DUAL PHOTOREDOX CATALYSED sp^2-sp^3 CROSS-ELECTROPHILE COUPLING IN A SELF-DESIGNED AND 3D PRINTED PHOTOREACTOR

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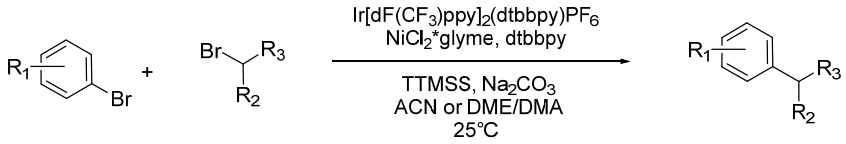
A detailed investigation of a photoredox mediated nickel cross-electrophile coupling of alkyl bromides with aryl bromides using TTMSS as reducing agent was carried out. [1] With this simple setup a wide range of commercially available alkyl- and aryl bromides were coupled showing excellent functional group tolerance and high yields. The mild conditions allowed the use of unprotected reagents which made the methodology ideal for late stage functionalizations. Thereupon the diversification of drug-like molecules was studied and a variety of drugs were successfully modified.



To ensure reproducibility all reactions were carried out with a self-designed and 3D-printed photoreactor. The reactor enables complete temperature control between -10 °C and +40 °C with while using high light intensity by direct irradiation of two 18 W LED lamps.

[1] Zhang, P.; Le, C. C.; MacMillan, D. W. *J. Am. Chem. Soc.* **2016**, *138*, 8084-7.