

FEEDSTOCK ALKYNES AS A PLATFORM FOR MULTI-FUNCTIONALISATION VIA RADICAL CASCADE REACTIONS

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Controlling the three-dimensional structure of chemical matter is key to obtaining the desired function of a material. Photoredox catalysis is becoming increasingly important in these processes due to the mild reaction conditions that are generally involved, relative to thermal or chemical oxidative/reductive processes. The use of mild conditions permits the development of chemical transformations that are not only highly selective, but also tolerant of the presence of diverse functionality. Radical cyclisation reactions provide access to highly complex molecules in few synthetic steps. Moreover, the mild reactions conditions commonly employed in radical cascade reactions allow for broad functional-group compatibility and as such, have found numerous applications in natural product synthesis. Here, we describe a photoredox-catalyzed method for achieving 1,3-difunctionalization of unactivated alkanes using alkynes as linchpin radical acceptors and hydrogen atom abstractors. This new synthetic platform holds a promising outlook for advancing our understanding of carbon-to-carbon HAT and selective difunctionalization of alkanes.
