The talk will be focused on the design and development of a series of practical and efficient P-chiral phosphorus ligands on the basis of a 2,3-dihydrobenzo[d][1,3]oxaphosphole motif. Their distinct structural features offer unique reactivities and selectivities in a number of transition-metal-catalyzed reactions, providing efficient syntheses to many challenging structures such as chiral amines, chiral biaryls, chiral diaryl alkyl tertiary alcohols, chiral tertiary boronic esters, and chiral all-carbon quaternary stereocenters. These synthetic methods have resulted in green synthesis of several chiral natural products and drugs.

References