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The GAP chemistry for chiral N-phosphonyl imines

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Novel chiral N-phosphoramidate and N-phosphonyl imines were found to be efficient asymmetric chiral auxiliaries. Various nucleophilic addition reactions such as aza-Henry reaction, aza-Darzens reaction, Strecker reaction were performed on these chiral amines and desired products were obtained in excellent chemical yields (94-99%) and diastereo selectivities (upto >99%). These reactions were confirmed to follow the GAP chemistry (group assisted purification chemistry) process, which can avoid traditional chromatography and re-crystallization purifications, i.e., the chiral product bearing a chiral N-phosphonyl group can simply be purified by washing the solid crude products with hexane or hexane:ethylacetate mixture, hence provide a green process to purify organic compounds and motivates the synthetic community to search more of such reagents/processes. Moreover, the chiral auxiliary can be cleaved under acidic conditions and can be easily recovered without loss of chirality.

Biography

Parminder Kaur received her MSc (Organic Chemistry) from University of Delhi, India and PhD from the Texas Tech University, Texas, USA in 2010. For her postdoctoral work, she joined Northwestern University in 2010 and then moved to University of California, Irvine to 2011. She worked at UC Irvine as postdoctoral fellow till 2013 and currently works as Assistant Specialist III there. Her research interests are in the areas such as synthetic chemistry, medicinal chemistry, asymmetric catalysis, porous organic materials/polymers, synthetic biology and protein-ligand interactions. She has been in the field of chemistry for last 8 years and has published 15 research articles in peer-reviewed journals such as *Journal of American Chemical Society*, *Green Chemistry*, and *Journal of Organic Chemistry*. She was also awarded with research fellowship from the prestigious Council of Scientific and Industrial Research, India for five years.

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