J. Hestand, J. L. Skinner, “Perspective: Crossing the Widom line in no man’s land; experiments, simulations and the location of the liquid-liquid critical point” *J. Chem. Phys.*, **149** (14), 140901, (2018).
 10. Y. Ni, N. J. Hestand, J. L. Skinner, “Communication: Diffusion constant in supercooled water as the Widom line is crossed in No Man’s Land” *J. Chem. Phys.*, **148** (19), 191102, (2018).
 11. N. J. Hestand, F. C. Spano, “Expanded Theory of H- and J-Molecular Aggregates: The Effects of Vibronic Coupling and Charge Transfer” *Chem. Rev.*, **118** (15), 7069-7163, (2018).
 12. K. Broch, J. Dieterle, F. Branchi, N. J. Hestand, Y. Olivier, H. Tamura, C. Cruz, V. Nichols, A. Hinderhofer, D. Beljonne, F. Spano, G. Cerullo, C. Bardeen, F. Schreiber, “Robust singlet fission in pentacene thin films with tuned charge transfer interactions” *Nat. Commun.*, **9** (1), 954, (2018).
 13. A. Austin, N. J. Hestand, I. McKendry, C. Zhong, X. Zhu, M. Zdilla, F. C. Spano, J. M. Szarko, “Enhanced Davydov Splitting in Crystals of a Perylene Diimide Derivative” *J. Phys. Chem. Lett.*, **8** (6), 1118-1123, (2017).
 14. N. J. Hestand, F. C. Spano, “Molecular Aggregate Photophysics Beyond the Kasha Model: Novel Design Principles for Organic Materials” *Acc. Chem. Res.*, **50** (2), 341-350, (2017).
 15. N. J. Hestand, R. V. Kazantsev, A. S. Weingarten, L. C. Palmer, S. I. Stupp, F. C. Spano, “Extended-Charge-Transfer Excitons in Crystalline Perylene Monoimide Photocatalytic Scaffolds” *J. Am. Chem. Soc.*, **138** (36), 11762-11774, (2016).
 16. N. J. Hestand, F. C. Spano, “Determining the Spatial Coherence of Excitons from the Photoluminescence Spectrum in Charge-Transfer J-aggregates” *Chem. Phys.*, **481**, 262-271, (2016).
 17. C. Zheng, D. Bleier, I. Jalan, S. Pristash, A. R. Penmetcha, N. J. Hestand, F. C. Spano, M. S. Pierce, J. A. Cody, C. J. Collison, “Phase separation, crystallinity and monomer-aggregate population control in solution processed small molecule solar cells” *Sol. Energ. Mat. Sol. Cells*, **157**, 366-376, (2016).
 18. N. J. Hestand, F. C. Spano, “Interference between Coulombic and CT-Mediated couplings in molecular aggregates: H- to J-Aggregate transformation in perylene-based π -stacks” *J. Chem. Phys.*, **143** (24), 244707, (2015).
 19. N. J. Hestand, H. Yamagata, B. Xu, D. Sun, Y. Zhong, A. R. Harutyunyan, G. Chen, H.-L. Dai, Y. Rao, F.C. Spano. “Polarized Absorption in Crystalline Pentacene: Theory vs Experiment” *J. Phys. Chem. C*, **119** (38), 22137-22147, (2015).
 20. N. J. Hestand, C. Zheng, A. R. Penmetcha, B. Cona, J. A. Cody, F. C. Spano, C. J. Collison, “Confirmation of the origins of panchromatic spectra in squaraine thin films targeted for organic photovoltaic devices” *J. Phys. Chem. C*, **119** (33), 18964-18974, (2015).
 21. N. J. Hestand, R. Tempelaar, J. Knoester, T. L. Jansen, F. C. Spano, “Exciton mobility control through sub-Å packing modifications in molecular crystals” *Phys. Rev. B*, **91** (19), 195315, (2015).
 22. N. J. Hestand, F. C. Spano, “The effect of chain bending on the photophysical properties of conjugated polymers” *J. Phys. Chem. B*, **118** (28), 8352-8363, (2014).
 23. F. Paquin, H. Yamagata, N. J. Hestand, M. Sakowicz, N. Bérubé, M. Côté, L. Reynolds, S. A. Haque, N.

Stingelin, F. C. Spano, C. Silva, “Two-dimensional spatial coherence of excitons in semicrystalline polymeric semiconductors: Effect of molecular weight” *Phys. Rev. B*, **88** (15), 155202, (2013).

24. H. Yamagata, N. J. Hestand, F. C. Spano, A. Köhler, C. Scharsich, S. T. Hoffman, H. Bässler, “The red-phase of poly [2-methoxy-5-(2-ethylhexyloxy)-1,4-phenylenevinylene] (MEH-PPV): A disordered HJ-aggregate” *J. Chem. Phys.*, **139** (11), 114903, (2013).

