Exponent®
Engineering & Scientific Consulting

Sarah Conron, Ph.D., CSCIP/G

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Professional Profile

Dr. Conron has expertise in secure identity document fabrication, assessment, and evaluation with a focus on document security features. She has experience working in many areas related to secure identity documents, from raw material testing to security printing to document manufacturing, focused on maximizing security feature quality and reducing the risk of document counterfeiting.

Dr. Conron has extensive experience using spectroscopic characterization methods, such as Fourier Transform Infrared (FTIR) Spectroscopy, to determine material composition, identify surface contamination, and evaluate material compatibility. Dr. Conron currently serves on the board of the Document Security Alliance in Washington, DC.

In her work for Exponent, Dr. Conron has worked with many different printing techniques utilizing both paper and polymer substrates. These techniques include screen, inkjet, intaglio, thermal transfer, and offset printing. She is also well versed in laser personalization systems and the underlying chemistry. In addition to her work with printing techniques, she also has experience with lamination processes and equipment. Dr. Conron applies her knowledge in physical organic chemistry, coupled with spectroscopic testing methods, in performing evaluations of security features and anti-counterfeiting technologies, such as Optically Variable Devices (OVDs), Multiple Laser Images (MLIs), and security inks and printed images/text.

Dr. Conron has experience with a wide variety of physical characterization techniques including Fourier Transform Infrared (FTIR) Spectroscopy, UV-Visible spectroscopy (UV-Vis), photoluminescence (PL), time-resolved laser spectroscopy, and small- and wide-angle X-ray scattering (SAXS/WAXS). Additionally, Dr. Conron is skilled in standard organic synthesis and purification methods, molecular characterization (Gas Chromatography – Mass Spectrometry (GC-MS), Liquid Chromatography – Mass Spectrometry (LC-MS), Energy Dispersive X-Ray Spectroscopy (EDX)), and organic thin film fabrication methods (spin coating and Vacuum Thermal Evaporation (VTE)).

Prior to joining Exponent, Dr. Conron worked as a postdoctoral research associate at the University of Southern California where she specialized in fabrication, analysis, and optimization of thin film organic photovoltaics incorporating novel electron transporting dyes. At USC, she also studied interfacial dynamics and surface characterization of vapor- and solution-deposited organic solids. Before working at USC, Dr. Conron's Ph.D. research focused on synthesis and characterization of artificial photosynthetic systems for use as light harvesters and electron transporters. She analyzed the solution-phase electron transport properties via laser spectroscopy of organic donor-acceptor systems, nanoscale aggregates, and DNA hairpins.

Academic Credentials & Professional Honors

Ph.D., Chemistry, Northwestern University, 2011

B.A., Chemistry, The College of Wooster, 2005

Phi Lambda Upsilon, The National Chemistry Honor Society, 2007

Excellence in Research Award, The American Chemical Society Wooster Chapter, 2005

Senior Thesis with Honors, The College of Wooster, 2005

Licenses and Certifications

Certified Smart Card Industry Professional for Government (CSCIP/G)

Prior Experience

Postdoctoral Research Associate, Department of Chemistry, University of Southern California, 2011-2013

Professional Affiliations

American Chemical Society—ACS

Document Security Alliance – Board Member, Program Committee Chair

Publications

Note: Most client reports and deliverables are confidential but may be available upon request and with client approval. Other publications are presented below.

Erwin P, Conron SM, Golden JH, Allen K, Thompson, ME. Implications of multichromophoric arrays in organic photovoltaics. Chemistry of Materials 2015; 27:5386–5392.

Chen JJ, Conron SM, Erwin P, Dimitriou M, McAlahney K, Thompson ME. High-efficiency bodipy-based organic photovoltaics. ACS Applied Materials and Interfaces 2015; 7:662–669.

Colvin MT, Carmieli R, Miura T, Richert S, Gardner DM, Smeigh AL, Dyar SM, Conron SM, Ratner MA, Wasielewski MR. Electron spin polarization transfer from photogenerated spin-correlated radical pairs to a stable radical observer spin. Journal of Physical Chemistry A 2013; 117:5314–5325.

