

Ellie Bennett

Ph.D. Candidate in Chemistry • Columbia University in the City of New York
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EDUCATION

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| August 2016 – Present | Columbia University in the City of New York
Ph.D. Candidate in Chemistry, Expected Summer 2021
M.Phil. in Chemistry, January 2020
M.A. in Chemistry, May 2018
Research Advisor: <i>Jonathan S. Owen</i> |
| September 2012 – June 2016 | University of Cambridge
M.Sc. Natural Sciences, June 2016
Research Advisor: <i>Clare P. Grey</i>
BA (Hons) Natural Sciences, June 2016 |

PUBLICATIONS

5. **Bennett, E.**; Greenberg, M. W.; Banerjee, S.; Billinge, S. J. L.; Owen, J. S. Synthesis and sizing curve for monodisperse ZnS nanocrystals. *In Preparation*.
4. Abecassis, B.; ...; **Bennett, E.**; ... Owen, J. S. Monodisperse PbS Nanocrystals Following Persistent Nucleation and Size Dependent Growth. *In Preparation*.
3. Campos, M. P.; De Roo, J.; ...; **Bennett, E.**; ... Owen, J. S. Analysis of the Induction Time Preceding the Nucleation of Colloidal PbS and PbSe Nanocrystals. *In Preparation*.
2. Mahdavi-Shakib, A.; ...; **Bennett, E.**; ...; Owen, J. S.; Frederick, B.G.; Austin, R. N. Green Au/TiO₂ Alcohol Oxidation Catalysts on Morphologically Precise Anatase Nanoparticles. *In preparation*.
1. Dhaene, E.; Billet, J.; **Bennett, E.**; Van Driessche, I.; De Roo, J. The Trouble with ODE: Polymerization during Nanocrystal Synthesis, *Nano Letters*, **2019**, 10, 7411-7417

RESEARCH EXPERIENCE

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|---|------------------------|
| Graduate Student Researcher (Prof. Jonathan S. Owen)
<i>Columbia University, US</i> | Nov. 2016 – Present |
| <ul style="list-style-type: none">- Designed and optimized the size-controlled synthesis of monodisperse ZnS nanocrystals from substituted thiourea derivatives.- Established a sizing curve relating the ZnS nanocrystal diameter to its optical features using electron microscopy and X-ray scattering techniques.- Developed morphologically controlled quantum dot shelling methods to improve optical properties for incorporation in QD-LEDs.- Undertook <i>in-situ</i> PbS and PbSe X-ray scattering experiments at NSLS-II (Brookhaven National Lab). | |
| Masters Student Researcher (Prof. Clare P. Grey)
<i>University of Cambridge, UK</i> | Sept. 2015 – June 2016 |
| Project: NbS ₂ as a cathode material: the relationship between defects and electrochemical behaviour <ul style="list-style-type: none">- Studied how the synthetic conditions affected the stacking faults and crystallinity in NbS₂.- Constructed cells using synthesized NbS₂ and conducted electrochemical tests. | |
| Summer Student Researcher (Prof. Guillermo Requena)
<i>Technische Universität Wien, AT</i> | July – Sept. 2014 |
| Project: <i>In-situ</i> solidification process of the B206 aluminium alloy
Sponsorship: The Worshipful Company of Armourers and Braisers <ul style="list-style-type: none">- Developed software techniques to process and interpret synchrotron tomography data. | |

TEACHING & MENTORING EXPERIENCE

Teaching Development Program 2019 – expected Jan. 2021

Columbia University, (Center for Teaching and Learning)

- Program designed to develop and implement pedagogical practices to enhance student-centered learning.
- Attended seminars and workshops, completed reflective assignments, and was assessed *via* teaching observation.

General Chemistry Lecture Course Jan. 2017 – May 2019

Columbia University (Prof. A. McDermott, Prof. R. Beer)

- Teaching assistant for ~ 70 undergraduate and postbaccalaureate students. Wrote and graded quizzes and planned weekly lessons to enhance concepts covered with lecture. (3 semesters)

Intensive General Chemistry Lecture Course Aug. 2018 – Dec. 2018

Columbia University (Prof. A. McDermott & Prof. R. Gonzalez)

- Teaching assistant for ~45 undergraduate students for the accelerated general chemistry course. Wrote and graded quizzes, planned weekly lessons to enhance lecture content, helped lead experiments and practise research proposals (1 semester)

Physical Chemistry Lab Course Jan. 2017 – May 2017

Columbia University (Dr. L. Avila)

- Sole teaching assistant for a class of ~15 senior undergraduate students. Supported experimental work, assisted instrument maintenance, graded lab reports, presentations, and final projects. (1 semester)

PRESENTATIONS

- Synthesis and sizing curve for monodisperse ZnS nanocrystals *Friday Synthesis Symposium, Columbia University; Expected January 2021*
- Synthesis of ZnS quantum dots: Towards shelling and heterostructures *258th National Meeting of the American Chemical Society, San Diego, CA; August 25-29, 2019*

LEADERSHIP & OUTREACH EXPERIENCE

Co-president, *Initiative for Diversity in Engineering and Science (IDEaS)* 2018 – 2020

- Co-founding board member of IDEaS at Columbia University.
- Organized diversity and inclusion lectures for chemistry students and faculty.
- Coordinated departmental outreach events.

Graduate Student Volunteer, *Science outreach events at Columbia University*

- *Girls' Science Day at Columbia University* 2016 – present
- *Ph.D. for a Day* 2019 – present
- *March Chemistry Madness* 2017 – 2019
- *NYC Regional Brain Bee* 2016

Designed worksheets, led demonstrations and hands-on experiments for local middle school students

Alumna, *Churchill College Future Leaders* Sep. 2015 – May 2016

- Competitive course designed to enhance leadership, communication, and presentation skills.

AWARDS & PROFESSIONAL AFFILIATIONS

Jack Miller Award (excellence in teaching), *Columbia University* 2019

Columbia-Upjohn Fellowship (exemplifying academic excellence), *Columbia University* 2017 – 2018

Student Member, *American Chemical Society* 2016 - present

Armours and Braisers' European Placement Prize, Highly Commended 2014

Churchill College Scholar (Dean's List), *University of Cambridge* 2013 – 2016

RELEVANT SKILLS

Characterization: experience analyzing and collecting 1D (^1H , ^{13}C , ^{19}F , ^{29}Si and ^{31}P) and 2D NMR; Photoluminescence; PL Quantum Yield; UV-vis; FT-IR; TEM and STEM; EDS; PXRD; electrochemical; and MS measurements.

Synthesis: standard air-free Schlenk line techniques, glovebox techniques and maintenance, *in-situ* synchrotron experimental flow set-up.

Experience using Igor, ChemDraw, ImageJ, and Adobe Illustrator, Microsoft Excel.