Courses Taught

Lectures:

PHYS 110 Foundations of Physics
 PHYS 245 Electric Circuit Analysis
 PHYS 342 Thermodynamics
 PHYS 351 Statics
 PHYS 352 Dynamics
 PHYS 411 Modern Physics
 CHEM 101 Introduction to Chemistry
 CHEM 111 General Chemistry I
 CHEM 112 General Chemistry II
 CHEM 331 Quantitative Analysis
 CHEM 332 Instrumental Analysis
 CHEM 431 Physical Chemistry I
 CHEM 432 Physical Chemistry II
 CHEM 435 Inorganic Chemistry
 CHEM 493 Research
 CHEM 496 Senior Seminar

Labs:

PHYS 110 Foundations of Physics
 PHYS 211 General Physics I
 PHYS 212 General Physics II
 PHYS 231 Engineering Physics I
 PHYS 232 Engineering Physics II
 CHEM 110 Chemistry for the Health Sciences
 CHEM 111 General Chemistry I
 CHEM 112 General Chemistry II
 CHEM 331 Quantitative Analysis
 CHEM 332 Instrumental Analysis
 CHEM 431 Physical Chemistry I
 CHEM 432 Physical Chemistry II

Students Mentored in Research

1. Abhradeep Sarkar (NCSSU), *Phosphorescence in Covalent Organic Frameworks*. 2025 –
2. Megan Redding, *Modeling the Photophysics of Dipolar Aggregates Using An Essential States Model*. 2021 – 2022
3. Dawson Moorman and Gisell Chavez-Valadez, *Synthesis and Spectroscopic Characterization of Brooker’s Merocyanine Viynlogs*. 2022
4. Ericsson McDermott, Reece Keller, Nick Barron, Nash Grantham, and Alisa Rosen, *Microwave Synthesis of Chromium-doped Aluminum Oxide*. 2022
5. Rhema Maxwell, Abigail Richardson, Anna Wilslef, *HPLC Analysis of Salicin in Willow Bark*. 2021

Presentations

1. “Modeling polarized absorption spectra of n-alkyl anilino squaraines”, *American Chemical Society Midwest Regional Meeting*, Iowa City, IA, October 2022.
2. “Modeling nonlocal electron-phonon coupling in crystalline pentacene”, *American Chemical Society Midwest Regional Meeting*, Springfield, MO, October 2021.
3. “Why is Water Weird?”, *Evangel University*, Springfield, MO, October 2018.
4. “Infrared spectroscopy of supercooled liquid water nanodroplets near the Widom line”, *Gordon Research Seminar on Water and Aqueous Solutions*, Holderness, NH, July 2018.
5. “Infrared spectroscopy of supercooled liquid water nanodroplets near the Widom line”, *Midwest Theoretical Chemistry Conference*, Chicago, IL, June 2018.

6. “Real Theoretical Chemistry”, *Pantego Christian Academy*, Arlington, TX, March 2018.
7. “Beyond Kasha’s model for molecular aggregates: H- to J-aggregate transformations in rylene-based π -stacks”, *American Chemical Society National Meeting*, Philadelphia, PA, August 2016.
8. “J- and H-aggregates: Applications to squaraines”, *Rochester Institute of Technology*, Rochester, NY, May 2014.

Honors and Awards

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| 1. <i>Francis H. Case Fellowship</i> , Temple University Chemistry Department | 2016 – 2017 |
| 2. <i>University Fellowship</i> , Temple University | 2012 – 2016 |
| 3. <i>Outstanding Graduate in Science and Technology</i> , Evangel University | 2012 |
| 4. <i>Academic All-American</i> , NAIA | 2010 – 2012 |
| 5. <i>Founders Scholar</i> , Evangel University | 2008 – 2012 |

Grants Received

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| 1. ACS Midwest Regional Meeting Travel Grant
<i>Sponsor:</i> Evangel University Professional Development Committee | 2023 |
| 2. ACS Midwest Regional Meeting Travel Grant
<i>Sponsor:</i> Evangel University Professional Development Committee | 2022 |
| 3. Chemistry Software for Teaching & Research: ChemDraw Professional
<i>Sponsor:</i> Evangel University Auxiliary | 2022 |
| 4. ACS Midwest Regional Meeting Travel Grant
<i>Sponsor:</i> Evangel University Professional Development Committee | 2021 |
| 5. Teaching Lab Instrumentation: Vernier Mini GC Plus Gas Chromatograph
<i>Sponsor:</i> Evangel University Auxiliary | 2020 |
| 6. Teaching Lab Instrumentation: Nicolet Summit FTIR & Picospin 80 NMR
<i>Sponsor:</i> Evangel University | 2019 |
| 7. Midway Compute Cluster Research II Allocation
<i>Sponsor:</i> Research Computing Center, University of Chicago | 2018 |
| 8. Midway Compute Cluster Research II Allocation
<i>Sponsor:</i> Research Computing Center, University of Chicago | 2017 |

Professional Affiliations & Service

Member:

American Chemical Society	2012 – present
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Reviewer:

Chemical Reviews
 Chemical Physics Letters
 Journal of Applied Physics
 Journal of Chemical Physics
 Journal of Physical Chemistry
 Scientific Reports
 Journal of Chemical Theory and Computation

Committee Service:

Chemistry Program Coordinator	2021 – present
Valor Scholars Committee	2021 – present
Valor Scholars Interview Committee	2021 – present
Faculty Affairs Committee	2022 – present
Faculty Athletic Representative	2022 – present
Academic Integrity Policy Revision Committee	2023

Community Service:

James River Youth Volunteer	2021 – 2024
EU Launch Community Day of Engagement	2022 – 2024
James River Project Partnership Volunteer	2022, 2023
Valor Volunteer Day	2022
Medical Mission Trip to Nicaragua	2022
Evangel University Beautification Day	2021