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

Summary (Google Scholar, 2/5/26):

Published Papers: 24
Total Citations: 4154
h-index: 18
i10-index: 22

1. R. Ringström, S. R. Hashemi, Y. Liang, N. J. Hestand, K. Börjesson "Strong Exciton Coupling: A Practical Toolbox for Computing Interaction Energies, Wavefunctions, and Optical Spectra", *Submitted*, (2026).
2. H. Li, H. J. Kantrow, D. A. Valverde-Chávez, M. McNeil, A. Magni, M. B. Qarai, J. Kpare, J. Cramlet, Q. He, F. Thouin, Z. Feng, Y. Zhang, A. Comstock, S. Barlow, J. Azoulay, S. Jang, R. Demadrille, M. Heeny, S. Marder, N. J. Hestand, A. Salleo, F. C. Spano, C. Silva-Acuña, N. Stingelin "Trions as fundamental species in chemically doped polymer semiconductors", *Submitted*, (2026).
3. 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).

4. 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).
5. 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).
6. 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).
7. 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).
8. 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).

Papers Published Prior to Evangel

9. A. A. Kananenka, N. J. Hestand, J. L. Skinner, "OH-Stretch Raman Multivariate Curve Resolution Spectroscopy of HOD/H_2O mixtures" *J. Phys. Chem. B*, **123** (24), 5139-5146, (2019).
10. 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).
11. 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).
12. 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).
13. 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).
14. 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).
15. 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).
16. 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).
17. 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).
18. 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).

19. 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).
20. 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).
21. 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).
22. 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).
23. 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).
24. 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).
25. 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).
26. 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).

Students Mentored in Research

1. Abigail Bell and Alexandria Maciaszek, *Exploring the Effects of Ion Size on the Properties of Doped Poly-3-Hexylthiophene.* 2025 –
2. Kaitlyn Standifer, *Impacts of Ring Exchange on the Singlet-Triplet Gap in Conjugated Polymers.* 2025
3. Abhradeep Sarkar (NCSU), *Phosphorescence in Covalent Organic Frameworks.* 2025 –
4. Megan Redding, *Modeling the Photophysics of Dipolar Aggregates Using An Essential States Model.* 2021 – 2022
5. Dawson Moorman and Gisell Chavez-Valadez, *Synthesis and Spectroscopic Characterization of Brooker's Merocyanine Viynlogs.* 2022
6. Ericsson McDermott, Reece Keller, Nick Barron, Nash Grantham, and Alisa Rosen, *Microwave Synthesis of Chromium-doped Aluminum Oxide.* 2022
7. Rhema Maxwell, Abigail Richardson, Anna Wilslef, *HPLC Analysis of Salicin in Willow Bark.* 2021

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

Presentations

1. "Kinetic exchange stabilizes spinless bipolarons in doped conductive polymers", *American Chemical Society National Meeting*, Atlanta, GA, March 2026.
2. "Modeling polarized absorption spectra of n-alkyl anilino squaraines", *American Chemical Society Midwest Regional Meeting*, Iowa City, IA, October 2022.
3. "Modeling nonlocal electron-phonon coupling in crystalline pentacene", *American Chemical Society Midwest Regional Meeting*, Springfield, MO, October 2021.
4. "Why is Water Weird?", *Evangel University*, Springfield, MO, October 2018.
5. "Infrared spectroscopy of supercooled liquid water nanodroplets near the Widom line", *Gordon Research Seminar on Water and Aqueous Solutions*, Holderness, NH, July 2018.
6. "Infrared spectroscopy of supercooled liquid water nanodroplets near the Widom line", *Midwest Theoretical Chemistry Conference*, Chicago, IL, June 2018.
7. "Real Theoretical Chemistry", *Pantego Christian Academy*, Arlington, TX, March 2018.
8. "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.
9. "J- and H-aggregates: Applications to squaraines", *Rochester Institute of Technology*, Rochester, NY, May 2014.

Honors and Awards

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

Grants Received

1. **Sigma Zeta Research Award** 2026
   Sponsor: Sigma Zeta National Honor Society
2. **Midwest Regional Meeting Travel Award** 2025
   Sponsor: ACS Midwest Regional Board
3. **ACS Midwest Regional Meeting Travel Grant** 2023
   Sponsor: Evangel University Professional Development Committee
4. **ACS Midwest Regional Meeting Travel Grant** 2022
   Sponsor: Evangel University Professional Development Committee
5. **Chemistry Software for Teaching & Research: ChemDraw Professional** 2022
   Sponsor: Evangel University Auxiliary
6. **ACS Midwest Regional Meeting Travel Grant** 2021
   Sponsor: Evangel University Professional Development Committee
7. **Teaching Lab Instrumentation: Vernier Mini GC Plus** 2020
   Sponsor: Evangel University Auxiliary
8. **Teaching Lab Instrumentation: FTIR & NMR** 2019
   Sponsor: Evangel University
9. **Midway Compute Cluster Research II Allocation** 2018
   Sponsor: Research Computing Center, University of Chicago
10. **Midway Compute Cluster Research II Allocation** 2017
    Sponsor: Research Computing Center, University of Chicago

Professional Affiliations & Service

Member:

American Chemical Society 2012 – present

Reviewer:

AIP Advances
Physical Review
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