# Furoxanization of C-H bonds to achieve the transformation of nitrogen-containing functional groups

(*Graduate School of Science, Kobe University*) ○ Chenlu Dong, Xufeng Zhao, Yuki Katsuragi, Hojin Kim, Masahiko Hayashi, Ryosuke Matsubara

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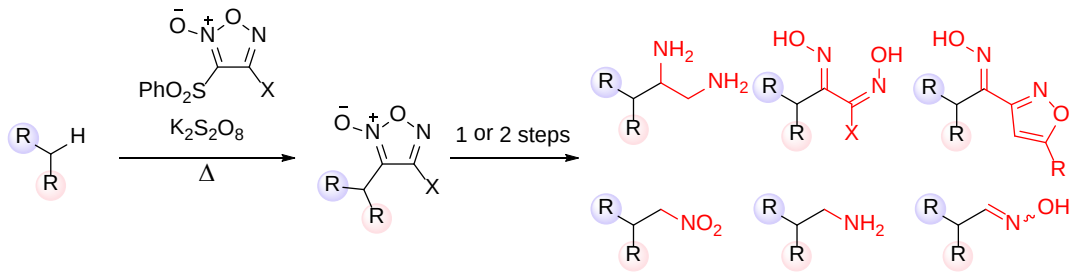
The heteroaromatic unit furoxan was first synthesized 150 years ago.[1] In the past few decades, it has attracted attention for its ability to enable spontaneous or stimulus-sensitive nitrogen oxide release, which is a unique characteristic that distinguishes it from other heteroaromatics. Transition-metal catalyzed is now recognized to be one of the most powerful C-C bond forming reactions. Recently our group has reported on the radical addition to 3-sulfonylfuroxans under metal process.[2] Thus, furoxan-mediated “build-and-scrap” strategy, which converts carboxylic acids to a range of other functionalities, had been established. This time, we have developed the radical-mediated C–C bond forming method still through metal-free process to introduce a furoxan ring to C–H bonds. The subsequent transformation of furoxans to form nitrogen-containing functional groups is realized. There are two important meanings in this work from different aspects. One is that it provides a rare C–C bond forming method on the furoxan ring. The other is that, combined with the subsequent furoxan transformation, the developed method enables the incorporation of various nitrogen-containing functional groups into C–H bonds in 2–3 steps.




1) Kekulé, A. *Ann. Chem. Pharm.* **1857**, *101*, 200. 2) Matsubara, R.; Kim, H.; Sakaguchi, T.; Xie, W.; Zhao, X.; Nagoshi, Y.; Wang, C.; Tateiwa, M.; Ando, A.; Hayashi, M.; Yamanaka, M.; Tsuneda, T. *Org. Lett.* **2020**, *22*, 1182.