

## JOHN DAYTON TOVAR, PH.D.

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### RESEARCH INTERESTS

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Materials-oriented synthetic organic chemistry, pi-conjugated molecules and polymers, supramolecular chemistry, organic electronics, biomimetic electronic materials.

### ACADEMIC APPOINTMENTS

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- July 2016 Professor, Department of Chemistry, Department of Materials Science and Engineering, Johns Hopkins University
- July 2012 Associate Professor, Department of Chemistry, Department of Materials Science and Engineering, Johns Hopkins University
- April 2009 Assistant Professor, Department of Materials Science and Engineering Johns Hopkins University (Joint appointment)
- July 2005 Assistant Professor, Department of Chemistry Johns Hopkins University
- 2002 - 2005 (Baxter) Postdoctoral Fellow, Department of Materials Science and Engineering Northwestern University (with Professors Samuel I. Stupp and Mark C. Hersam)

### EDUCATION

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- May 2002 Ph.D., Organic Chemistry (with Professor Timothy M. Swager)  
Massachusetts Institute of Technology  
Thesis: "Synthesis and Utility of Electronically Diverse Polycyclic Aromatics"
- March 1997 B.S., Chemistry  
University of California, Los Angeles

### AWARDS AND HONORS

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- Visiting Professor, Ministry of Science and Technology, Taiwan (2019)  
Invitational Fellowship, Japan Society for the Promotion of Science (2019)  
Journal of Physical Organic Chemistry "Early Excellence" profilee (2012)  
Thieme Chemistry Journal Award (2010)  
NSF CAREER Award (2007)  
Princeton Applied Research New Young Investigator Award (2004)  
Baxter-IBNAM Early Career Development Award, Northwestern (2003)  
Wyeth-Ayerst Scholar, MIT (2001)

Departmental Outstanding Teaching Award, MIT (1998)  
Hypercube Scholar and Departmental High Honors, UCLA (1997)  
Golden Key National Honor Society, UCLA (1995)  
Valedictorian, San Dimas High School (1993)

### **PROFESSIONAL SERVICE**

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Meeting (co)organizer: 2012 Mid-Atlantic Regional Meeting (Contemporary Organic Materials); 2015 Pacifichem (Conjugated Polymers for Biological Applications, with Hsiao-hua Yu and Shu Wang); 2017 Fall ACS meeting (ORGN: From bioinspired to biocompatible material design for organic electronics, with Ron Castellano); 2021 Pacifichem (Functional Pi-Conjugated Molecules for Biological Applications, with Hsiao-hua Yu and Shu Wang); 2021 Pacifichem (Hierarchical self-assembly and application of functional  $\pi$ -systems, with Roxanne Kietlyka, Gustavo Fernandez, Myongsoo Lee, Kazunori Sugiyasu and Shiki Yagai).

Organizing committee: 8<sup>th</sup> International Symposium on Macrocyclic and Supramolecular Chemistry, 2013 (Crystal City, VA); 17<sup>th</sup> International Symposium on Novel Aromatic Compounds, 2017 (Stony Brook, NY)

Editorial activities: Editorial Advisory Board member for *Macromolecules* (2016-2019) and *ACS Macro Letters* (2016-2019); Guest editor, *Organic and Biomolecular Chemistry* (Special issue on Peptide Materials, 2017, with Honggang Cui and Dave Adams)

### **CURRENT FUNDING AND SUPPORT (\$3,295,000)**

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National Science Foundation (DMREF)

“Self-assembled peptide-pi-electron supramolecular polymers for bioinspired energy harvesting, transport and management”

October 1, 2017 – September 30, 2021 (\$1,600,000, DMR-1728947, JDT lead PI, collaboration with H. E. Katz at JHU and A. L. Ferguson at UIUC)

Department of Energy (BES Materials Chemistry)

“Exploration of radial conjugation pathways in pi-electron materials”

