

A Readily-Reconfigurable Continuous-Stirred Tank Photochemical Reactor Platform

Daniel Francis University of Leeds , **John Blacker** University of Leeds , **Nikil Kapur** University of Leeds , **Stephen Marsden** University of Leeds

Abstract:

A new modular photochemical continuous-stirred tank reactor design is described, based upon the development of light-source units that can be fitted to the previously described fReactor CSTR platform.

In contrast to many tubular or plate-based designs, these units are especially well-suited to handling multiphase mixtures, exemplified here in solid-liquid and gas-liquid photochemical reactions. The use of slurries as input feeds allows for intensification of a photochemical bromination, while the modular nature of the system facilitates simple integration of downstream reaction steps, exemplified here in a continuous synthesis of an intermediate for the drug valsartan.

Download:



<https://chemrxiv.org/engage/chemrxiv/article-details/618a5adfef38c05aeb6cc3c4>

A Readily-Reconfigurable Continuous-Stirred Tank
Photochemical Reactor Platform

Daniel Francis,¹ John Blacker,^{2*} Nikil Kapur,^{3*} Stephen P. Marsden^{4*}

¹ Institute of Process Research and Development, University of Leeds, Leeds LS2 9JT, UK; ² School of Chemistry, University of Leeds, Leeds LS2 9JT, UK; ³ School of Chemical and Process Engineering, University of Leeds, Leeds LS2 9JT, UK; ⁴ School of Mechanical Engineering, University of Leeds, Leeds LS2 9JT, UK

Keywords: Continuous flow reactors, photochemistry, photoresists, multiphase

ABSTRACT: A new modular photochemical continuous stirred tank reactor design is described, based upon the development of light source units that can be fitted to the previously described fReactor CSTR platform. In contrast to many tubular or plate-based designs, these units are especially well-suited to handling multiphase mixtures, exemplified here in solid liquid and gas-liquid photochemical reactions. The use of slurries as input feeds allows for intensification of a photochemical bromination, while the modular nature of the system facilitates simple integration of downstream reaction steps, exemplified here in a continuous synthesis of an intermediate for the drug valsartan.



Further reference materials:



<https://www.freactor.com/>

fReactorTM
...one for every lab