



## CALCIUM CARBIDE AS A COST EFFECTIVE STARTING MATERIAL FOR SYNTHESIS OF DIARYLETHYNES AND *POLY-PHENYLENEETHYNELENES* VIA PALLADIUM-CATALYZED COUPLING REACTION

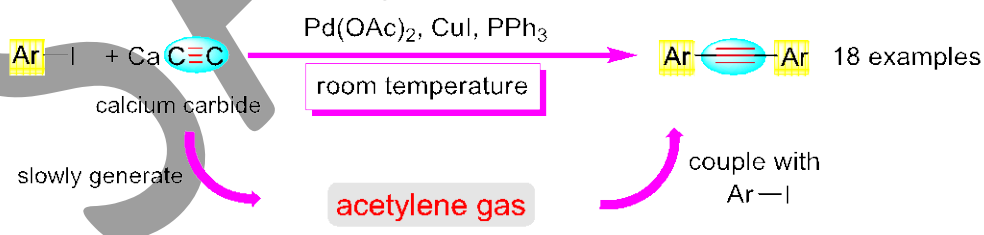
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The synthesis of diarylethyne from inexpensive calcium carbide as acetylene surrogate via palladium catalyzed coupling reaction with aryl iodides was developed. A number of symmetrical diarylethyne were synthesized from various substituted aryl iodides including electron donating and withdrawing group, heteroatoms and labile functional groups. The reaction proceeded smoothly under mild conditions with commercially inexpensive reagents such as Pd(OAc)<sub>2</sub>, CuI and triethylamine in the presence of wet acetonitrile as solvent to generate the coupling products in good to high yields. Moreover, highly functionalized oligo-phenyleneethynylene were prepared in good yields under the developed reaction conditions which demonstrate the high functional group compatibility of our methodology. The reaction mechanism was also investigated and evidences revealed that the presence of water is vital to drive the reaction completely. This result suggests the slow release mechanism of acetylene gas in the reaction from the hydrolysis of calcium carbide with water. Moreover, the results of the studies to extend the scope of this reaction toward the synthesis of *poly-phenyleneethylenes* (PPEs) will be discussed during the presentation.



**Keywords:** Calcium carbide; Sonogashira reaction; diarylethyne; palladium coupling reaction..