

## GENEVIEVE SAUVE

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### Professional Preparation

|   |                     |           |
|---|---------------------|-----------|
| Concordia University  | B.S. Chemistry      | 1994      |
| California Institute of Technology                              | Ph.D. Chemistry     | 1999      |
| Thesis: "Dye Sensitization of Nanocrystalline Titanium Dioxide" |                     |           |
| Advisor: Professor Nathan S. Lewis                              |                     |           |
| Carnegie Mellon University                                      | Conducting Polymers | 2002-2008 |

### Appointments

7/2009-present Assistant Professor  
*Department of Chemistry, Case Western Reserve University, Cleveland, OH*

2008-2009 Visiting Scientist  
*Helmholtz-Centre Berlin for Materials and Energy, Berlin, Germany*

2008-2009 Visiting Assistant Professor  
*Department of Chemistry, Case Western Reserve University, Cleveland, OH*

2005-2008 Research Associate with Professor Richard D. McCullough  
*Department of Chemistry, Carnegie Mellon University, Pittsburgh, PA*

2002-2005 Postdoctoral Fellow with Professor Richard D. McCullough  
*Department of Chemistry, Carnegie Mellon University, Pittsburgh, PA*

1999-2000 Senior Development Chemist  
*PPG Industries, Pittsburgh, PA*

### Current Graduate Students

1. Fernando, Juwanmandadige Roshan Chandraquptha (1/2010-present)
2. Mao, Zhenghao (1/2010-present)

### Current and Past Undergraduate Students

Cassie Daddario (8/2009-5/2010), Quinn M. Gleisner (5/2010-present), Joshua Young (9/2010-present), Margeret Oti (9/2010-present)

### Postdoctoral Fellows and Visiting scientists

Wasana Senevirathna (6/2010-present)  
Dr. Lei Gao (7/2010-present)

## Service and other Synergistic Activities

Member, Energy and Materials Faculty Search Committee, 2009-2010

Member, Graduate Admissions Committee, 2009-present

Member, Chemistry Executive Committee, 2009-2010

Co-founder, Solar Energy and OptoElectronic Materials (SEOEM) laboratory, CWRU

## Teaching

Fall 2009 CHEM 335: Physical Chemistry 1

Spring 2010 CHEM 504: Special topics in organic chemistry – Solar energy conversion

Fall 2010 CHEM 335: Physical Chemistry 1

## Reviewing activity

*Proposals:* National Science Foundation (NSF); Office of Basic Energy Sciences (DOE); ACS-PRF

*Journals:* Langmuir; Macromolecules; Organic Letters; Progress in Polymer Science; Journal of Polymer Science Part B: Polymer Physics; The Journal of Physical Chemistry Letters.

## Grants

*Pending:* NSF DGE “The GK-12 STEM Sandbox: Using the Tools and Paradigms of Design to Bring Research to Life” PI: David Schiraldi Co-PIs: Alexis Abramson, Genevieve Sauve.

*Past:* DAAD (German Academic Exchange Service) Faculty Research Visit grant to Germany, 2009

## Awards , scholarships and fellowships

1. Max Planck Institute of Colloids and Interfaces Fellowship, 2008
2. Masters and Doctoral Research Scholarships, FCAR (Le Fond Québécois de la Recherche sur la Nature et les Technologies), 1994-1999  
*Scholarship with full tuition awarded to best candidates in continuing graduate work in natural science, mathematics or engineering research.*
3. Dow Chemical Company Travel Fellowship, 1997  
*Awarded to support travel to industrial laboratories.*
4. Chemistry Award, Celanese Canada LTD, 1994  
*Awarded to outstanding students in the chemistry department (one of two).*
5. Merit Award, Society of Chemical Industry, Canadian section, 1994  
*Award in recognition of outstanding academic achievement*
6. Canada Scholarship, 1990-1993  
*Awarded in recognition of sustained academic excellence in science, engineering and technology. Competed nationally.*
7. Entrance Scholarship, Concordia University, 1990-1993.  
*Awarded to the best incoming undergraduate student in chemistry.*

## Publications

1. **Sauvé, G.;** Javier, A. E.; Zhang, R.; Liu, J.; Sydlik, S. A.; Kowalewski, T.; McCullough, R. D. “Well-defined, high molecular weight poly(3-alkylthiophene)s in thin-film transistors: side chain invariance in field-effect mobility” *J. Mater. Chem.*, **2010**, 20, 3195-3201.