October 1, 2018 – March 31, 2022 (\$1,095,000, DE-SC0019017, JDT lead PI, collaboration with R. Jasti at U. Oregon and M. Kertesz at Georgetown)

National Science Foundation (CHE Macromolecular, Supramolecular and Nanochemistry)

“Pendant Photochromic Switches Enabling Fluxional Macromolecular Pi-Electronics”

July 1, 2020 – June 30, 2023 (\$600,000, CHE-2002922, JDT lead PI, collaboration with A. E. Bragg at JHU)

### **PRIOR FUNDING AND SUPPORT (\$4,218,000)**

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Petroleum Research Fund (administered by the American Chemical Society)

“Unusual Aromaticity and Organic Semiconductor Performance”

Feb 2007 – Sept 2009 (\$40,000, PRF-45738-G7, JDT sole PI)

Institute for NanoBioTechnology (JHU)

“Supramolecular bioelectronic nanostructures for use in neural tissue engineering”

May 2010 – April 2011 (\$20,000, JDT lead PI)  
Collaboration with H.-Q. Mao (JHU Materials Science and Engineering)

National Science Foundation (DMR Polymers EAGER)  
“Optoelectronic Supramolecular Block-Copolymer Assemblies Aided by Donor-Acceptor Interactions,”  
Sept 2009 – Aug 2012 (\$296,000, DMR-0947897, JDT co-PI)

National Science Foundation (DMR Polymers CAREER)  
“Regulating charge transport through pi-conjugated electronic materials”  
Apr 2007 – Mar 2013 (\$473,000, DMR-0644727, JDT sole PI)

Department of Energy (BES Biomolecular Materials)  
“Self-Assembly of Pi-Conjugated Peptides in Aqueous Environments Leading to Energy Transporting Bioelectronic Nanostructures”  
Sept 2010 – Aug 2013 (\$590,000, DE-SC0004857, JDT sole PI)  
Sept 2013 – Aug 2016 (\$810,000, DE-SC0004857, JDT lead PI, collaboration with H. E. Katz at JHU and A. L. Ferguson at UIUC)

National Science Foundation (DMR Polymers)  
“Locally unusual and tunable aromatic rings for pi-conjugated polymers”  
July 2012 – June 2016 (\$359,000, DMR-1207259, JDT sole PI)

National Science Foundation (DMR Biomaterials)  
“Nanoscale electric fields in self-assembled optoelectronic biomaterials”  
July 15, 2014 – June 30, 2017 (\$600,000, DMR-1407493, JDT lead PI, collaboration with H. E. Katz and H.-Q. Mao at JHU)

Johns Hopkins University (Discovery Award)  
“Engineering plasticity after stroke to promote recovery using peptide pi-electron hydrogels”  
July 1, 2017 – June 30, 2018 (\$100,000, JDT co-PI, collaboration with R. Felling and S. Zeiler at JHU School of Medicine)

National Science Foundation (CHE Chemical Structure, Dynamics and Mechanism B)  
“Encouraging pi-electron delocalization through boron-based heteroaromatic subunits”  
May 1, 2015 – April 30, 2019 (\$390,000, CHE-1464798, JDT sole PI)

National Science Foundation (CHE Macromolecular, Supramolecular and Nanochemistry)  
“Fluxional macromolecular pi-electronics via rational manipulation of aromaticity and spin”  
August 1, 2016 – July 31, 2019 (\$540,000, CHE-1607821, JDT lead PI, collaboration with A. E. Bragg at JHU)

#### **INVITED LECTURES AND PRESENTATIONS (AS PI AFTER JULY 2005)**

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**Future:** Bioderived Electronics 2022 (Ein Gedi, Israel), 17<sup>th</sup> International Meeting on Boron Chemistry (Rennes, France)

**2021:** American Chemical Society Spring Meeting (POLY, virtual), Institute of Electrical and Electronics Engineers Nano Meeting (NanoBioelectronics, virtual)

