Catalysis serves as a powerful tool for chemical bond transformation, asymmetric induction, and more importantly for achieving increased structural complexity in fewer synthetic steps. Over the past decade, stunning advances in catalytic methodologies have revolutionized the methods for preparing architecturally complex natural products and natural-product-like structures. With this background, we organized this themed collection of ‘Synthetic approaches to natural products via catalytic processes’. There are 14 original research articles and 8 review-type articles in this collection, which include photoredox catalysis, organocatalysis and transition-metal mediated catalysis etc. and their synthetic applications. We believe that this collection will inspire readers to an in-depth consideration of the area and serve as the foundation of future application and research.

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toral fellow in Professor Chuo Chen’s group at the UT Southwestern Medical Center at Dallas. He started his independent career as a professor in the Department of Chemistry at East China Normal University in October 2010. His research interests are focused on the development of new methodologies and strategies to efficiently synthesize natural products that have novel molecular structure, potent biological activity, and the potential for mechanistic studies. All the programs will begin with the synthesis of the corresponding natural products, once the target molecules have been completed; function-oriented synthesis of natural product analogues and derivatives to further study their potential medicinal functions and chemical biology will be carried out. In the past few years, the Gao group has developed bio-inspired strategies, cascade reactions and photo-induced electrocyclization/cycloaddition for the total synthesis of a series of bioactive natural products containing polycyclic rings, which provide opportunities for the related functional studies.