Euan Bassey

Post-Doctoral Research Scholar

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Research & Teaching Experience

CENTRE DE RMN À TRÈS HAUTS CHAMPS DE LYON | Marie Skłodowska-Curie Fellow

March 2025 – Present | Lyon, France

- Affiliated with the research groups of Profs. Andrew Pell and Guido Pintacuda
- Research projects focussing on the development of novel experimental and theoretical methods for the acquisition and assignment of nuclear magnetic resonance (NMR) spectra, using broadband NMR and cluster expansion techniques.

UNIVERSITY OF CALIFORNIA, SANTA BARBARA | Post-Doctoral Researcher

November 2022 – March 2025 | Santa Barbara, U.S.

- Affiliated with the research groups of Profs. Anton Van der Ven and Raphaële Clément
- Research projects focussing on theoretical and experimental characterisation of Li- and Na-ion battery cathodes using operando magnetometry, NMR and electron paramagnetic resonance (EPR) spectroscopies; development of new statistical mechanics cluster expansion techniques for the prediction of materials' magnetic properties
- Assisted with development of CASM software
- Collaborations with multiple national and international institutions: Diamond Light Source; Institut Laue-Langevin and MagLab
- Prepared and delivered lectures to undergraduates (Materials Science for Non-Science Majors) and graduates (Quantum Mechanics, Statistical Mechanics); held corresponding office hours

UNIVERSITY OF CAMBRIDGE | Post-Doctoral Researcher

July 2022 – November 2022 | Cambridge, U.K.

- Affiliated with the research group of Prof. Dame Clare Grey and Faraday Institution NEXGENNA team
- Research projects focussing on experimental and theoretical studies of Na-ion cathode materials, focussing on magnetic resonance techniques: NMR, EPR and magnetic property measurements

UNIVERSITY OF CAMBRIDGE | Undergraduate Supervisor

October 2019 – November 2022 | Cambridge, U.K.

- Designed and supervised Masters student projects, including teaching NMR, EPR, DFT, diffraction and how to analyse and present data
- Prepared and delivered small-group classes for first-year undergraduate chemistry courses (organic, physical and inorganic chemistry)
- Practical laboratory class demonstrator for first and second-year undergraduate chemistry classes (organic, physical and inorganic chemistry)

Publications

1. Graciela E. García Ponte, Sesha Sai Behara, Euan N. Bassey, Raphaële J. Clément, Anton Van der Ven, First-Principles Statistical Mechanics Study of Magnetic Fluctuations and Order–Disorder in the Spinel $LiNi_{0.5}Mn_{1.5}O_4$ Cathode, Chemistry of Materials, 2025, XXX

Education

UNIVERSITY OF CAMBRIDGE

PhD in Chemistry

Oct 2018 - Jul 2022 | Cambridge, U.K.

Yusuf Hamied Department of Chemistry

Pass, no corrections

UNIVERSITY OF CAMBRIDGE

MSci in Natural Sciences

Oct 2017 - Jun 2018 | Cambridge, U.K.

Yusuf Hamied Department of Chemistry

Class I (5/60)

UNIVERSITY OF CAMBRIDGE

MA (Cantab.) in Natural Sciences

Oct 2014 - Jun 2017 | Cambridge, U.K.

Selwyn College

Class I (5/60)

Skills

PROGRAMMING

Experienced:

Python • LaTeX • MATLAB • Linux

Proficient:

C++ • CSS • HTML • Fortran

LANGUAGES

Fluent/Experienced:

English • German (B1/B2)

Proficient:

French • Italian

Referees

Professor Dame Clare P. Grey FRS, Geoffrey Moorhouse Gibson Professor of Chemistry, University of Cambridge ✉ cpg27@cam.ac.uk

Professor Raphaële Clément, Associate Professor of Materials, University of California, Santa Barbara

✉ rclement@ucsb.edu

Professor Anton Van der Ven, Professor of Materials, University of California, Santa Barbara

