

Tandem dihetero-Diels-Alder and Huisgen cycloaddition reactions. Synthesis, crystal structure and hydrolysis of the novel cage phosphoranes

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Abstract

© 2018 the Partner Organisations. The reaction of 2-(1-phenylvinyloxy)benzo-1,-,2-dioxaphosphole with hexafluoroacetone, ethyltrifluoropyruvate and chloral leads to the formation of cage phosphoranes possessing the 1-phospha-2,6,8-trioxabicyclo[3.2.1]octane framework whose structure was established by the XRD method and NMR spectroscopy. The process involves dihetero-Diels-Alder and Huisgen 1,3-dipolar cycloaddition reactions and is accompanied by the simultaneous formation of the P-C and C-C bonds. Despite the generation of three chiral carbon atoms, the stereoselectivity of the process exceeds 96%. Hydrolysis leads to the formation of functionalized aldols and phosphonates.

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