



Exponent®

Engineering & Scientific Consulting

Sandy Pittelli, Ph.D.

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Professional Profile

Dr. Pittelli is a formally trained chemist specializing in polymer science, polymer processing, and electrochemistry. She has extensive knowledge of the structure-property relationships of polymeric materials, including characterization techniques such as atomic force microscopy, x-ray photoelectron spectroscopy, electrical conductivity measurements, and grazing-incidence wide-angle x-ray scattering (GIWAXS).

In addition to general polymer characterization, Dr. Pittelli specializes in material processing with experience in various solution-based methods for coating polymer films and understanding the effects of drying dynamics on polymer film properties. She is experienced in a variety of electrochemical techniques including differential pulse voltammetry (DPV), cyclic voltammetry (CV), chronoamperometry, electrochemical impedance spectroscopy, electrochemical conductance measurements and in situ spectroelectrochemistry.

Prior to joining Exponent, Dr. Pittelli received her Ph.D. in chemistry from the Georgia Institute of Technology, where she conducted her doctoral research in the field of organic electronics, specifically focusing on conjugated polymers. Her thesis work demonstrated how the structure of conductive polymers can affect the charge transport properties after chemical or electrochemical doping. Through this work she developed a scalable process to construct electrochemical devices for electrochromic applications.

Academic Credentials & Professional Honors

Ph.D., Chemistry, Georgia Institute of Technology, 2019

B.S., Chemistry, Rensselaer Polytechnic Institute, 2014

Georgia Institute of Technology William Emerson Outstanding Service Award, 2018

Georgia Institute of Technology Sepcic Pfeil Ph.D. Fellowship Award for Innovative Research, 2018

Georgia Institute of Technology Center for the Science and Technology of Advanced Materials and Interfaces (STAMI) Graduate Student Fellow, 2018

Society of Plastic Engineers Color and Appearance Division Scholar, 2017

Georgia Institute of Technology President's Fellow, 2014-2018

Rensselaer Polytechnic Institute William Pitt Mason Prize, 2014

Rensselaer Polytechnic Institute Leadership Award, 2010-2014

Prior Experience

Graduate Research Assistant, Georgia Institute of Technology, 2014-2019

National Science Foundation REU Fellow, 2013

Undergraduate Research Assistant, Rensselaer Polytechnic Institute, 2012-2014

Publications

Pittelli S. Understanding the effects of structure on the charge transport properties and doping of dioxythiophene polymers. Georgia Institute of Technology Doctoral Thesis. 2019.

Pittelli S, De Keersmaecker M, Ponder J, Österholm A, Ochieng M, Reynolds J. Structural effects on the charge transport properties of chemically and electrochemically doped dioxythiophene polymers. *Journal of Materials Chemistry C* 2020; 8: 683-693.

Ponder J, Menon A, Dasari R, Pittelli S, Thorley K, Yee S, Marder S, Reynolds J. Conductive, solution-processed dioxythiophene copolymers for thermoelectric and transparent electrode applications. *Advanced Energy Materials* 2019; 9: 1900395.

Pittelli S, Shen D E, Österholm A, Reynolds J. Chemical oxidation of polymer electrodes for redox active devices: stabilization through interfacial interactions. *American Chemical Society Journal of Applied Materials and Interfaces* 2018; 10: 970-978.

Xia K, Pittelli S, Church J, Colón W. Kinetic stability of proteins in beans and peas: implications for protein digestibility, seed germination, and plant adaptation. *Journal of Agriculture and Food Chemistry* 2016; 64: 7649-7657.

Ponder J, Pittelli S, Reynolds J. Heteroatom role in polymeric dioxyselenophene/dioxythiophene systems for color and redox control. *American Chemical Society Macro Letters* 2016; 5: 714-717.

Timko S, Maydanov A, Pittelli S, Conte M, Cooper W, Koch B, Schmitt-Kopplin P, Gonsior M. Depth-dependent photodegradation of marine dissolved organic matter. *Frontiers in Marine Science* 2015; 2: 66.

Presentations

Pittelli S, Ponder J, Gregory S, Yee S, Reynolds J. Dioxythiophene (DOTT) polymers: a fused thiophene approach to understanding the structure-property relationships of conducting polymers. Poster presentation, 14th International Symposium on Pi-Electron Systems, Berlin, Germany, 2019.

Pittelli S, De Keersmaecker M, Ponder J, Shen D E, Österholm A, Ochieng M, Reynolds J. Structural effects of the charge transport properties and doping of dioxythiophene polymers. Invited oral presentation, Eastman Chemical Award Finalist at the 256th American Chemical Society Meeting, Boston, MA, 2018.

Pittelli S, Ponder J, Ochieng M, De Keersmaecker M, Reynolds J. Structural tuning of the charge transport properties in dioxythiophene polymers for electrochemical device applications. Poster presentation and invited oral presentation, Electronic Processes in Organic Materials Gordon Research Conference and Gordon Research Seminar, Tuscany, Italy, 2018.

Pittelli S, Ponder J, Ochieng M, De Keersmaecker M, Reynolds J. Structural tuning of the charge

transport properties in dioxythiophene polymers for electrochemical device applications. Oral presentation, 13th National Graduate Research Polymer Conference, Minneapolis, MN, 2018.

Pittelli S, Shen D E, Österholm A, Reynolds J. Chemical doping of conjugated polymers for use in electrochemical devices. Oral presentation, Materials Research Society Fall Meeting, Boston, MA, 2017.

Pittelli S, Shen D E, Österholm A, Reynolds J. Chemical doping of conjugated polymers for use in electrochemical devices. Poster presentation, 4th Annual Research Symposium of the Applied Polymer Technology Extension Consortium, Baton Rouge, LA, 2016.

Pittelli S, Shen D E, Österholm A, Reynolds J. Chemical doping of conjugated polymers for use in electrochemical devices. Poster presentation, 12th National Graduate Research Polymer Conference, Akron, OH, 2016.

Pittelli S, Conte M, Cooper W, Koch B, Schmitt-Kopplin P, Gonsior M, Depth-dependent photodegradation of marine dissolved organic matter. Poster presentation, 2014 Ocean Sciences Meeting, Honolulu, HI, 2014.