**2020:** University of Miami, American Chemical Society Spring Meeting (POLY, Philadelphia, canceled), 17<sup>th</sup> International Meeting on Boron Chemistry (Rennes, France, postponed), Institute of Electrical and Electronics Engineers Nano Meeting (Montreal, postponed), American Chemical Society Fall Meeting (ORGN, virtual)

**2019:** Nagoya University, University of Tokyo, Tokyo Institute of Technology, RIKEN Advanced Science Institute (Japan), Hokkaido University, “Core-to-Core Joint Symposium” at Nagoya University, Osaka University, Kyoto University, American Chemical Society Spring Meeting (PMSE, Orlando), University of Glasgow, University of Liverpool, University of Bristol, Cambridge University, Imperial College London, Academia Sinica (Taiwan), National Cheng Kung University, National Chiao Tung University, National Taiwan University, Friedrich-Alexander-Universität Erlangen-Nürnberg (Germany)

**2018:** Temple University (PA); 101<sup>st</sup> Canadian Chemistry Conference (Edmonton); 2<sup>nd</sup> “From Carbon-Rich Molecules to Carbon-Based Materials” conference (Nassau, The Bahamas); American Chemical Society Fall meeting (Boston); Lehigh University (PA); University of Massachusetts, Amherst; “Using nanotechnology to integrate living and non-living matter” symposium (Advanced Science Research Center, City University of New York); “Aromaticity 2018” conference (Riviera Maya, Mexico)

**2017:** American Chemical Society Spring meeting (San Francisco) and Fall meeting (Washington D.C.), Johns Hopkins University, University of Florida, Materials Research Society Fall meeting (Boston)

**2016:** Pacific Northwest National Laboratory, University of California Santa Cruz, University of Alabama, Georgetown University (DC), 99<sup>th</sup> Canadian Chemistry Conference (2 talks, Halifax), Sun Yat-Sen University (Guangzhou, China), Warwick Polymer Conference (England), University of Liverpool (England), Uppsala University (Sweden), Stony Brook University (NY), University of Maryland, Harvard University (MA), Materials Research Society Fall Meeting (Boston)

**2015:** American Chemical Society Spring Meeting (COLL, Denver), 12<sup>th</sup> Foundations of Nanoscience meeting (Snowbird, Utah), 98<sup>th</sup> Canadian Chemistry Conference (Macromolecular Sci Eng, Ottawa), 24<sup>th</sup> American Peptide Society Meeting (Orlando, FL), FASEB SRC meeting “Molecular Mechanisms and Physiological Consequences of Protein Aggregation” (Palm Beach, FL), International Conference on Materials for Advanced Technologies (Singapore), “Pi-day in Málaga” at the University of Málaga (Spain), University of Toronto (Canada), University of Calgary (Canada), Messiah College (PA), Materials Research Society Fall Meeting (CC, Boston), Pacifichem (Organic session 263, Honolulu)

**2014:** Iowa State University (Materials Science), Iowa State University (Chemistry), Trinity College (CT), Sandia National Laboratory (NM), University of New Mexico, Functional Peptide and Protein Nanostructures workshop (Jerusalem, Israel), American Chemical Society Fall Meeting (COLL and PMSE, San Francisco), 1<sup>st</sup> “From Carbon-Rich Molecules to Carbon-Based Materials” conference (El Jadida, Morocco), Southeast Regional Meeting of the American Chemical Society (Nashville, TN), University of California, Irvine, University of Kentucky

**2013:** US-Korea Workshop on Nanotechnology for the Environment (Seoul, Korea); American Chemical Society Spring Meeting (POLY, New Orleans); Materials Research Society Spring

Meeting (Symposium QQ, San Francisco); Chinese University of Hong Kong; 15<sup>th</sup> International Symposium on Novel Aromatics (Taipei, Taiwan); American Chemical Society Fall Meeting (COLL, Indianapolis, IN); Calvin College (MI); Hope College (MI); Emory University (GA)

