

Kevin M. McPeak

Curriculum vitae

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Louisiana State University
Cain Department of Chemical Engineering
110 Chemical Engineering Bldg
S. Stadium Dr.
Baton Rouge, LA 70803
kmcpeak@lsu.edu
225.578.0058

EDUCATION

Ph.D., Drexel University, Department of Chemical & Biological Engineering, 2010
B.S., Northwestern University, Environmental Engineering, 1999

PROFESSIONAL APPOINTMENTS/EMPLOYMENT

Louisiana State University, Cain Department of Chemical Engineering
Assistant Professor, 2015 – Present

Swiss Federal Institute of Technology, Optical Materials Engineering Laboratory
Group Leader, 2014 – 2015
Post-doctoral researcher, 2010 – 2014

PUBLICATIONS

Manuscripts in Preparation

McPeak, KM; Faridi, A; Kim, D; Rossinelli, A; Heinrich, M; Blome, M; Jayanti, SV; Burger, S; Braga, D; Norris, DJ “Periodic Nanostructured CdS/PbS-Quantum Dot Solar Cells in Substrate Configuration”

Jayanti, SV*; **McPeak, KM***; Kim DK*; Erickson, P; Burger, S; Cui, J; Prins, F; Kress, SJP; Rossinelli, A; McNeill, K; Norris, DJ “Polariton Emission from Colloidal Quantum Dots Strongly Coupled to Plasmonic Hole Arrays”

*These authors contributed equally in this work

Prins, F; Kim DK; Eva, DL; **McPeak, KM**; Norris, DJ “Fluorescent Beaming from Patterned Colloidal Quantum-Dot Films Obtained via Template Stripping”

Manuscripts in Under Review

Poulikakos, LV; Gutsche, P; McPeak, KM; Burger, S; Niegemann, J; Hafner, C; Norris, DJ “The Optical Chirality Flux as a Useful Far-Field Probe of Chiral Near Fields” *ACS Photonics*

Refereed Journal Articles

Gosalvez, MA; Ferrando, N; Fedoryshyn, Y; Leuthold, J; **McPeak, KM** “Evidence for faster etching at the mask-substrate interface: atomistic simulation of complex cavities at the micron/submicron scale by the continuous cellular automaton” *Journal of Micromechanics and Microengineering*, **2016**, 26 (4), 045013

McPeak, KM; van Engers, C; Rossinelli, A; Jayanti, SV; Norris, DJ “Ultraviolet Plasmonic Chirality from Colloidal Aluminum Nanoparticles Exhibiting Charge-Selective Protein Detection” *Advanced Materials*, **2015**, 27(40):6244-50.

Kress, S; Antolinez, FP; Richner, P; Jayanti, SV; Kim, DK; Riedinger, A; Fischer, M; Meyer, S; **McPeak, KM**; Poulikakos, D; Norris, DJ “Wedge Waveguides and Resonators for Quantum Plasmonics” *Nano Letters*, **2015**, 15 (9), 6267–6275

Jayanti, SV; Park, JH; Dejneka, A; Chvostova, D; **McPeak, KM**; Chen, X; Oh, SH; and Norris, DJ “Low-temperature enhancement of plasmonic performance in silver film” *Optical Materials Express*, **2015**, 5, 1147-1155

McPeak, KM; Jayanti, SV; Kress, SJP; Meyer, S; Iotti, S; Rossinelli, A; Norris, DJ “Plasmonic Films can easily be Better: Rules and Recipes” *ACS Photonics* **2015**, 2 (3), 326–333

McPeak, KM; van Engers, C; Blome, M; Park, JH; Burger, S; Gosálvez, MA; Faridi, A; Ries, YR; Sahu, A; and Norris, DJ “Complex Chiral Colloids and Surfaces via High-Index Off-Cut Silicon” *Nano Letters* **2014**, 14, 2934–2940

Park, J.H.; Nagpal, P; **McPeak, KM**; Lindquist, NC; Oh, S-H; Norris, DJ “Fabrication of Smooth Patterned Films and Multilayers of Refractory Metals, Semiconductors, and Oxides via Template Stripping” *ACS Appl. Mater. Interfaces*, **2013**, 5 (19), 9701–9708

