



## Metal-Free, Light-Mediated Decarboxylative Reactions

A PhD studentship is available in the group of Professor Ai-Lan Lee (School of Chemistry, University of Edinburgh); <https://ailanleegroup.wordpress.com/>

The studentship is fully funded for 42 months by the University of Edinburgh and covers tuition fees and an annual stipend (starting at £19,237 per annum) for a candidate satisfying EPSRC residency criteria. <https://www.ukri.org/councils/esrc/career-and-skills-development/funding-for-postgraduate-training/eligibility-for-studentship-funding/#contents-list>

### Project Summary

The Lee Group will relocate to University of Edinburgh from September 2024 and is recruiting a motivated PhD student to develop sustainable methodologies for light-mediated reactions. This synthetic organic chemistry PhD project builds on recent exciting observations in our laboratories that various visible light-mediated decarboxylative reactions can occur without the need for metal-mediation or photocatalysts. In this project, we aim to explore our sustainable methodology further using inexpensive, non-toxic, widely available and bench stable carboxylic acids as versatile radical precursors to develop various decarboxylative-functionalisation reactions. In particular, we aim to develop reactions that are not only more sustainable but also practical, cost-effective, scalable and suitable for late-stage functionalisations of drug molecules and natural products.

The project is ideal for a student who is passionate about improving sustainability in the field of synthetic organic chemistry. Training will be provided in modern synthetic organic chemistry techniques, including use of commercial photoreactors. There will also be opportunities to apply continuous flow chemistry and electrophotocatalysis in later stages of the project.

In the first instance, the initial application including cover letter and CV should be directed to: Dr Ai-Lan Lee, email: [A.Lee@hw.ac.uk](mailto:A.Lee@hw.ac.uk)

The position will remain open until filled; prompt applications are encouraged. A closing date may be added at a later date.

### References

- 1) "Direct Decarboxylative Giese Amidations: Photocatalytic vs. Metal- and Light-Free" D. M. Kitcatt, K. A. Scott, E. Rongione, S. Nicolle and A.-L. Lee *Chem. Sci.*, **2023**, *14*, 9806.
- 2) "Direct Minisci-type C-H Amidation of Purine Bases" D. T. Mooney, P. R. Moore and A.-L. Lee *Org. Lett.*, **2022**, *24*, 8008.
- 3) "Direct Decarboxylative Giese Reactions" D. M. Kitcatt, S. Nicolle and A.-L. Lee *Chem. Soc. Rev.*, **2022**, *51*, 1415.
- 4) "Direct Hydrodecarboxylation of Aliphatic Carboxylic Acids: Metal- and Light-Free" E. B. McLean, D. T. Mooney, D. J. Burns and A.-L. Lee *Org. Lett.*, **2022**, *24*, 686.

### IMPORTANT

Before submitting your application, please complete the online [School of Chemistry Equality, Diversity and Inclusion Form 2024](#).

**The form will automatically generate a unique “Receipt Number” that you MUST include in your cover letter.**

**Equality and Diversity**

The School of Chemistry holds a Silver Athena SWAN award in recognition of our commitment to advance gender equality in higher education. The University is a member of the Race Equality Charter and is a Stonewall Scotland Diversity Champion, actively promoting LGBT equality. The University has a range of initiatives to support a family friendly working environment. See our University Initiatives website for further information. University Initiatives website:

<https://www.ed.ac.uk/equality-diversity/help-advice/family-friendly>