**2012:** Columbia University (NY); Washington College (MD); Lebanon Valley College (PA); International Conference of Young Researchers on Advanced Materials (Singapore); Argonne National Laboratory (IL); Marquette University (WI); Los Alamos National Laboratory (NM)

**2011:** Rutgers University, Newark (NJ); 14<sup>th</sup> International Symposium on Novel Aromatics (Eugene, OR); Massachusetts Institute of Technology; Boston College (MA); University of Delaware; University of Massachusetts, Amherst; Case Western Reserve University (OH); University of Colorado, Boulder; University of Florida; Florida State University

**2010:** Carnegie Mellon University (PA); University of California, Davis; Stanford University (CA); Texas A&M University; University of Oregon; North Carolina Polymer Discussion Group; University of Michigan; Louisiana State University; Ohio State University; Indiana University

**2009:** 11<sup>th</sup> Pacific Polymer Conference (Cairns, Australia); University of California, Los Angeles; George Mason University (VA); Juniata College (PA); Vanderbilt University (TN); University of Maryland; University of Tokyo; National Institute for Materials Science (Tsukuba, Japan); RIKEN Advanced Science Institute (Wako, Japan); Materials Research Society of Singapore, National University of Singapore

**2008:** Randolph-Macon College (VA); Hampden-Sydney College (VA); 8<sup>th</sup> International Symposium on Functional  $\pi$ -Electron Systems (Fp8: Graz, Austria); Organic Structures and Properties Gordon Research Conference (short talk)

**2007:** University of the Sciences in Philadelphia (PA); Colgate University (NY); NSF Physical Organic Chemistry Workshop (Basin Harbor, VT); 39<sup>th</sup> ACS Middle Atlantic Regional Meeting (Alan G. MacDiarmid Memorial Symposium).

**2006:** Georgetown University (Washington, D.C.); ISIS-ULP and BASF (Strasbourg, France)

#### **PUBLICATIONS (PEER-REVIEWED)**

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[\* publications from research prior to current appointment, undergraduate co-authors in bold]

80 from independent research at JHU published, in press or accepted.

4 from postdoctoral research; 7 from doctoral research; 1 from undergraduate research

92. S. S. Panda, K. Shmilovich, N. Herringer, N. Marin, A. L. Ferguson and J. D. Tovar, "Computationally Guided Tuning of Peptide-Conjugated Perylene Diimide Self-Assembly," in *Langmuir*, 2021, *in press*. (DOI: 10.1021/acs.langmuir.1c01213)
91. S. S. Panda and J. D. Tovar, "Aqueous Self-assembly of Peptide-Diketopyrrolopyrrole Conjugates with Variation of N-alkyl Side Chain and  $\pi$ -Core Lengths, invited for the special issue "Supramolecular Optoelectronic Materials" by *Organic Materials*, 2021 (3) 353-361. (DOI: 10.1055/a-1503-5912)
90. J. D. Tovar, "Repurposing aromaticity for organic electronics: making, breaking and stacking pi-circuits," invited by the *Journal of the Chinese Chemical Society*, 2021 (68) 51-58. (DOI: 10.1002/jccs.202000524)

