A Shift in Retrosynthetic Paradigm

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The current state-of-the-art for the formation of enantiomerically enriched all-carbon quaternary stereocenters in acyclic system relies on the formation of a single carbon-carbon bond per chemical step via asymmetric catalysis and these extraordinary sophisticated methods were logically classified among the most powerful and innovative ones.

The synthetic community has indeed invested great efforts in the last few decades to improve efficiency in synthesis by developing the field of asymmetric catalysis.

To further improve efficiency, particularly for these extremely challenging acyclic structures possessing such all-carbon quaternary stereocenters, new synthetic plans are needed. The prerequisite for these new approaches should be the diastereo- and enantiomerically pure formation of multiple carbon-carbon bonds in acyclic system, in a single-pot operation, with formation of all-carbon quaternary stereocenters, from commercially available or easily accessible starting materials.

In this presentation, we will present straightforward solutions to these challenging goals.