2. Osaka, I.; Zhang, R.; **Sauvé, G.**; Smilgies, D.-M.; Kowalewski, T.; McCullough, R. D. "High-Lamellar Ordering and Amorphous-Like p-Network in Short-Chain thiazolothiazole-Thiophene Copolymers Lead to High Mobilities", *J. Am. Chem. Soc.*, **2009**, 131(7), 2521-2529.
3. Liu, J.; Zhang, R.; **Sauvé, G.**; Kowalewski, T.; McCullough, R. D. "Highly Disordered Polymer Field Effect Transistors: N-alkyl dithieno[3,2-b:2',3'-d]pyrroles-based Copolymers with Surprisingly High Charge Carrier Mobilities", *J. Am. Chem. Soc.*, **2008**, 130(39), 13167-13176.
4. Singh, K. A.; **Sauvé, G.**; Zhang, R.; Kowalewski, T.; McCullough, R. D.; Porter, L. M. "Dependence of Field-Effect Mobility and Contact Resistance on Nanostructure in Regioregular Poly(3-hexylthiophene) Thin Film Transistors", *Appl. Phys. Lett.*, **2008**, 92, 263303.
5. Osaka, I.; **Sauvé, G.**; Zhang, R.; Kowalewski, T.; McCullough, R. D. "Novel Thiophene-Thiazolothiazole Copolymers for Organic Field-Effect Transistors", *Adv. Mater.*, **2007**, 19(23) 4160-4165.
6. **Sauvé, G.**; McCullough, R. D. "High Field-Effect Mobilities for Diblock Copolymers of Poly(3-hexylthiophene) and Poly(methyl acrylate)", *Adv. Mater.*, **2007**, 19(14) 1822-1825.
7. Li, B.; Santhanam, S.; Schultz, L.; Jeffries-EL, M.; Iovu, M. C.; **Sauvé, G.**; Cooper, J.; Zhang, R.; Revelli, J. C.; Kusne, A. G.; Snyder, J. L.; Kowalewski, T.; Weiss, L. E.; McCullough, R. D.; Fedder, G. K.; Lambeth, D. N.; "Inkjet Printed Chemical Sensor Array Based on Polythiophene Conductive Polymers", *Sensors and Actuators, B: Chemical*, **2007**, B123, 651-660.
8. Li, B.; **Sauvé, G.**; Iovu, M. C.; Zhang, R.; Cooper, J.; Santhanam, S.; Schultz, L.; Revelli, J. C.; Kusne, A. G.; Kowalewski, T.; Snyder, J. L.; Weiss, L. E.; Fedder, G. K.; McCullough, R. D.; Lambeth, D. N.; "Volatile Organic Compound Detection Using Nanostructured Copolymers", *Nano Lett.*, **2006**, 6 (8) 1598-1602.
9. Zhang, R.; Li, B.; Iovu, M.; Jeffries-EL, M.; **Sauvé, G.**; Cooper, J.; Jia, S.; Tristram-Nagle, S.; Smilgies, D. M.; Lambeth, D. N.; McCullough, R. D.; Kowalewski, T. "Nanostructure Dependence of Field-Effect Mobility in Regioregular Poly(3-hexylthiophene) Thin Film Field Effect Transistors", *J. Am. Chem. Soc.*, **2006**, 128(11), 3480-3481.
10. Jeffries-EL, M.; **Sauvé, G.**; McCullough, R. D. "Facile Synthesis of End-Functionalized Regioregular Poly(3-alkylthiophene)s via Modified Grignard Metathesis Reaction", *Macromolecules*, **2005**, 38(25), 10346-10352.
11. Ewbank, P. C.; Loewe, R. S.; Zhai, L.; Reddinger, J.; **Sauvé, G.**; McCullough, R. D. "Regioregular Poly(thiophene-3-alkanoic acid)s: Water Soluble Conducting Polymers Suitable for Chromatic Chemosensing in Solution and Solid State", *Tetrahedron*, **2004**, 60(49), 11269-11275.
12. Jeffries-EL, M.; **Sauvé, G.**; McCullough, R. D. "In-situ End-group Functionalization of Regioregular Poly(3-alkylthiophene) Using the Grignard Metathesis Polymerization Method", *Adv. Mater.*, **2004**, 16(12), 1017-1019.
13. **Sauvé, G.**; Cass, M. E.; Coia, G.; Doig, S. J.; Lauermaun, I.; Pomykal, K. E.; Lewis, N. S. "Dye Sensitization of Nanocrystalline Titanium Dioxide with Osmium and Ruthenium Polypyridyl Complexes", *J. Phys. Chem. B*, **2000**, 104, 6821-6836.
14. **Sauvé, G.**; Cass, M. E.; Doig, S. J.; Lauermaun, I.; Pomykal, K. E.; Lewis, N. S. "High Quantum Yield Sensitization of Nanocrystalline Titanium Dioxide Photoelectrodes with cis-Dicyanobis(4,4'-dicarboxy-2,2'-bipyridine)osmium(II) or Tris(4,4'-dicarboxy-2,2'-bipyridine)osmium(II) Complexes", *J. Phys. Chem. B*, **2000**, 104, 3488-3491.
15. Kamat, P. V.; **Sauvé, G.**; Guldi, D. M.; Asmus, K.-D. "Radical Reactions of C<sub>84</sub>", *Res. Chem. Intermed.*, **1997**, 23, 575-585.
16. **Sauvé, G.**; Kamat, P. V.; Thomas, K. G.; Thomas, K. J.; Das, S.; George, M. V. "Photochemistry of Squaraine Dyes: Excited Triplet State and Redox Properties of Crown Ether Squaraines", *J. Phys. Chem.*, **1996**, 100(6), 2117-2123.

