

DEVELOPMENT OF MECHANOCHEMICAL C–N BOND FORMING REACTIONS

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In view of green chemistry paradigm, expansion of mechanochemical synthetic toolbox is imperative because of intrinsic “green-by-design” nature of mechanochemical transformations. Absence of bulk solvent brings several advantages over the conventional reactions in solution, such as fast reaction rates, superior safety profile and low amount of produced waste [1]. Carbon-nitrogen bond forming reactions are the most frequently applied transformations in the synthesis of active pharmaceutical ingredients [2]. Recently, new mechanochemical approach for the synthesis of amides has been developed in our group (Fig.1, A) [3]. The method delivers a range of amides in high 70–96% yields, and can be applied for the challenging hexa-amidation of biotin[6]juril macrocycle (Fig. 1, B).

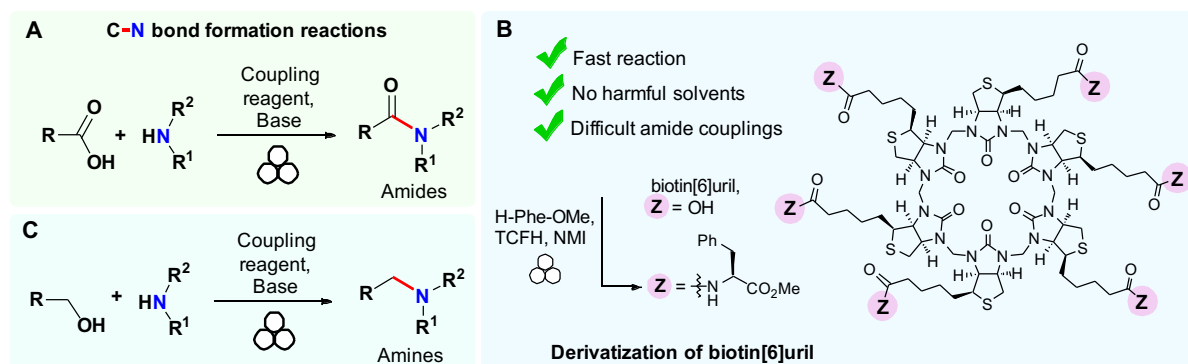


Fig.1. General scheme for mechanochemical C–N bond forming reactions

We also present an extension of the same methodology towards the synthesis of amines from alcohols, as another prominent C–N bond forming reaction (Fig.1, C).

References

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