

Highly Functionalized Pd(0)-Catalyzed Trimethylenemethane (TMM) Cycloadditions

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Trimethylenemethane (TMM) cycloaddition is a palladium(0)-catalyzed process by which five-membered carbon rings are formed. This process, though very useful, results in the loss of a reactive functional group, making further synthetic steps more difficult. In order to maintain the functional group, a new, highly-functionalized TMM cycloaddition was attempted with an epoxide precursor rather than the typical acetoxymethyl group. This precursor, trimethyl(2-oxiranyl-2-propenyl)silane, was successfully synthesized in three steps from propargyl alcohol. The epoxide was then used in a palladium(0)-catalyzed TMM cycloaddition to result in the desired cyclopentane molecule, which retained the useful oxygen and trimethylsilyl group.

Information about the Authors:

Samantha Cassell, a rising sophomore, is double majoring in Chemistry and Secondary Education, and plans on becoming a high school chemistry teacher. Last year she received the Undergraduate Award for Achievement in Organic Chemistry and acted as the freshman representative on Chemistry Club's executive board. This year she will be Chemistry Club's Vice President of Chemistry in the Schools.

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