Blome, M; **McPeak, KM**; Burger, S; Schmidt, F; Norris, DJ “Back-Reflector Design in Thin-Film Silicon Solar Cells by Rigorous 3d Light Propagation Modeling” *The International Journal for Computation and Mathematics in Electrical and Electronic Engineering*

McPeak, KM; Becker, MA; Ko, DK; Chattopadhyay, S.; Shibata, T.; Bunker, BA; Baxter, JB “Microreactor Chemical Bath Deposition of Laterally Graded $\text{Cd}_{1-x}\text{Zn}_x\text{S}$ Thin Films: A Route to High-Throughput Optimization for Photovoltaic Buffer Layers” *Chemistry of Materials* **2013**, 25, 297–306

Lindquist, NC; Nagpal, P; **McPeak, KM**; Norris, DJ; Oh, S-H “Engineering metallic nanostructures for plasmonics and nanophotonics” *Reports on Progress in Physics* **2012**, 75, 036501

McPeak, KM; Le, TP; Britton, N.G.; Baxter, JB “Chemical Bath Deposition of ZnO Nanowires at Near-Neutral pH Conditions without Hexamethylenetetramine (HMTA): Understanding the Role of HMTA in ZnO Nanowire Growth” *Langmuir* **2011**, 27, 3672-3677

McPeak, KM; Becker, MA; Britton, NG; Majidi, H; Bunker, BA; Baxter, JB “*In Situ* X-Ray Absorption Near-Edge Structure Spectroscopy of ZnO Nanowire Growth During Chemical Bath Deposition” *Chemistry of Materials* **2010**, 22, 6162-6170

McPeak, KM; Baxter, JB “ZnO Nanowires Grown by Chemical Bath Deposition in a Continuous Flow Microreactor” *Crystal Growth and Design* **2009**, 9, 4538-4545

McPeak, KM; Baxter, JB “Microreactor for High-Yield Chemical Bath Deposition of Semiconductor Nanowires: A ZnO Nanowire Case Study” *Industrial Engineering & Chemical Research* **2009**, 48, 5954–5961

PATENTS

Microreactor for Solution Deposition and Method of Use, McPeak, KM; Baxter, JB, US 20090291557 A1, 2009

AWARDS AND HONORS

BASF Sustainability Lab Recipient, LSU, 2016

MRS Symposium W Poster Prize, Boston, MA 2014

E-MRS Symposium F Oral Prize, Lille, France 2014

Royal Chemical Society Material’s Horizon Poster Award, MRS Boston, 2013

Graduate Research Excellence Award, Drexel University, 2010

Outstanding Teaching Assistant Award, Drexel University, 2007

McCormick School of Engineering Design Competition Winner, Northwestern University, 1998

GRANTS AND FELLOWSHIPS

Molloy and Mitchell Glick Scholarship, Drexel University, 2010

George Hill, Jr. Fellowship Recipient, Drexel University, 2010

Koerner Fellowship Recipient, Drexel University, 2007

Deans III Fellow, Drexel University, 2006

INVITED TALKS

“Plasmonic Chiral Colloids from High-Index Silicon Wafers”, University of Minnesota, 2015

“Plasmonic Chiral Colloids from High-Index Silicon Wafers”, Tufts University, 2015

“Plasmonic Chiral Colloids from High-Index Silicon Wafers”, 8th annual meeting: Photonic Devices, 2015

“Chiral Nanoparticles for Visible and Ultraviolet Plasmonics”, Louisiana State University, 2015

“Chiral Nanoparticles for Visible and Ultraviolet Plasmonics”, Kansas State University, 2015

“Chiral Nanoparticles for Visible and Ultraviolet Plasmonics”, University of Washington, 2013

“Chiral Colloids and Surfaces for Visible and Ultraviolet Plasmonics”, Rensselaer Polytechnic Institute, 2013

“Nanostructured Photovoltaics and Chiral Plasmonic Nanoparticles via Template Stripping”, Naval Research Laboratory, 2012

“JCMsuite on High Performance Computers” JCMwave User Meeting, 2012

“Chemical Bath Deposition of Semiconductor Nanowires and Thin Films for Solar Cell Applications”, Argonne National Laboratory, 2010