17. Serpone, N.; **Sauvé, G.**; Koch, R.; Tahiri, H.; Pichat, P.; Piccinini, P.; Pelizzetti, E.; Hidaka, H. "Standardization Protocols of Process Efficiencies and Activation Parameters in Heterogeneous Photocatalysis: Relative Photonic Efficiencies  $\xi_r$ ", *J. Photochem. Photobiol. A: Chem.*, **1996**, 94(2,3), 191-203.
18. **Sauvé, G.**; Kamat, P. V.; Ruoff, R. S. "Excited Triplet and Reduced Forms of C<sub>64</sub>", *J. Phys. Chem.*, **1995**, 99, 2162-2165.
19. **Sauvé, G.**; Dimitrijevic, N. M.; Kamat, P. V. "Singlet and Triplet Excited State Behaviors of C<sub>60</sub> in Nonreactive and Reactive Polymer Films", *J. Phys. Chem.*, **1995**, 99, 1199-1203.
20. Serpone, N.; Terzian, R.; Lawless, D.; Kennepohl, P.; **Sauvé, G.** "On the Usage of Turnover Numbers and Quantum Yields in Heterogeneous Photocatalysis", *J. Photochem. Photobiol., A: Chem.*, **1993**, 73(1), 11-16.

### Book chapter

Ewbank, P. C.; Stefan, Mihaela C.; **Sauvé, G.**; McCullough R. D., "Synthesis, characterization and properties of regioregular polythiophene-based materials, in Handbook of Thiophene-based Materials: Applications in Organic Electronics and Photonics", Wiley, **2009**

### Presentations

**Sauvé, G.** "Polymeric materials for printable electronic applications: from synthesis to device characterization", Case Western Reserve University, Department of Materials Science and Engineering, March 2, **2010**; Invited Talk.

**Sauvé, G.**, "Block copolymers of poly(3-hexylthiophene): towards better control of nanostructures", *Workshop on Quantum Solar Energy Conversion*, Rauris, Austria, March 12, **2009**; Submitted talk.

**Sauvé, G.**, "Printable Electronics: From Synthesis of Conducting Polymers to High Mobility Transistors", *Nano-Science Center*, University of Copenhagen, Denmark, October 30, **2008**; Invited Talk.

