FLOW PHOTOCHEMISTRY FOR EFFICIENT AND SCALABLE SYNTHESIS

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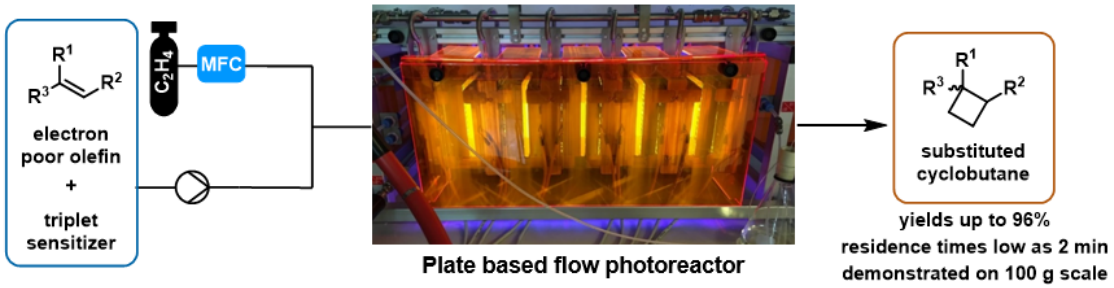
In recent years the popularization of continuous flow photochemistry has brought with it significant advances in light source, reactor and catalyst technology. By utilizing these advances, it is now possible to carry out transformations that were previously unattainable, or only feasible on small scales; significantly enriching the chemist's synthetic toolbox from test reaction to production scale.



Herein, we present the development of modern and classical photochemical transformations in continuous flow, using various light source and reactor types. In one example, the gas-liquid photochemical [2+2] cycloaddition of electron poor olefins with ethylene was developed. A detailed examination of the combination of both light source and triplet sensitizer was essential for an efficient reaction. Using multiple reactor plates and a longer run time, this was scaled out and exemplified on a 100 g scale, with a scale up strategy to supply even larger quantities [1].

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[1] J. D. Williams, M. Nakano, R. Gérardy, J. A. Rincón, O. de Frutos, C. Mateos, J.-C. M. Monbaliu, C. O. Kappe *Org. Process Res. Dev.* **2019**, *23*, 78–87.