89. S. A. Harry, F. Ghorbani, J. Capilato, C. R. Pitts, J. Joram, G. M. Peters, J. D. Tovar, I. Smajlagic, M. Siegler, T. Dudding and T. Lectka, "Carbonyl-Directed Aliphatic Fluorination: A Special Type of Hydrogen Atom Transfer Beats Out Norrish II," in the ***Journal of the American Chemical Society***, 2020 (142) 14710-14724. (DOI: 10.1021/jacs.0c07004)
88. J. P. Dibble, **C. Troyano-Valls** and J. D. Tovar, "A tale of three hydrophobicities: Impact of constitutional isomerism on nanostructure evolution and electronic communication in pi-conjugated peptides," in ***Macromolecules***, 2020 (53) 7263-7273. (DOI: 10.1021/acs.macromol.0c01492)
87. S. S. Panda, K. Shmilovich, A. L. Ferguson and J. D. Tovar, "Computationally guided tuning of amino acid configuration influences the chiroptical properties of supramolecular peptide-pi-peptide nanostructures," in ***Langmuir***, 2020 (36) 6782-6792. (DOI: 10.1021/acs.langmuir.0c00961)
86. G. Grover, G. M. Peters, J. D. Tovar, M. Kertesz, "Quinonoid vs aromatic structures of heteroconjugated polymers from oligomer calculations," in ***Physical Chemistry Chemical Physics***, 2020 (22) 11431-11439. (DOI: 10.1039/D0CP00606H)
85. E. R. Jira, K. Shmilovich, T. S. Kale, A. L. Ferguson, J. D. Tovar, C. M. Schroeder, "Effect of core oligomer length on the phase behavior and assembly of  $\pi$ -conjugated peptides," in ***ACS Applied Materials & Interfaces***, 2020 (12) 20722-20732. (DOI: 10.1021/acsami.0c02095)
84. K. Shmilovich, R. A. Mansbach, H. Sidky, O. E. Dunne, S. S. Panda, J. D. Tovar, A. L. Ferguson, "Discovery of self-assembling pi-conjugated peptides by active learning-directed coarse-grained molecular simulation," in the ***Journal of Physical Chemistry B***, 2020 (124)3873-3891. (DOI: 10.1021/acs.jpccb.0c00708)
83. T. Lee, S. S. Panda, J. D. Tovar and H. E. Katz, "Unusually conductive organic-inorganic hybrid nanostructures derived from bio-inspired mineralization of peptide/pi-electron assemblies," in ***ACS Nano***, 2020 (14) 1846-1855. (DOI: 10.1021/acsnano.9b07911)
82. C. R. Honick, G. M. Peters, J. D. Tovar and A. E. Bragg, "Core structure dependence of cycloreversion dynamics in diarylethene analogs," in ***Physical Chemistry Chemical Physics***, 2020 (22) 3314-3328. (DOI: 10.1039/C9CP05797H)
81. G. M. Peters, G. Grover, R. Maust, C. Colwell, H. Bates, W. Edgell, R. Jasti, M. Kertesz, and J. D. Tovar, "Linear and radial conjugation in extended pi-electron systems," in the ***Journal of the American Chemical Society***, 2020 (142) 2293-2300. (DOI: 10.1021/jacs.9b10785)
80. M. Baghernejad, C. van Dyck, J. Bergfield, D. R. Levine, A. Gubicza, J. D. Tovar, M. Calame, P. Broekmann and W. Hong, "Quantum interference enhanced chemical responsivity in single-molecule dithienoborepin junctions," in ***Chemistry - A European Journal***, 2019 (25) 15141-15146. (DOI: 10.1002/chem.201903315)
79. B. A. Thurston, E. P. Shapera, J. D. Tovar, A. Schleife and A. L. Ferguson, "Revealing the Sequence-Structure-Electronic Property Relation of Self-Assembling  $\pi$ -Conjugated Oligopeptides by Molecular and Quantum Mechanical Modeling," in ***Langmuir***, 2019 (35) 15221-15231. (DOI: 10.1021/acs.langmuir.9b02593)
78. J. Kim, J. Oh, S. Park, J. L. Zafra, J. R. DeFrancisco, D. Casanova, M. Lim, J. D. Tovar, J. Casado and D. Kim, "Two-Electron Transfer Stabilized by Excited-State Aromatization," in ***Nature Communications***, 2019 (10) 4983. (DOI: 10.1038/s41467-019-12986-w)
77. S. S. Panda, K. Shmilovich, A. L. Ferguson and J. D. Tovar, "Controlling supramolecular chirality in peptide-pi-peptide networks by variation of alkyl spacer length," in ***Langmuir***, 2019 (35) 14060-14073. (DOI: 10.1021/acs.langmuir.9b02683)
76. J. D. Young, C. R. Honick, J. Zhou, C. R. Pitts, F. Ghorbani, G. M. Peters, J. D. Tovar, T. Lectka, A. E. Bragg, "Energy- and conformer-dependent excited-state relaxation of an E/Z