Mickley Conron SM, Shoer LE, Smeigh AL, Ricks AB, Wasielewski MR. Photoinitiated electron transfer in zinc porphyrin-perylenediimide cruciforms and their self-assembled oligomers. Journal of Physical Chemistry B 2013; 117:2195–2204.

Carmieli R, Smeigh AL, Mickley Conron SM, Thazhathveetil AK, Fuki M, Kobori Y, Lewis FD, Wasielewski MR. Structure and dynamics of photogenerated triplet radical ion pairs in DNA hairpin conjugates with anthraquinone end caps. Journal of the American Society 2012; 134:11251–11260.

Colvin MT, Smeigh AL, Giacobbe EM, Mickley Conron SM, Ricks AB, Wasielewski MR. Ultrafast intersystem crossing and spin dynamics of zinc meso-tetraphenylporphyrin covalently bound to stable radicals. Journal of Physical Chemistry A 2011; 115:7538–7549.

Mickley Conron SM, Thazhathveetil AK, Wasielewski MR, Burin AL, Lewis FD. Direct measurement of the dynamics of hole hopping in extended DNA G-tracts. An unbiased random walk. Journal of the American

Chemical Society 2010; 132:14388–14390.

Gunderson VL, Mickley Conron SM, Wasielewski MR. Self-assembly of a hexagonal supramolecular light-harvesting array from chlorophyll trefoil building blocks. Chemical Communications 2010; 46:301–403.

Bullock JE, Carmiele R, Mickley SM, Vura-Weis J, Wasielewski MR. Photoinitiated charge transport through pi-stacked electron conduits in supramolecular ordered assemblies of donor-acceptor triads. Journal of the American Chemical Society 2009; 131:11919–11929.

Carmiele R, Mi Q, Butler Ricks A, Giacobbe EM, Mickley SM, Wasielewski MR. Direct measurement of photoinduced charge separation distances in donor-acceptor systems for artificial photosynthesis using OOP-ESEEM. Journal of the American Chemical Society 2009; 131:8372–8373.

Dance ZEX, Mickley SM, Ahrens MJ, Butler Ricks A, Ratner M, Wasielewski MR. Intersystem crossing mediated by photoinduced intramolecular charge transfer in julolidine-anthracene donor-acceptor molecules. Journal of Physical Chemistry A 2008; 112:4194–4201.

Presentations

Conron SM, Chen JJ, Thompson ME. Utilization of boron-dipyrromethenes as donors in lamellar organic solar cells. Poster, Electron Donor-Acceptor Interactions Gordon Research Conference, Newport, RI, August 2012.

Conron SM. Exploring new acceptor materials for OPVs. Southern California Inorganic Photochemistry Conference, Catalina Island, CA, September 2011.

Conron SM. Dynamics of DNA charge transfer probed using nanosecond transient absorption spectroscopy. CRC DNA Photonics Meeting, New Orleans, LA, October 2010.

Mickley SM, Ricks AB, Wasielewski MR. Emergent charge transfer behavior in self-assembling, pi-stacked donor-acceptor systems based on perylenediimides. Electron Donor-Acceptor Interactions Gordon Research Conference, Newport, RI, August 2008.

Mickley SM, Cohen B, Vega AM, Wasielewski MR. Development of 3,5-dimethyljulolidine as a conformationally-restricted donor in electron donor-acceptor systems. 233rd American Chemical Society National Meeting, Chicago, IL, March 2007.

Mickley SM, McDevitt JT. An automated taste chip-based system for detection and measurement of interleukin-6. Research Experiences for Undergraduates Summer Poster Session, The University of Texas, Austin, TX, August 2004.

Mickley SM, Amburgey-Peters JC. Synthesis of a phosphatidylserine analog: trans-cyclohexane-1,2-diol-bis((CBZ-L-Ser-Bzl) phosphate). 227th American Chemical Society National Meeting, Anaheim, CA, March 2004.