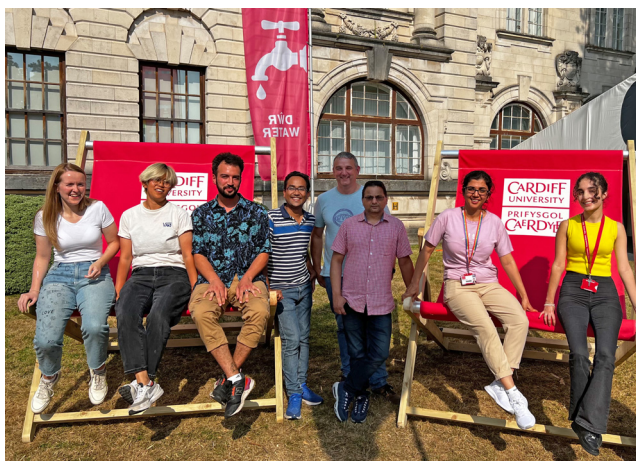


Chiral Iodotriptycenes: Synthesis and Catalytic Applications



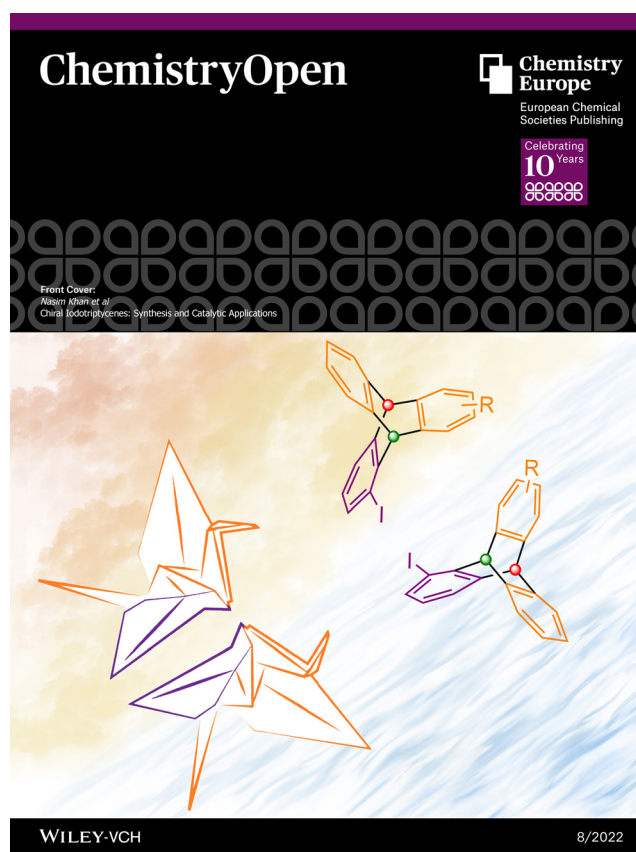
Invited for this month's cover picture is the group of Thomas Wirth at Cardiff University (UK). The cover picture shows two structures of triptycenes. In each of these molecules all three aromatic rings are different with the rigid structure of the molecules making them chiral. The two sp^3 -carbons shown in red and green are the stereocentres with defined configuration. These molecules contain the crucial iodine functionality which are utilised to generate hypervalent iodine(III)-catalysts *in situ*. The authors acknowledge Dr. Yu Wang for the creation of the cover image. Read the full text of their Research Article at 10.1002/open.202200145.

What prompted you to investigate this topic/problem?

Enzymes are well known for non-covalent interactions and able to induce very high selectivities reactions. Such interactions are less established in small molecule reactions and catalysis. We wanted to exploit the potential of non-covalent interactions in stereoselective reactions by using triptycene scaffolds for the synthesis of novel iodine-based catalysts.

Did you expect a very different outcome? If so, what was your initial guess?

The initial idea was to develop an easy access to chiral iodotriptycenes by creating asymmetry in the triptycene core structure with the iodine substituent in one of the aromatic rings and the coordinating ligand in another. However, the enantioselectivities observed in the reaction products were unexpectedly low. This was then attributed to the too large distance between the iodine reaction centre and the coordinating ligand, which was later also confirmed by single crystal X-ray structure analysis. An exciting different outcome can be expected if a better suitable coordinating ligand is placed in closer proximity to the iodine centre.



What future opportunities do you see?

The investigation already provided new and useful information for the synthesis of chiral triptycenes including hypervalent iodine chemistry. This will spark attention of the scientific community specially in organoiodine chemistry and catalysis.

What other topics are you working on at the moment?

At the moment, we are working to explore electrochemical flow reactions for the synthesis of hazardous compounds, we develop new biphasic mixing systems for efficient synthesis including biocatalysis, we implement fast inline analysis in conjunction with automated optimisation, and we approach syntheses of biologically active target molecules.
