

## Synthesis and Properties of Selectively Modifiable Cyclodextrin Analogues

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The cyclodextrins (CDs) are carbohydrate based natural products that have been utilized as components of molecular pores, artificial receptors, and molecular machines. However, these macrocycles are under-utilized in supramolecular chemistry because the selective functionalization of the hydroxyl groups on CDs is often prohibitively challenging. Although methods for the partial control of functional group placement are known, these techniques are inefficient and not completely selective. Until recently, the traditionally lengthy total synthesis of CDs had been the only method known to afford completely regioselective placement of functionality.

We have devised an alternative convergent approach for the synthesis of such macrocycles. This strategy involves the use of [3+2] Huisgen cycloadditions between azide and alkyne functionalities to form the macrocycles from linear precursors. In addition, the synthetic routes are initiated with parent monosaccharides, which allows for the installation of synthetic handles in the form of orthogonal protecting groups.