- photoswitchable thienyl-ethene,” in *Physical Chemistry Chemical Physics* 2019 (21) 14440-14452. (DOI: 10.1039/C9CP01226E).
75. G. M. Peters and J. D. Tovar, “Pendant Photochromic Conjugated Polymers Incorporating a Highly Functionalizable Thieno[3,4-b]thiophene Switching Motif,” in the *Journal of the American Chemical Society*, 2019 (141) 3146-3152. (DOI: 10.1021/jacs.8b12617)
74. R. E. Messersmith and J. D. Tovar, “Borepin rings as ‘sigma-free’ reporters of aromaticity within polycyclic aromatic scaffolds,” in the *Journal of Physical Chemistry A*, 2019 (123) 881-888. (DOI: 10.1021/acs.jpca.9b00125)
73. T. S. Kale,\* H. A. M. Ardoña,\* **A. Ertel** and J. D. Tovar, “Torsional impacts on quaterthiophene segments confined within peptidic nanostructures,” in *Langmuir*, 2019 (35) 2270-2282. (DOI: 10.1021/acs.langmuir.8b03708)
72. R. E. Messersmith, M. A. Siegler and J. D. Tovar, “A heptacyclic heptacycle: A doubly naphtho[b]thiophene fused borepin,” invited by *Synlett* (part of a Cluster issue on Synthesis of Materials), 2018 (29) 2499-2502. (DOI: 10.1055/s-0037-1610163)
71. J. R. DeFrancisco, G. L. Espejo, J. L. Zafra, S. Yadav, R. E. Messersmith, C. J. Gómez-García, H. Ottosson, J. Casado and J. D. Tovar, “Torsional bias as a strategy to tune singlet-triplet gaps in organic diradicals,” in the *Journal of Physical Chemistry C*, 2018 (122) 12148-12157. (DOI: 10.1021/acs.jpcc.8b01905)
70. S. S. Panda, H. E. Katz and J. D. Tovar, “Solid-state electrical applications of protein and peptide-based nanomaterials,” invited by *Chemical Society Reviews* (part of a special issue on “Peptide and Protein Nanotechnology”), 2018 (14) 3640-3658. (DOI: 10.1039/C7CS00817A)
69. J. D. Tovar, “Photon management in supramolecular peptide nanomaterials,” invited by *Bioinspiration and Biomimetics*, 2018 (13) 015004 (part of a special issue on “Biophotonics and biologically inspired photonics”). (DOI: 10.1088/1748-3190/aa9685)
68. R. E. Messersmith, S. Yadav, M. A. Siegler, H. Ottosson and J. D. Tovar, “Benzo[b]thiophene fusion enhances local borepin aromaticity in polycyclic heteroaromatic compounds,” in the *Journal of Organic Chemistry*, 2017 (82) 13440-13448. (DOI: 10.1021/acs.joc.7b02512)
67. Y. Zhou, B. Li, S. Li, H. A. M. Ardoña, W. L. Wilson, J. D. Tovar and C. M. Schroeder, “Concentration-driven assembly and sol-gel transition of pi-conjugated oligopeptides,” in *ACS Central Science*, 2017 (3) 986-994. (DOI: 10.1021/acscentsci.7b00260)
66. T. S. Kale, J. E. Marine and J. D. Tovar, “Self-assembly and associated photophysics of dendron-appended peptide-pi-peptide triblock macromolecules,” in *Macromolecules*, 2017 (50) 5315-5322. (DOI: 10.1021/acs.macromol.7b00821)
65. H. A. M. Ardoña,\* T. S. Kale,\* **A. Ertel** and J. D. Tovar, “Non-resonant and local field effects on the photophysics of oligo(phenylenevinylene) segments within peptidic nanostructures,” in *Langmuir*, 2017 (33) 7435-7445. (DOI: 10.1021/acs.langmuir.7b01023)
64. H. A. M. Ardoña, E. R. Draper, F. Citossi, M. Wallace, L. Serpell, D. J. Adams, J. D. Tovar, “Kinetically-controlled coassembly of multichromophoric peptide hydrogelators and the impacts on energy transport,” in the *Journal of the American Chemical Society*, 2017 (139) 8685-8692. (DOI: 10.1021/jacs.7b04006)
63. A. M. Sanders, T. S. Kale, H. E. Katz and J. D. Tovar, “Solid-phase synthesis of self-assembling multivalent pi-conjugated peptides,” in *ACS Omega*, 2017 (2) 409-419. (DOI: 10.1021/acsomega.6b00414)
62. B. Li, S. Li, Y. Zhou, H. A. M. Ardoña, L. R. Valverde, W. L. Wilson, J. D. Tovar and C. M. Schroeder, “Non-equilibrium self-assembly of pi-conjugated oligopeptides in solution,” in