**Sauvé, G.**, "Regioregular poly(3-alkylthiophene)s for use in printable electronic applications: transistors and sensors", *ACS local polymer section*, Pittsburgh, PA, April 22, **2008**; Invited Talk.

**Sauvé, G.**, "Regioregular poly(3-alkylthiophene)s for use in printable electronic applications: transistors and sensors", *PPG Coatings Innovation Center*, Allison Park, PA, Feb. 26, **2008**; Invited Talk.

**Sauvé, G.**, Javier, A.; Stefan, M. C.; Liu, J.; Sydlík, S. A.; Zhang, R.; Kowalewski, T.; McCullough, R. D. "Record High Charge Carrier Mobilities for Well-Defined Regioregular Poly(3-alkylthiophene)s and for Block Copolymers of Poly(3-hexylthiophene)", *Materials Research Society Spring Meeting*, San Francisco, CA, March 24-28, **2008**; Submitted Poster.

**Sauvé, G.**; McCullough, R. D. "High Mobilities for Block Copolymers of Regioregular Poly(3-hexylthiophene)", *Materials Research Society Spring Meeting*, San Francisco, CA, April 9-13, **2007**; Submitted talk.

**Sauvé, G.**; McCullough, R. D. "High Mobilities for Block Copolymers of Regioregular Poly(3-hexylthiophene)", *233<sup>rd</sup> ACS National Meeting*, Chicago, IL, March 25-29, **2007**; Submitted talk.

**Sauvé, G.**; Zhang, R.; Li, B.; Iovu, M. C.; Craley, C.; Jeffries-EL, M.; Cooper, J.; Jia, S.; Tristram-Nagle, S.; Smilgies, D. M.; Lambeth, D. N.; Kowalewski, T. A.; McCullough, R. D. "Synthesis, mobility, and Conductivity of Well-defined Regioregular Poly(3-hexylthiophene) and Diblock Copolymers of Regioregular Poly(3-hexylthiophene)", *SPIE-Optics and Photonics, Conference 6336 (Organic Field-Effect Transistors V)*, San Diego, CA, August 13-17, **2006**. Submitted Talk.

McCullough, R. D.; **Sauvé, G.**; Li, B.; Jeffries-EL, M.; Santhanam, S.; Schultz, L.; Zhang, R.; Iovu, M. C.; Cooper, J.; Sreedharan, P.; Revelli, J. C.; Kusner, A. G.; Kowalewski, T.; Snyder, J. L.; Weiss, L. E.; Lambeth, D. N.; Fedder, G. K. "Regioregular Polythiophene Nanowires and Sensors", *SPIE-Optics and Photonics, Conference 5940 (Organic Field-Effect Transistors IV)*, San Diego, CA, July 31-August 4, **2005**; Gave Rick McCullough's invited talk.

**Sauvé, G.;** Iovu, M. C.; Jeffries-EL, McCullough, R. D. "Well-Defined Poly(3-hexylthiophene)-*b*-Poly(acrylate) Di-block Copolymers", *Abstracts of Papers, ACS National Meeting*, Washington, DC, August 28-September 1, **2005**. Submitted Poster.

**Sauvé, G.;** Jeffries-EL, M.; McCullough, R. D. "Control of End-groups of Regioregular Poly(3-alkylthiophenes) Using Grignard Metathesis", *Abstracts of Papers, 35<sup>th</sup> Central Regional Meeting of the American Chemical Society*, Pittsburgh, PA, October 19-22, **2003**, Submitted Poster.

**Sauvé, G.;** Jeffries-EL, M.; McCullough, R. D. "Control of End-groups of Regioregular Poly(3-alkylthiophenes) Using Grignard Metathesis", *Abstracts of Papers, 226<sup>th</sup> ACS National Meeting*, New York, NY, September 7-11, **2003**, POLY-401, Submitted Poster.

**Sauvé, G.;** Cass, M.; Coia, G.; Doig, S.; Lewis, N. S. "Studies of Ru and Os Bipyridine Complexes as Sensitizers for Polycrystalline TiO<sub>2</sub>-Based Photoelectrochemical Cells", *216<sup>th</sup> ACS national Meeting*, August 23-27, **1998**. Submitted Talk.