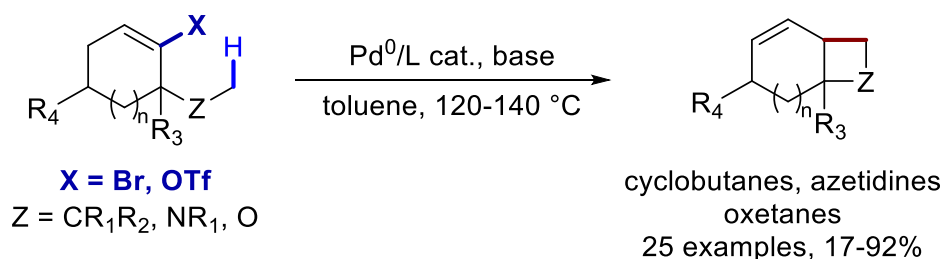


1,4-Pd Migration-Enabled Synthesis of Fused 4-Membered Rings

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1,4-Palladium migration has been established as an elegant approach towards the functionalization of remote C–H bonds.^{1,2} However, its application has been restricted to aryl halide precursors.³ In this work, we are expanding the application of 1,4-Pd migration to alkenyl (pseudo)halides and we report an unprecedented Pd⁰-catalysed cyclobutanation protocol towards fused cyclobutanes.⁴ This reaction takes place via alkenyl-to-alkyl 1,4-Pd shift, followed by intramolecular Heck coupling. The method performs best with cyclohexenyl precursors giving access to a variety of substituted bicyclo[4,2,0]octenes, and also shows a potential for accessing smaller ring systems starting from cyclopentenyl halides. Precursors containing an *N*-methyl or methoxy group lead to fused azetidines or oxetanes, respectively, via the same mechanism. Determination of orders for the reaction using variable time normalization analysis (VTNA)⁵ and deuterium-labelling studies (k_H/k_D 3.1) point towards a rate-limiting C(sp³)–H activation step.



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