

Access to indazole fluorophores from azobenzenes via tandem double C-H activation and Michael addition: developments and applications

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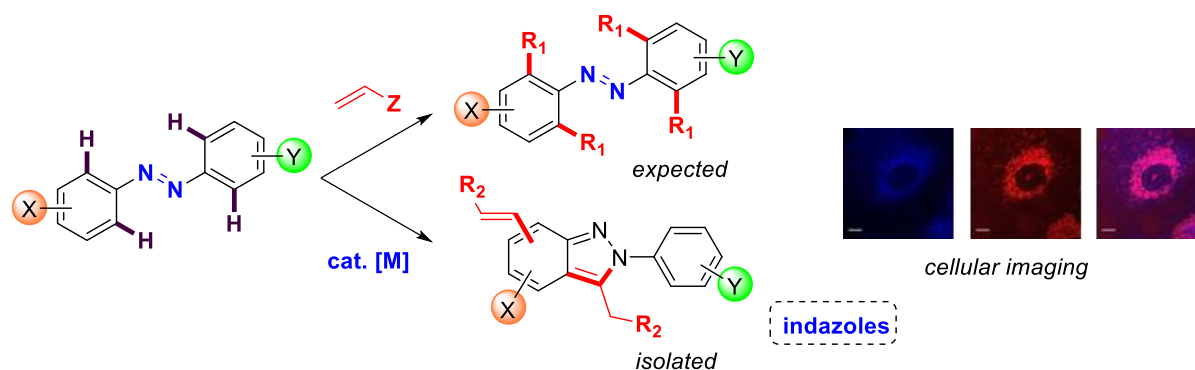
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Azobenzenes have attracted considerable attention due to their unique photochromic properties and quite recently, our group started a diversity-oriented program for their synthesis.¹ If the preparation of simple azo units is efficiently reported, the synthesis of densely-substituted azo compounds remains a perpetual challenge for the organic chemist.² In our quest to generate original photo-switches, we speculated that the use of azobenzenes in the presence of alkenes could generate the targeted highly functionalized azos. However, after preliminary experiments, it rapidly turned out that this strategy provides various poly-substituted indazoles exhibiting interesting fluorescence after excitation at 365 nm under a UV lamp. This finding stimulated us to design a new eco-friendly process for the synthesis of 2*H*-indazoles via tandem oxidative dehydrogenative cross coupling – Michael addition at room temperature and to explore their photophysical properties. Several compounds exhibit high fluorescence quantum yield in water and allow a vesicles labeling in live cells upon one-photon and two-photon excitation.



References

- 1) T. H. L. Nguyen, N. Gigant, S. Delarue-Cochin, D. Joseph, *J. Org. Chem.* **2016**, *81*, 1850-1857.
- 2) T. H. L. Nguyen, N. Gigant, D. Joseph, *ACS Catal.* **2018**, *8*, 1546-1579.