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Phenylchlorocarbene Additions to Diarylcyclooctenes and Diarylcyclooctynes

The Merrer group has shown that halocarbene additions to C-C pi systems with greater than 55 kcal/mol of strain energy (cyclopropene and benzocyclopropene) are influenced by reaction dynamics. More recently, we have found that pi systems with a lower strain energy – adamantene, 37-40 kcal/mol of strain – are also subject to dynamic control. To determine if the threshold of strain energy needed to induce dynamic control of carbene additions is even less than 40 kcal/mol, we currently are studying the reactions of phenylchlorocarbene (PhCCl) with diaryl-fused cyclooctyl pi systems, **1-4**. We are synthesizing **1-4** by amending previously published methods and reacting each compound with PhCCl generated photochemically from phenylchlorodiazirine. Product analysis and subsequent computational studies will illuminate the possible intervention of dynamic effects.

