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Cite this: RSC Adv., 2017, 7, 45763

## Recent advances in synthetic facets of immensely reactive azetidines

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The synthetic chemistry of azetidine constitutes an important yet undeveloped research area, in spite of their ubiquity in natural products and importance in medicinal chemistry. Their aptness as amino acid surrogates along with their potential in peptidomimetic and nucleic acid chemistry is considered remarkable. Azetidines also possess important prospects in other settings such as catalytic processes including Henry, Suzuki, Sonogashira and Michael additions. They also represent an important class of strained compounds making them excellent candidates for ring-opening and expansion reactions. With this in mind, the present review article addresses the recent developments in synthetic strategies towards functionalized azetidines along with their versatility as heterocyclic synthons.

Received 11th August 2017  
Accepted 20th September 2017

DOI: 10.1039/c7ra08884a

rsc.li/rsc-advances

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### 1. Introduction

Azetidines constitute a vital class of aza-heterocyclic scaffolds with prevalence in diverse natural and synthetic products exhibiting a wide range of biological activities.<sup>1</sup>  $\alpha$ -Amino azetidin-2-carboxylic acid is a proline antagonist in plant tissue



Dr Vishu Mehra obtained his Master's degree in Applied Chemistry with first division in 2007 from Guru Nanak Dev University, Amritsar. In 2007, he joined Jubilant Chemsys (R & D) at Noida and worked as a Trainee Research Associate in the field of organic synthesis. He joined the research group of Dr Vipin Kumar in 2009 in the Department of Chemistry, Guru Nanak Dev University, and

worked extensively on the synthetic transformations of C-3 functionalized azetidin-2-ones leading towards the synthesis of functionally decorated heterocyclic compounds. He has also received the best poster presentation award in an international conference held at Punjab University, Chandigarh in 2011. He has published fourteen research papers in journals of international repute and is currently working as an Assistant Professor at Hindu College, Amritsar. His research interests include utilization of  $\beta$ -lactam synthon protocol for the preparation of functionally enriched heterocyclic scaffolds having biological relevance. He is also working on designing synthetic conjugates of medicinally active compounds to architect novel hybrid pharmacophores with higher potential and efficacy as compared to their analogues.



Dr Isha Lumb Ph.D. has been working as an Assistant Professor in Department of Chemistry, Baring Union Christian College, Batala since 2016. She obtained her Master's degree in Chemistry with first division in 2007 from Panjab University. She joined research group of Prof. Geeta Hundal in the Department of Chemistry, GNDU, Amritsar in 2009 and exclusively worked on synthesis,

characterization and crystal structure determination of amide based polydentate ligands and their complexes with different transition metals. During her doctoral work, she has published four research papers in journals of international repute. Her research interest includes the designing and synthesis of polydentate ligands along their complexes with different metals and characterized them with different spectroscopic techniques including X-ray crystallography. She is also working on designing synthetically medicinally active complexes, having high potential and efficacy against antimicrobial and antifungal activities.