- ACS Applied Materials & Interfaces**, 2017 (9) 3977-3984. (DOI: 10.1021/acsami.6b15068)
61. W. Liyanage, H. A. M. Ardoña, H.-Q. Mao and J. D. Tovar, "Cross-linking approaches to tune the mechanical properties of peptide- $\pi$ -electron based hydrogels," invited by **Bioconjugate Chemistry**, 2017 (28) 751-759 (part of a special issue on "Peptide conjugates for biological applications"). (DOI: 10.1021/acs.bioconjchem.6b00593)
60. D. R. Levine, R. E. Messersmith, M. A. Siegler and J. D. Tovar, "Ring fusion isomers of dithienoborepins: perturbations of electronic structure, aromaticity and reactivity in boron-containing polycyclic heteroaromatics," invited by the **Canadian Journal of Chemistry** as part of a special issue in honor of Professor Reginald Mitchell, 2017 (95) 381-389. (DOI: 10.1139/cjc-2016-0493)
59. T. S. Kale and J. D. Tovar, "Regulation of Peptide- $\pi$ -Peptide Nanostructure Bundling: The Impact of "Cruciform"  $\pi$ -Electron Segments," invited as part of a Symposium-in-Print in honor of the retirement of Professor Gary H. Posner, **Tetrahedron**, 2016 (72) 6084-6090. (DOI:10.1016/j.tet.2016.07.064)  
NOTE: correction posted 24 January 2017 (DOI:10.1016/j.tet.2017.01.033)
58. R. E. Messersmith, M. A. Siegler and J. D. Tovar, "Aromaticity competition in differentially-fused borepin containing polycyclic aromatics," in the **Journal of Organic Chemistry**, 2016 (81), 5595-5605. (DOI: 10.1021/acs.joc.6b00927)
57. A. M. Sanders, T. J. Magnanelli, A. E. Bragg and J. D. Tovar, "Photoinduced electron transfer within supramolecular donor-acceptor peptide nanostructures under aqueous conditions," in the **Journal of the American Chemical Society**, 2016 (138) 3362-3370. (DOI: 10.1021/jacs.5b12001)
56. A. M. Fraind, L. R. Ryzhkov and J. D. Tovar, "Chain dynamics, relaxation times and conductivities of bithiophene-acene copolymers measured using high-frequency saturation transfer EPR," in the **Journal of Physical Chemistry B**, 2016 (120) 1033-1039. (DOI: 10.1021/acs.jpcc.5b11212)
55. B. A. Thurston, J. D. Tovar and A. L. Ferguson, "Thermodynamics, morphology, and kinetics of early-stage self-assembly of  $\pi$ -conjugated oligopeptides," in **Molecular Simulations**, 2016 (42) 955-975. (DOI: 10.1080/08927022.2015.1125997)
54. K. Besar, H. A. M. Ardoña, J. D. Tovar and H. E. Katz, "Demonstration of hole transport and voltage equilibration in self-assembled  $\pi$ -conjugated peptide nanostructures using field-effect transistor architectures," in **ACS Nano**, 2015 (9) 12401-12409. (DOI: 10.1021/acsnano.5b05752)
53. H. A. M. Ardoña and J. D. Tovar, "Peptide  $\pi$ -electron conjugates: organic electronics for biology?" invited cover article by **Bioconjugate Chemistry**, 2015 (26) 2290-2302. (DOI: 10.1021/acs.bioconjchem.5b00497)
52. B. C. Streifel, J. L. Zafra, G. L. Espejo, C. J. Gómez-García, J. Casado and J. D. Tovar, "An unusually small singlet-triplet gap in a quinoidal 1,6-methano[10]annulene due to Baird's  $4n$   $\pi$ -electron triplet stabilization," inside cover article in **Angewandte Chemie International Edition**, 2015 (54) 5888-5893. (DOI: 10.1002/anie.201500879)  
NOTE: correction posted 28 July 2016 (DOI: 10.1002/anie.201605796)
51. H. A. M. Ardoña, K. Besar, **M. Togninalli**, H. E. Katz and J. D. Tovar, "Sequence-dependent mechanical, photophysical and electrical properties of  $\pi$ -conjugated peptide hydrogelators," in the **Journal of Materials Chemistry C**, 2015 (3) 6505-6514 (part of a special web-themed issue on "Bioelectronics"). (DOI: 10.1039/C5TC00100E)
50. R. E. Messersmith and J. D. Tovar, "Assessment of the aromaticity of borepin rings by spectroscopic, crystallographic and computational methods: a historical overview," cover



