
Volume Editor's Preface

The C≡C bond has been of high importance in preparative organic chemistry for nearly 150 years. In its classical applications it was its high energy content that was exploited for numerous synthetic applications. This high energy is due to the large concentration of π -electrons on just two carbon atoms (in the case of monoacetylenes), and every process which reduces this electron density is easily undergone by alkynes. This is demonstrated by their high propensity for all types of addition reactions, i.e. partial or total replacement of π -bonds by σ -bonds, and isomerizations, which are delocalisation of electrons in the literal sense of the word. That the terminal C≡C bond carries an acidic hydrogen atom, which can easily be removed by numerous bases, adds significantly to the preparative importance of alkynes: the trapping of the resulting acetylide anion by a wide range of electrophiles opens the way to functionalized alkynes (and the countless compound types derived therefrom). It is these classical uses of alkynes that have made them so important and popular as substrates and intermediates in natural and unnatural product synthesis.

More recently, however, another application of C≡C bonds that is becoming of increasing importance in (bio)organic chemistry, supramolecular chemistry, and materials science is their use as building blocks for the construction of complex highly unsaturated systems. The C≡C bond is particularly well suited for this purpose since it is geometrically clearly defined (no *E/Z* problem as for the analogous double-bond systems), and because of the numerous new metal-mediated coupling reactions discovered in the last decades it can be connected to practically any other carbon atom, regardless of its hybridization. Furthermore, because the unsaturated character is usually maintained during these coupling reactions, complex molecules result in which electronic communication is possible over distances unheard of in classical organic chemistry. This makes alkynes particularly interesting for application in materials science; often the term “carbon rich system” is just a synonym for a linear, cyclic (planar), or three-dimensional (poly)alkyne.

Volume 43 of **Science of Synthesis** provides a rapid and detailed entry into the ways alkynes are prepared in the 21st century, without neglecting the classical routes to these “magic wands” of organic chemistry.

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