

Synthesis of Acetylenic Derivatives from Calcium Carbide and Green Oxidation of Organosulfur

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In this presentation, two topics will be discussed. The first part of our research focuses on the method development for acetylenic compounds. We are able to replace the use of typical highly flammable acetylene gas, starting material into a low price solid calcium carbide which is primary feedstock from heavy chemical industry for the synthesis of acetylenic compounds such as diarylethyne, *poly*-phenyleneethylene, arylpyroles and *N*-vinyl indoles in one step fashion (Figure I).[1] The processes provides high yields of acetylenic derivatives in comparable or better yield than conventional methods. The second part involves the development of green and sustainable oxidation of organosulfur for the construction of S-S, S-N and C-N bond formation.[2] For examples, hypervalent iodine (III) were used as oxidizing agent to prepare thiol, sulfinamide and guanidine from the corresponding organosulfurs. Recently, we are able to perform the catalytic version using nonhazardous photocatalyst such as Rose Bengal under irradiation of visible light to prepare disulfide and aminoheterocycles (Figure II). Moreover, our photochemical reaction can be successfully adapted into continuous flow reactor which is applicable for large scale chemical industry. For all developed reaction, the optimization and scope of the reaction will be discussed in this presentation.

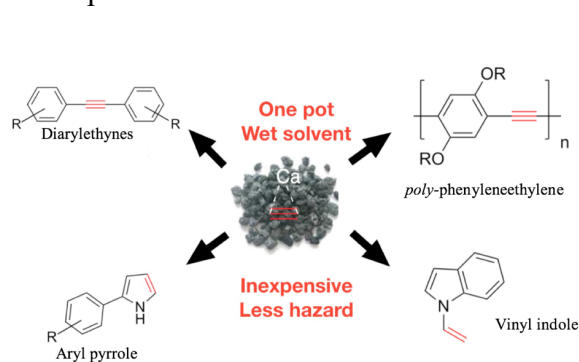


Figure 1

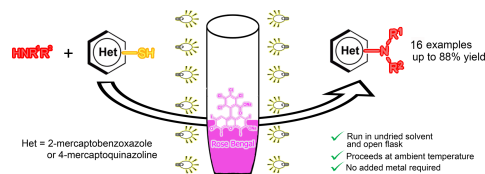


Figure 2

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