The simple and versatile synthesis of tetrasubstituted pyrroles and subsequent functionalization

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The cycloaddition–retroelectrocyclization reaction is a useful reaction for the conversion of electron-rich alkynes and electron-poor alkenes into buta-1,3-dienes.\(^1\) We have recently shown that this reaction is more widely applicable to ester-substituted alkenes to afford compounds of type \(1\).\(^2\) In this presentation we will describe how compounds of type \(1\) can be efficiently and rapidly converted into highly substituted pyrroles \(2\). Further one-step functionalization allows isolation of substituted pyrroles of type \(3\) and, \(4\) and \(2H\)-pyrrol-2-ones \(5\), the latter of which exhibit strong chromophoric behaviour and a bathochromic shift upon protonation.

![Chemical structure](image)

R = alkyl, aryl
Y = CN or COOEt


2. T. A. Reekie, E. J. Donckele, L. Ruhlmann, C. Boudon, N. Trapp, F. Diederich, manuscript submitted.