# Ryan M. Pearson

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## Experience

**Cypris Materials, Inc.** 2019 – Current
Co-Founder, Chief Operating Officer

## Education

**Ph.D. Chemistry (Organic, Materials)** 2014 – 2019
Colorado State University, Fort Collins, CO
University of Colorado, Boulder, CO (moved with professor)

**B.S. Chemistry** 2010 – 2014
Pennsylvania State University, University Park, PA

## Research

**Catalysis, Materials Design and Computational Chemistry** 2014 – 2019
Research Advisor: Garret Miyake

Design, synthesis and computational characterization of novel organic photoredox catalysts for broad application in small molecule and macromolecular transformations.

**Natural Product Synthesis** 2012 – 2014
Research Advisor: Gong Chen

Development of new modes of C-H activation and their application in total synthesis of complex natural products.

## Selected Awards & Honors

2019 Forbes 30 Under 30
2019 Cyclotron Road Cohort Five Fellow
2017 BASF Science Competition (*1st Place*)
2016 ACS Division of Polymer Chemistry Excellence in Graduate Polymer Research Symposia Award (*Awarded to 1 graduate student per university)*
2015 ACS Ciba Award in Green Chemistry (*Awarded to 2 graduate students annually)*
2015 ACS Summer School on Green Chemistry and Sustainable Energy Fellow
2015 IBM Students for a Smarter Planet Award
2013 3M Fellow in the Summer Undergraduate Research Program
2012, 2013 Penn State Eberly College of Science Undergraduate Research Award

## Publications (*716 citations, i10-index = 9*)

12. Cole, J.[†]; Chen, D.[†]; Kudisch, M.; **Pearson, R.**; Lim, C.; Miyake, G. "Organocatalyzed Birch Reduction Driven by Visible Light" *J. Am. Chem. Soc,* **2020**, *142*, 13573-13581
11. Sartor, S.; Chrisman, C.; **Pearson, R.**; Miyake, G.; Damrauer, N. "Designing Phenothiazine Donor-Acceptor Complexes as High Triplet Yield Photoredox Catalysts" *The Journal of Physical Chemistry A*, **2020**, *124*, 817-823
10. Sartor, S.; McCarthy, B.; **Pearson, R.**; Miyake, G.; Damrauer, N "Exploiting Charge Transfer States for Maximizing Intersystem Crossing Yields in Organic Photoredox Catalysts" *J. Am. Chem. Soc.,* **2018**, *140*, 4778 – 4781.
9. McCarthy, B.; **Pearson, R.**; Lim, C.; Sartor, S.; Damrauer, N.; Miyake, G. "Structure-Property Relationships for the Design of Visible Light, Strongly Reducing Phenoxazine Photoredox Catalysts and their Application in

Organocatalyzed Atom Transfer Radical Polymerization" *J. Am. Chem. Soc.,* **2018**, *140*, 5088 – 5101.

8. **Pearson, R†**; Du, Y.†; Lim, C.†; Sartor, S.; Ryan, M.; Yang, H.; Damrauer, N.; Miyake, G. "Strongly Reducing, Visible-Light Organic Photoredox Catalysts as Sustainable Alternatives to Precious Metals" *Chem. Euro. J.,* **2017**, *23*, 1 – 8. (*Cover article, one of the most accessed articles in 2017*)
7. **Pearson, R.†**; Ryan, M.†; Miyake, G. "The Impact of Light Intensity on Control in Photoinduced Organocatalyzed Atom Transfer Radical Polymerization" *Macromolecules,* **2017**, *50*, 4616 – 4622.
6. Ramsey, B.; **Pearson, R.**; Beck, L.; Miyake, G. "Photoinduced Organocatalyzed Atom Transfer Radical Polymerization Using Continuous Flow" *Macromolecules,* **2017**, *50*, 2668 – 2674.
5. Boyle, B.†; French, T.†; **Pearson, R.**; McCarthy, B.; Miyake, G. "Structural Color for Additive Manufacturing: 3D-Printed Photonic Crystals from Block Copolymers" *ACS Nano,* **2017**, *11*, 3052 –3058.
4. **Pearson, R.†**; Lim, C.†; McCarthy, B.; Musgrave, C.; Miyake, G. "Organocatalyzed Atom Transfer Radical Polymerization Using *N*-Aryl Phenoxazines as Photoredox Catalysts" *J. Am. Chem. Soc.*, **2016**, *138*, 11399 – 11407.
3. Theriot, J.; Ryan, M.; French, T.; **Pearson, R.**; Miyake, G. "Atom Transfer Radical Polymerization of Functionalized Vinyl Monomers Using Perylene as a Visible Light Photocatalyst" *JoVE*, **2016**, e53571 – e53571.
2. He, G.; Zhang, S.; Nack, W.; **Pearson, R.**; Rabb-lynch, J.; Chen, G. "Total Synthesis of Hibispeptin A via Pd-Catalyzed C($sp_3$)-H Arylation with Sterically Hindered Aryl Iodides" *J. Org. Chem.*, **2014**, *16*, 6488 – 6491.
1. **Pearson, R.**; Zhang, S.; He, G.; Edwards, N.; Chen, G. "Synthesis of Phenanthridines via Palladium-Catalyzed Picolinamide-Directed Sequential C-H Functionalization" *Beilstein J. Org. Chem.,* **2013**, *9*, 891 – 899.

† indicates Co-First Author

## Patents

4. **Pearson, R.**; Matthew, D.; Miyake, G. "Multi-Coat Polymer Photonic Crystal Films" *International Patent Application WO/2020/160299*
3. Matthew, D.; Miyake, G.; **Pearson, R.** "Polymer Composite Photonic Crystal Coatings" *International Patent Application WO/2020/180427*
2. Miyake, G.; **Pearson, R.**; Matthew, D. "Group Transfer Polymerization for the Production of Functional Monomers" *US Patent Application 2020/0239626*
1. Miyake, G.; Theriot, J.; Ryan, M.; **Pearson, R.**; French, T.; Yang, H; Lockwood, A.; Musgrave, C; Lim, C-H. "Compositions and Methods of Promoting Organic Photocatalysis" *US Patent 15/960,086*.

## Book Chapters

1. Ryan, M.; **Pearson, R.**; Miyake, G. "Organocatalyzed Controlled Radical Polymerizations", in *Organic Catalysis for Polymerization*. Royal Chemical Society, **2018**, 584-606

## Selected Oral Presentations

6. **Pearson, R.** "Paintable Structural Color – Sustainable Color Without Pigments or Dyes" *Air Force Research Laboratory Seminar Series*, **2020**
5. **Pearson, R.** "Paintable Structural Color – Sustainable Color Without Pigments or Dyes" *PPG Seminar Series*, **2020**
4. **Pearson, R.** "Solar Control Window Paint" *TEDxCSU*, **2018**
3. **Pearson, R.**; Ryan, M.; Foster, K.; Hess, K. "Expansion and Interfacial Modulation via Polymer Additives" *BASF Science Competition (1st place)*, **2017**
2. **Pearson, R.**; Miyake, G. "Design and Application of Strongly Reducing Organic Photoredox Catalysts" *253rd American Chemical Society National Meeting*, **2017**
1. **Pearson, R.**; Miyake, G. "Organocatalyzed Photoredox Atom Transfer Radical Polymerization: Catalyst Development and Application" *20th Annual Green Chemistry & Engineering Conference*, **2016**