✉ avdv@ucsb.edu

2. Seongkoo Kang, Jihyun Kim, Youngju Choi, Suwon Lee, Leo W. Gordon, Euan N. Bassey, Jean-Claude Badot, Olaf J. Borkiewicz, Olivier Dubrunfaut, Raphaële J. Clément, Yong-Mook Kang, Controlling Interlayer Disorder Toward Reversible Phase Transition in a Layered Sodium Manganese Oxide Cathode, Journal of the American Chemical Society, 2025, 147(8), 6665-6678
3. Hanna Z. Porter, Emily E. Foley, Wen Jin, Eric Chen, Erick A. Lawrence, Euan N. Bassey, Raphaële J. Clément, Impact of Mg substitution on the structure and properties of the $Na_2Fe_2F_7$ weberite cathode, ACS Materials Au, 2025, 5(1), 170-181
4. Euan N. Bassey, Howie Nguyen, Teresa Insinna, Jeongjae Lee, Anne-Laure Barra, Giannantonio Cibin, Peter Bencok, Raphaële J. Clément, Clare P. Grey, Strong Magnetic Exchange Interactions and Delocalised Mn–O States Enable High-Voltage Capacity in the Na-Ion Cathode P2–$Na_{0.67}[Mg_{0.28}Mn_{0.72}]O_2$, Chemistry of Materials, 2024, 36 (19), 9493–9515
5. Tianyu Li, Tullio S. Geraci, Krishna Prasad Koirala, Arava Zohar, Euan N. Bassey, Philip A. Chater, Chongmin Wang, Alexandra Navrotsky and Raphaële J. Clément, Structural Evolution in Disordered Rock Salt Cathodes, Journal of the American Chemical Society, 146 (35), 24296–24309
6. Howie Nguyen, Euan N. Bassey, Emily Foley, Daniil A. Kitchaev, Raynald Giovine, Raphaële J. Clément, Operando Spin Probes for the Study of Battery Processes. Journal of Magnetic Resonance, 2024, 368, 107772
7. Madeleine Geers, Thomas B. Gill, Andrew D. Burnett, Euan N. Bassey, Oscar Fabelo, Laura Cañadillas-Delgado, Matthew J. Cliffe, Magnetic Structure and Properties of the Honeycomb Antiferromagnet $[Na(OH_2)_3]Mn(NCS)_3$, Physical Chemistry Chemistry Physics, 2024, 26, 15844–15849
8. Annalena R. Genreith-Schriever, Chloe S. Coates, Katharina Märker, Ieuan D. Seymour, Euan N. Bassey, and Clare P. Grey, Probing Jahn–Teller Distortions and Antisite Defects in $LiNiO_2$ with ^{7}Li NMR Spectroscopy and Density Functional Theory, Chemistry of Materials, 2024, 36(9), 4226–4239
9. Euan N. Bassey, Ieuan D. Seymour, Joshua D. Bocarsly, David A. Keen, Guido Pintacuda, Clare P. Grey, Superstructure and Correlated Na^+ Hopping in a Layered Mg-Substituted Sodium Manganate Battery Cathode are Driven by Local Electroneutrality, Chemistry of Materials, 2023, 35(24), 10564–10583
10. Juan R. Chamorro, Julia L. Zuo, Euan N. Bassey, Aurland K. Watkins, Guomin Zhu, Arava Zohar, Kira E. Wyckoff, Tiffany L. Kinnibrugh, Saul H. Lapidus, Susanne Stemmer, Raphaële J. Clément, Stephen D. Wilson, Ram Seshadri, Soft-Chemical Synthesis, Structure Evolution, and Insulator-to-Metal Transition in Pyrochlore-like λ-RhO_2, Chemistry of Materials, 2024, 36(3), 1547–1558
11. Teresa Insinna, Euan N. Bassey, Katharina Märker, Anne-Laure Barra, Clare P. Grey, Graphite Anodes for Li-Ion Batteries: An Electron Paramagnetic Resonance Investigation, Chemistry of Materials, 2023, 35(14), 5497–5511
12. Annalena R. Genreith-Schriever, Hrishit Banerjee, Ashok S. Menon, Euan N. Bassey, Louis F. Piper, Clare P. Grey, Oxygen Hole Formation Controls Stability in $LiNiO_2$ Cathodes: DFT Studies of Oxygen Loss and Singlet Oxygen Formation in Li-ion Batteries, Joule, 2023, 7(7), 1623–1640
13. Euan N. Bassey, Philip J. Reeves, Ieuan D. Seymour, Clare P. Grey, 17O NMR Spectroscopy in Lithium- and Sodium-ion Batteries: Challenges and Interpretation, Journal of the American Chemical Society, 2022, 144(41), 18714–18729
14. Eun Jeong Kim, Philip Maughan, Euan N. Bassey, Raphaële J. Clément, Le Anh Ma, Laurent C. Duda, Divya Sehrawat, Reza Younesi, Neeraj Sharma, Clare P. Grey, A. Robert Armstrong, Importance of superstructure and synthetic control in stabilising oxygen redox in P3-structure $Na_{0.67}Li_{0.2}Mn_{0.8}O_2$, Advanced Energy Materials, 2022, 12, 2102325
15. Euan N. Bassey, Philip J. Reeves, Michael A. Jones, Jeongjae Lee, Ieuan D. Seymour, Giannantonio Cibin, Clare P. Grey, Structural Origins of Voltage Hysteresis in the Na-ion Cathode P2-$Na_{0.67}[Mg_{0.28}Mn_{0.72}]O_2$: a Combined Spectroscopic and Density Functional Theory Study, Chemistry of Materials, 2021, 33(13), 4890–4906
16. Euan N. Bassey, Joseph A. M. Paddison, Evan N. Keyzer, Jeongjae Lee, Pascal Manuel, Ivan da Silva, Siân E. Dutton, Clare P. Grey, and Matthew J. Cliffe, Strengthening the Magnetic Interactions in Pseudobinary First-Row Transition Metal Thiocyanates, $M(NCS)_2$, Inorganic Chemistry, 2020, 59(16), 11627–11639