“Quantitative Speciation of ZnO Nanowire Growth from Chemical Bath Deposition Using *In Situ* XANES Spectroscopy”, University of Notre Dame, 2010

CAMPUS OR DEPARTMENTAL TALKS

“Chiral Nanoparticles for Visible and Ultraviolet Plasmonics”, Chemistry Department, Louisiana State University, 2015

CONFERENCE ACTIVITY

“Periodic Nanostructured CdS/PbS-Quantum Dot Solar Cells in Substrate Configuration”
McPeak, KM; Norris, DJ, MRS Dec 4, 2014, Boston, MA

“Chiral Aluminum Nanoparticles” **McPeak, KM;** Norris, DJ, MRS Dec 3, 2014, Boston, MA

“Complex Chiral Colloids and Surfaces Via High-Index Off-Cut Silicon” **McPeak, KM;** Norris, DJ, AIChE Nov. 20, 2014, Atlanta, GA

“Periodic Nanostructured CdS/PbS-Quantum Dot Solar Cells in Substrate Configuration”
McPeak, KM; Norris, DJ, AIChE Nov. 18, 2014, Atlanta, GA

“Chiral Nanoparticles for Visible and Ultraviolet Plasmonics” **McPeak, KM;** Norris, DJ, E-MRS May 27, 2014, Lille, France

“Chiral Metafluids for Visible and Ultraviolet Plasmonics” **McPeak, KM;** Norris, DJ, MRS Boston 2013 (poster)

“Chiral Plasmonic Nanoparticles from an Achiral Template” **McPeak, KM;** Norris, DJ, AIChE 2013, November 6, 2013, San Francisco, CA

“Chiral Plasmonic Nanoparticles from an Achiral Template” **McPeak, KM**; Norris, DJ, Spring MRS 2013, April 2, 2013, Boston, MA (poster)

“Nanostructured Photovoltaics and Chiral Plasmonic Nanoparticles via Template Stripping” **McPeak, KM**; Norris, DJ, MRS 2012, Nov 27, 2012, Boston, MA (poster)

“Nanostructured Photovoltaics and Chiral Plasmonic Nanoparticles via Template Stripping” **McPeak, KM**; Norris, DJ, AIChE 2012, October 29, 2012, Pittsburgh, PA

“Understanding the Chemical Bath Deposition of ZnO Nanowires and CdZnS Thin Films” **McPeak, KM**; Baxter, JB, AIChE 2012, October 29, 2012, Pittsburgh, PA

“Template Stripping: A Route to Ultrasoother Nanostructured Metal Films for Advanced Photon Management” **McPeak, KM**; Norris, DJ, Argonne National Laboratory, June 22, 2012, Argonne, IL

“Chemical Bath Deposition of ZnO Nanowires in a Continuous Flow Microreactor” **McPeak, KM**; Baxter, JB, Material Research Society, Fall 2009 Meeting, Boston, MA.

“Solution Deposition of ZnO Nanowires in a Continuous Flow Microreactor” **McPeak, KM**; Baxter, JB, AVS 56th International Symposium, 2009, San Jose, CA.

“Solution Deposition of ZnO Nanowires in a Continuous Flow Microreactor” **McPeak, KM**; Baxter, JB, AIChE Annual Meeting, 2009, Nashville, TN.

“Microreactor for High Yield Chemical Bath Deposition” **McPeak, KM**; Baxter, JB, Material Research Society, Fall 2008 Meeting, Boston, MA. (poster)

“Microreactor for High Yield Chemical Bath Deposition” **McPeak, KM**; Baxter, JB, AIChE Annual Meeting, 2008, Philadelphia, PA.

TEACHING EXPERIENCE

Louisiana State University, “Momentum Transport”, undergraduate level, Fall 2015

Drexel University, Teaching Assistant

“Fluid dynamics”, undergraduate level, Fall 2006

“Thermodynamics”, undergraduate level, Spring 2007

“Statistics”, undergraduate level, Summer 2007

SERVICE TO PROFESSION

NSF CBET Panelist, Winter 2016