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Synthesis of heterocycles by Pd catalyzed coupling and cyclization reactions

A variety of new palladium catalyzed cyclization reactions will be presented. In the first part of the lecture, new results related to regioselective cross-coupling reactions (mainly Suzuki and Sonogashira reactions) of polyhalogenated heterocycles are presented. This includes reactions of pentachloropyridine, tetrabromothiophene and related heterocycles. The rules behind the regioselectivity will be explained.

In the second part, the concept of the combination of double Heck reactions with electrocyclic reactions will be presented. These reactions provide a convenient approach to heterocycles, such as carbazoles.

In the third part of the presentation, new Pd catalyzed cyclizations will be presented. This includes the combination of regioselective Suzuki reactions of 2-chlorophenylboronic acid and subsequent double Buchwald-Hartwig reactions. These reactions provide a convenient access to complex ring systems. In addition, a new approach to bis-carbazoles based on catalytic CH activation will be presented. Finally, new cyclizations based on Sonogashira reactions of dibromothiophene and subsequent cyclization with anilines will be shown.