



Pr. Jonathan Clayden, October 4th at 11h, IECB auditorium

**Applications of conformational control: defluorination,
deracemization and directional motion.**

Biological systems have evolved the ability to catalyse reactivity and to induce molecular function through fine control of molecular conformation. This lecture will outline some ways in which new reactivity and function emerge from biomimetic concepts applied in a synthetic context. These will include (a) preorganised conformational features that induce reactivity such as uncatalysed arylation/vinylation¹⁻³ or selective defluorination,⁴ and (b) a 'life-like' biocatalytic enantioselective redox system that allows the contrathermodynamic deracemization of atropisomers and can be extended to drive controlled unidirectional molecular motion powered by the controlled oxidation of borane.⁵

1. D. J. Leonard, J. W. Ward, J. Clayden, *Nature* **2018**, *562*, 105–109.
2. H. Abas, J. M. Roselló, M. M. Amer, D. J. Durand, R. R. Groleau, N. Fey, J. Clayden, *Angew. Chem. Int. Ed.* **2019**, *58*, 2418–2422
3. S. M. Wales, R. K. Saunthwal, J. Clayden, *Acc. Chem. Res.* **2022**, *55*, 1731–1747.
4. M. H. Jesani, M. Schwarz, S. Kim, F. L. Evans, A. White, A. Browning, R. Abrams, J. Clayden, *Angew. Chem. Int. Ed.* **2024**, e202403477.
5. J. Berreur, O. F. B. Watts, T. H. N. Bulless, N. T. O'Donoghue, A. Winter, J. Clayden, B. S. L. Collins, *ChemRxiv* **2024**; doi:10.26434/chemrxiv-2024-tz8vc