

# 10<sup>th</sup> World Congress on Green Chemistry and Technology

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## Sustainable synthesis of reactive intermediates under continuous flow

In view of global concern, pharmaceuticals and fine chemical industries are increasingly seeking to replace stoichiometric reagents used in synthetic transformations by catalytic routes, in order to develop greener, safer, and more economical processes. Therefore, there is an immense interest for the discovery of new chemical process with sustainability. Integration of catalysis for the sustainable synthesis of small molecules, specialty chemicals and natural products are still more demanding research areas. Presently, continuous flow chemistry has become a new chemical processing technology for the chemical synthesis in a sustainable approach by which many disadvantages of traditional batch-process can be eradicated. Continuous flow methods are generally more efficient than conventional batch conditions and advantages associated with the flow relative to the batch, are the high surface-to-volume ratio, increased mass transfer, improved safety, more reproducibility, space and power savings, the ability to conduct multistep sequences, improved product quality with better yields, and easy scale-up. To this direction, we have developed a continuous flow process for the various chemical transformations utilizing environmentally benign catalyst. Thus, we have developed new catalytic reactions for the C-H peroxidation and Nef reaction under continuous flow using Fe-heterogeneous catalyst having several advantages over the batch/classical reactions. Furthermore, we have also developed continuous flow process for the synthesis of the versatile vinylogous ester intermediate and explored their application in the transesterification under continuous flow process using Fe-catalyst/Amberlyst-15. In addition we have also developed hydrolysis of vinylogous ester under continuous flow which can avoid the use of hazardous acidic environment. All the above research investigations will be presented.

## Biography

Boopathy Gnanaprakasam has obtained his BS (1999) and MS (2001) degree's in Chemistry from the University of Madras, India. Lately, he obtained his PhD (2008) on the topic of "Synthetic methods towards terpenoids, steroids and macrocycles" from Bhavnagar University. Subsequently, he has completed a couple of Post-doctoral Program from Weizmann Institute of Science, Israel (September 2008-August 2011) under Professor David Milstein and AVH Fellow from Gottingen University, Germany (September 2012-February 2014) under Professor Lutz F Tietze. Prior to AVH Post-doctoral Fellowship, he joined as a Scientist at ICES-A\*STAR, Singapore (December 2012-July 2013). After Post-doctoral program, he began his independent career as an Associate Professor at SRM Research Institute (March 2014-June 2014). In late 2014, he moved to IISER-Pune in the Department of Chemistry where he currently holds the rank of an Assistant Professor. His research interests include development of metal catalyzed sustainable/green synthetic methods for the natural products, continuous flow synthetic methodology for bioactive molecules and fluorinated organic scaffold. His recent research developed sustainable synthesis of peroxides, aldehydes and vinylogous esters.

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