Awards

2025

• Marie-Skłodowska-Curie Fellowship fund (€250,000), scored 98.6/100

2024

• Poster Award, Ab Initio Modelling in Solid State Chemistry Workshop

2023

• Royal Society of Chemistry Research Development Grant
• Heeger Fellowship
• University of Cambridge Outstanding Thesis prize
• Poster Award at the Materials Research Society Fall Meeting

2022

• Selwyn College Travel Award
• Royal Society of Chemistry Research Development Grant
• Best EPR poster at the Rocky Mountain Conference on Solid-State NMR and EPR
• Three-Minute Thesis Winner, Selwyn College

2021

• Selwyn College Travel Award

2019

• Department of Chemistry, University of Cambridge Travel Award

2018

• Emeleus Prize for Distinction in Inorganic Chemistry
• Johnson Matthey Prize for Best Inorganic Research Project
• Ron Snaith Award for Best Inorganic Chemistry Research Presentation

2017

• BP Prize for Outstanding Work in Practical Chemistry
• Walters-Kundert Sciences Summer Studentship Fund

2016

• Cambridge Materials Placements for Undergraduates Studentship

2013

• Exeter Research Placement Scheme

Talks & Conferences

SEPTEMBER 2024:

Presented a poster at the Ab initio Modelling in Solid State Chemistry workshop, held at Imperial College London ("A Paramagnetic NMR Cluster Expansion Toolkit for Li-ion Battery Cathodes").

APRIL 2024:

Presentation to the CRMN: "Constructing a Paramagnetic NMR Cluster Expansion Toolkit"

DECEMBER 2023:

Invited talk at the NMR Seminar Series (Department of Chemistry, University of Cambridge), "Introduction to Phase Cycling and Pulse Programming"

NOVEMBER 2023:

Materials Research Society Fall Meeting: presented two posters ("Strain-Magnetism coupled cluster expansion in NaMnO2"; "A Paramagnetic NMR Cluster Expansion Toolkit for Li-ion Battery Cathodes") and one talk ("Characterisation of Strongly Paramagnetic Cathodes using EPR and DFT")

MAY 2023:

Invited talk at the Collaborative Computational Project for NMR Crystallography webinar on DFT calculations for paramagnetic NMR: "Assigning NMR Spectra of Strongly Paramagnetic Materials"

MARCH 2023:

Royal Society of Chemistry JEOL Medal Session: presented characterisation of strongly paramagnetic Li-ion battery cathodes using multi-frequency, variable-temperature EPR combined with DFT calculations: "Characterizing Paramagnetic Battery Cathodes with EPR and DFT"

FEBRUARY 2023:

Invited talk at the International Virtual EPR Meeting: "Eyes to the Spin: Characterizing Paramagnetic Battery Cathodes with EPR and DFT"

MARCH 2022:

Invited talk at the Global NMR Discussion presentation: provided an overview of paramagnetic NMR applied to sodium-ion batteries to researchers from across the globe ("Motion, Migration, Charge Compensation in a Na+-ion Battery Cathode: Tales from the Paramagnetic NMR Storybook")

OCTOBER 2021:

Invited presentation to Clément, Van der Ven and Seshadri Groups at the University of California, Santa Barbara about characterising the electronic, magnetic and chemical structure changes induced on electrochemically cycling sodium-ion battery cathode materials.

MARCH 2021:

Virtual Presentation to Selwyn College Natural Sciences Society about undertaking a PhD in Chemistry and my research on lithium- and sodium-ion batteries

MARCH 2021:

Virtual Presentation to Cliffe Group at the School of Chemistry in the University of Nottingham about studying structural changes in sodium-ion battery cathodes

JANUARY 2020:

Presentation to the research groups based at the Centre de RMN à Très Hauts Champs in the Ecole Normale Supérieure de Lyon (France) about using NMR to study sodium-ion dynamics in sodium-ion battery cathodes

Outreach

2021

Cambridge Hands-On Science "Crash, Bang, Squelch!" Virtual Roadshow

2019

Cambridge Science Festival Royal

Society of Chemistry's "Spectroscopy in a Suitcase" program

2018

Solid-state chemistry seminar for undergraduates

2017

Selwyn College Open Day Volunteer

for Selwyn Schools and Sixth Form Outreach program Volunteer for

Materials Science Department Open Day

NOVEMBER 2019:

Poster presentation at the European Federation of Electron Paramagnetic Resonance school in Brno (Czech Republic) about using EPR spectroscopy in battery materials