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Engineering & Scientific Consulting

Benjamin Streifel, Ph.D.

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Professional Profile

Dr. Streifel has a diverse background working at the interface of chemistry, polymer science, and biomedical research. He has experience with polymer synthesis, wound healing materials, drug release mechanisms, and stimuli-responsive materials.

Dr. Streifel specializes in the design, synthesis, and characterization of hydrogels, foams, block copolymers, and semiconducting polymers.

Dr. Streifel has utilized a wide variety of techniques for the design, synthesis, and characterization of polymeric materials, including spectroscopy (UV-Vis, FTIR, and Fluorescence), mechanical and thermal analysis (DMA, rheology, DSC, and TGA), chromatography (GPC, GC-MS, and HPLC-MS), microscopy (optical and SEM), and nuclear magnetic resonance spectroscopy (NMR). Dr. Streifel has synthesized a number of polymeric materials, and is familiar with catalytic cross couplings, emulsion-templated polymerization, free radical and controlled radical (RAFT) polymerizations.

Prior to joining Exponent, Dr. Streifel worked as a National Research Council Postdoctoral Research Associate at the Naval Research Labs in Washington, DC. While there, he designed, synthesized, and characterized materials for the treatment of severe wounds. Before working at the Naval Research Labs, Dr. Streifel's Ph.D. research focused on the synthesis and characterization of semiconducting polymers for energy generation and spintronics applications.

Academic Credentials & Professional Honors

Ph.D., Chemistry, Johns Hopkins University, 2014

M.A., Chemistry, Johns Hopkins University, 2011

B.A., Chemistry, University of San Diego, 2009

Alan Berman Research Publication Award 2018

National Research Council Postdoctoral Research Associateship 2014-2017

Johns Hopkins University Owens Summer Fellowship 2013

University of San Diego Department of Chemistry Excellence in Research Award 2009

Professional Affiliations

American Chemical Society

Patents

U.S. Patent US8853349 B2: Disordered organic electronic materials based on non-benzenoid 1,6-methano[10]annulene rings, October 2014 (B.C. Streifel, J.D. Tovar, P.A. Peart)

U.S. Patent Application US20170260314 A1: Acute care cover for severe injuries, September 2017 (J.G. Lundin, C.L. McGann, B.C. Streifel, M.G. Stockelman, C.M. Watters, C.J. Santee, T.B. Bentley, J.H. Wynne)

Publications

B.C. Streifel, J.G. Lundin, A.M. Sanders, K.A. Gold, T.S. Wilems, S.J. Williams, E. Cosgriff-Hernandez, J.H. Wynne, "Hemostatic and absorbent polyHIPE-koalin composites for 3D printable wound dressing materials" Macromolecular Bioscience, 2018, In Press.

J.L. Lundin, C.L. McGann, G.C. Daniels, B.C. Streifel, J.H. Wynne, "Hemostatic kaolin-polyurethane foam composites for multifunctional wound dressing applications" Mater. Sci and Eng. C, 2017, 79, 702-709.

C.L. McGann, B.C. Streifel, J.L. Lundin, J.H. Wynne, "Multifunctional polyHIPE wound dressings for the treatment of severe limb trauma" Polymer, 2017, 126, 408-418.

B.C. Streifel, J.L. Parker, S.J. Giles, S.J. Williams, J.H. Wynne, "Interfacial stabilization of high internal phase emulsion-templated block-copolymer hydrogels via ionic and covalent crosslinking" J. Polym. Sci. Part A: Polym. Chem., 2016, 54, 2486-2492.

B.C. Streifel, J.L. Zafra, G.L. Espejo, C.J. Gomez-Garcia, J. Casado, J.D. Tovar, "An Unusually Small Singlet-Triplet Gap in a Quinoidal 1,6-Methano[10]annulene Resulting from Baird's 4n π-Electron Triplet Stabilization", Angewandte Chemie Int. Ed., 2015, 54, 5888-5893.

B.C. Streifel, J.F. Martinez-Hardigree, Howard E. Katz, J.D. Tovar, "Heteroaromatic variation in amorphous 1,6-methano[10]annulene-based charge-transporting organic semiconductors", J. Mater. Chem. C, 2014, 2, 7851-7858.

M.C. Smith, J.A. Snyder, B.C. Streifel, A.E. Bragg, "Ultrafast excited-state dynamics of o-terphenyl and 1,2-diphenylcyclohexene: the role of ‘ethylenic twisting' in the nonadiabatic photocyclization of stilbene analogs" J. Phys. Chem. Lett., 2013, 4, 1895-1900.

B.C. Streifel, P.A. Peart, J.F. Martinez-Hardigree; H.E. Katz; J.D. Tovar, "Torsional influences within disordered organic electronic materials based upon non-benzenoid 1,6methano[10]annulene rings" Macromolecules, 2012, 45, 7339-7349.

B.C. Streifel, J.D. Tovar, "Pi-conjugated Furan-Based Polymers" Encyclopedia of Polymer Science and Technology, 2012, Wiley and Sons.

Presentations

B.C. Streifel, J.G. Lundin, C.L. McGann, J.H. Wynne. Efficient dispersion of mineral hemostatics in a polyHIPE scaffold for severe wound treatment. Oral presentation, 253rd American Chemical Society National Meeting, San Francisco, CA, 2017.

B.C. Streifel, J.G. Lundin, C.L. McGann, J.H. Wynne. PolyHIPE materials for treatment of severe limb trauma and controlled drug delivery. Oral presentation, 252nd American Chemical Society National

Meeting, Philadelphia, PA, 2016.

B.C. Streifel, J.G. Lundin, J.D. Duncan, J.H. Wynne. Stimuli-responsive hydrogels for treatment of severe limb trauma and controlled drug delivery. Oral presentation, 251st American Chemical Society National Meeting, San Diego, CA, 2016.

B.C. Streifel, J.G. Lundin, P.A. Fulmer, J.H. Wynne. Synthesis and design of stimuli-responsive microporous hydrogels for the treatment of severe limb wounds. Poster presentation, Gordon Research Conference/Seminar (Polymers), South Hadley, MA, 2015.

J.G. Lundin, B.C. Streifel, G. Daniels, S.L. Giles, R. Baumann, J.H. Wynne. Development of multifunctional bioactive polymers for wound-contact applications. Poster presentation, 250th American Chemical Society National Meeting, Boston, MA, 2015.

B.C. Streifel, J.G. Lundin, G. Daniels, J.H. Wynne. Stimuli-responsive microporous polymer hydrogels for treatment of severe limb wounds. Oral Presentation, 249th American Chemical Society National Meeting, Denver, CO, 2015.

B.C. Streifel, J. Singh, R.M. Ireland, P.A. Peart, H.E. Katz, J.D. Tovar. Highly disordered semiconducting polymers based on 1,6-methano[10]annulene for thermoelectric applications. Poster presentation, Gordon Research Conference/Seminar (Polymers), South Hadley, MA, 2013.

B.C. Streifel, P.A. Peart, J.D. Tovar. Interrogating torsional interactions within thiophene-based conjugated copolymers using non-planar aromatics. Poster presentation, IUPAC Macro 2012 World Polymer Congress, Blacksburg, VA, 2012.

B.C. Streifel, J. Oria, T. Scudday, P.M. Iovine. Synthesis and characterization of arylboronic acid-tipped aliphatic polyester dendrons. Poster presentation, 236th American Chemical Society National Meeting, Philadelphia, PA, 2008.