Coupling reactions are one of the important class in organic chemistry where two fragments are coupled with the aid of a metal catalyst. Heck reaction, one of the important coupling reactions, is palladium catalyzed C-C coupling between aryl halides or vinyl halides and alkenes in the presence of a base. The Heck reaction is named after Emeritus Professor Richard Heck of the University of Delaware.

Organotellurium compounds are important in organic synthesis. Previous methods of Heck reactions involve the use of aryl halides as the coupling reagents. In our research we use organotellurium compounds to replace aryl halides. Organotellurium compounds have been identified as alternatives to halogens as electrophilic partners in some palladium catalyzed coupling reactions. The significance of this work is to provide a greener, lower cost method for the coupling of aryl compound and an alkene which is hard to accomplish by the traditional methods.

First a diaryl telluride was synthesized through the reaction of an aryl iodide, tellurium and a base potassium hydroxide. Next the diaryl telluride was used as the coupling reagent reacting with terminal alkenes in Heck reactions. The optimized reaction condition was screened and was used in various of Heck reactions. All the products were confirmed by proton NMR spectroscopy.