

SL01 Natural Products Synthesis

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After a brief review on acyclic stereocontrol and convergent synthesis, we will discuss the problem that led us to the discovery of Ni/Cr-mediated coupling reaction. The Cr-mediated C-C bond-forming reaction is viewed as a Grignard-type carbonyl addition of halides. However, this reaction displays a remarkable selectivity towards aldehydes over other carbonyl compounds. Activation of halides in the presence of aldehydes provides us with not only an experimental convenience, but also an opportunity to realize chemical transformations in an unconventional manner. Undoubtedly, the most valuable feature of this reaction is its exceptional compatibility with a wide range of functional groups. There are numerous examples in which this reaction has been successfully used at a late-stage in a multi-step synthesis. We will discuss the current status of the Cr-mediated coupling reactions, with the focus on a unified total synthesis of halichondrins A-C.

