



INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI
SHORT ABSTRACT OF THESIS

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Programme of Study : Ph.D.

Thesis Title: “Development of *ortho*-NosylOXY as a Novel Coupling Reagent for Peptide Synthesis and Related Organic Transformations”

Name of Thesis Supervisor(s) : Dr. Bhubaneswar Mandal

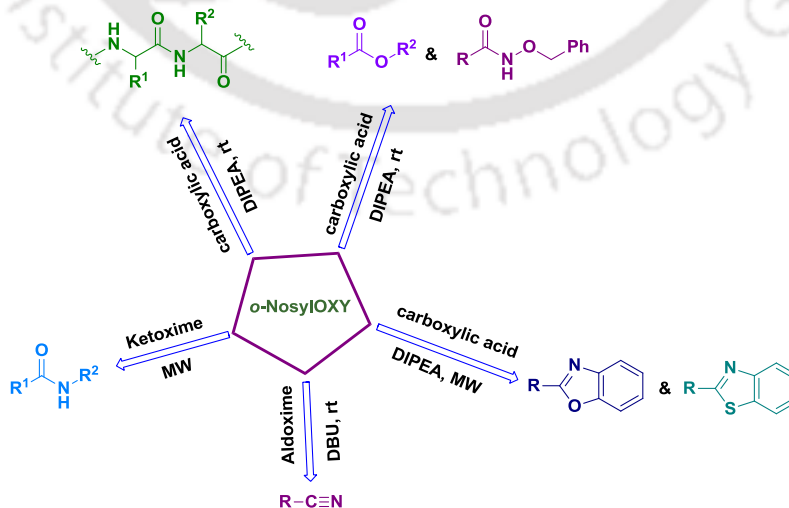
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SHORT ABSTRACT

We developed a reagent coupling reagent ethyl 2-cyano-2-(2-nitrobenzenesulfonyloxymino)acetate (*ortho*-NosylOXY) and its application for the synthesis of amides, esters, peptides, hydroxamates, *N*-protected amino acid based benzoxazoles & benzothiazoles and nitriles. The whole structure of the thesis is depicted in scheme 1. Firstly, we have developed a method for the synthesis of *o*-NosylOXY and its application for racemization free synthesis of amides and peptides. Secondly, we established a method for racemization free synthesis of ester and hydroxamates using *o*-NosylOXY. Thirdly, we illustrated synthesis of benzoxazole and benzothiazole from carboxylic acid and *N*-protected amino acid by *o*-NosylOXY. Fourthly, we demonstrated the application of *o*-NosylOXY for nitrile synthesis. Finally, we described the synthesis of amide/lactam from ketoxime via Beckmann rearrangement and *o*-NosylOXY as a organocatalyst.



Scheme 1. Thesis overview