

# LIEBIG LECTURESHIP

der Liebig-Vereinigung für Organische Chemie

in der Gesellschaft Deutscher Chemiker

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Paul McGonigal

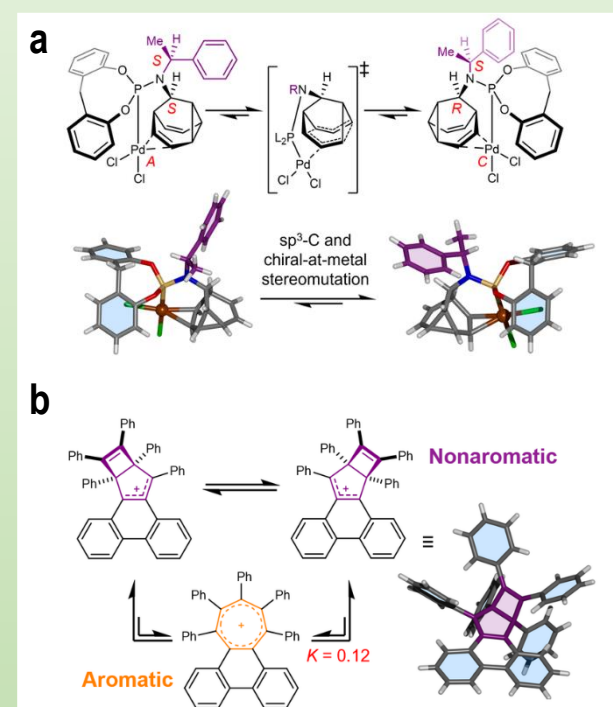
University of York/UK



## Geometry-Constrained Reactivity and Dynamics at the Limits of Carbon–Carbon Bonding

It is well-established that strain arises in organic molecules as a result of non-ideal bond lengths, bond angles, and unfavorable non-bonded interactions. The constrained geometries of ring systems are particularly predisposed to creating strain. Our recent research balances strain relief and geometry constraint to “switch-on” dynamic processes. This talk will summarize our investigations of fluxional carbon cages, which can give rise to phenomena such as dynamic preferential crystallization and stimulus-responsive dynamic  $sp^3$ -C stereochemistry (Figure a). It will also describe our discovery of an aromatic-to-nonaromatic that emerges when the aromatic stabilization energy of a ring system is offset precisely by steric strain (Figure b).

[1] Fluxional carbon cages *Chem. Sci.* **2018**, *9*, 8631–8636; *Chem. Sci.* **2020**, *11*, 324–332; *Nature Chem.* **2023** *15*, 615–624. [2] Sterically crowded aromatic rings *J. Am. Chem. Soc.* **2017**, *139*, 17882–17889; *Angew. Chem. Int. Ed.* **2022**, *61*, e202202193; *Nature Chem.* **2023**, *15*, 516–525.



<b>Berlin</b>	Thursday	November 23 <sup>th</sup>
<b>Chemnitz</b>	Friday	November 24 <sup>th</sup>
<b>Gießen</b>	Monday	November 27 <sup>th</sup>
<b>Heidelberg</b>	Tuesday	November 28 <sup>th</sup>
<b>Ulm</b>	Wednesday	November 29 <sup>th</sup>
<b>Dortmund</b>	Thursday	November 30 <sup>th</sup>
<b>Aachen</b>	Friday	December 1 <sup>st</sup>

Paul McGonigal (b 1985) is Reader in Functional Organic Materials at the University of York, where he investigates dynamic processes in organic functional materials. He received his MChem and PhD degrees from The University of Edinburgh (Prof David Leigh, 2011), before spending periods as a postdoctoral researcher at The Institute of Chemical Research of Catalonia, Spain (Prof Antonio Echavarren) and as a US–UK Fulbright Scholar at Northwestern University (Prof Fraser Stoddart). From 2015 - 2023, he started his independent academic career at Durham University as an Assistant and Associate Professor.