- article in the *Journal of Physical Organic Chemistry*, 2015 (28) 378-387. (DOI: 10.1002/poc.3422)
49. J. D. Tovar, "Peptide nanostructures with pi-ways: photophysical consequences of peptide/pi-electron molecular self-assembly," invited by the *Israel Journal of Chemistry* 2015 (55) 622-627 (part of a special issue on Functional Peptide and Protein Nanostructures). (DOI: 10.1002/ijch.201400161)
  48. H. A. M. Ardoña and J. D. Tovar, "Energy transfer within responsive pi-conjugated peptide-based coassembled nanostructures in aqueous environments," in *Chemical Science*, 2015 (6) 1474-1484 (DOI: 10.1039/C4SC03122A)
  47. B. D. Wall, Y. Zhou, S. Mei, H. A. M. Ardoña, A. L. Ferguson and J. D. Tovar, "Variation of formal hydrogen bonding networks within electronically delocalized pi-conjugated oligopeptide nanostructures," in *Langmuir*, 2014 (30) 11375-11385. (DOI: 10.1021/la501999g)
  46. B. C. Streifel, J. F. Martinez-Hardigree, H. E. Katz and J. D. Tovar, "Heteroaromatic variation in amorphous 1,6-methano[10]annulene-based charge-transporting organic semiconductors," in the *Journal of Materials Chemistry C*, 2014 (2) 7851-7858. (DOI: 10.1039/c4tc01326c)
  45. B. D. Wall, A. E. Zacca, A. M. Sanders, W. L. Wilson, A. L. Ferguson and J. D. Tovar, "Supramolecular polymorphism: Tunable electronic interactions within pi-conjugated peptide nanostructures dictated by primary amino acid sequence," in *Langmuir*, 2014 (30) 5946-5956. (DOI: 10.1021/la500222y)
  44. D. R. Levine, M. A. Siegler and J. D. Tovar, "Thiophene-fused borepins as directly functionalizable boron-containing  $\pi$ -electron systems," in the *Journal of the American Chemical Society*, 2014 (136) 7132-7139. (DOI: 10.1021/ja502644e)
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#### **MISCELLANEOUS**

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US citizen: Born in Waterloo, Iowa