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Boronic Acids In Saccharide Recognition

Boronic Acids in Saccharide Recognition provides a comprehensive review and critical analysis of the current developments in this field. It also assesses the potential of this innovative approach, outlining future lines of research and possible applications. Topics include: the molecular recognition of saccharides, the complexation of boronic ...

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Boronic Acids in Saccharide Recognition by Tony D James ...

Boronic Acids in Saccharide Recognition Details. The desire to quantify the presence of analytes within diverse physiological, environmental and industrial systems has led to the development of many novel detection methods. In this arena, saccharide analysis has exploited the pair-wise interaction between boronic acids and saccharides.

Boronic Acids in Saccharide Recognition - Knovel

alcohol 12, arylboronic acids 13-15 and linear substrates 16-18 for cyclisation Figure 12. Different reported boronic acid based saccharide sensors with different principle of detection ranging from fluorescence to electrochemistry Figure 13. Different fructose boronic acid complexes revealed by NMR spectroscopy Figure 14.

Saccharide recognition : boronic acids as receptors in ...

In the recognition step, the addition of saccharides led to the conversion of uncharged boronic acid into negatively charged boronate anion ester moieties, and subsequent rectification of the ion current was observed. The saccharide–boronic acid complex onto the channel walls was found to be reversible.

Saccharide/glycoprotein recognition inside synthetic ion ...
We designed amphiphilic phenylboronic acid azoprobes (B-Azo-Cn) and evaluated their saccharide recognition function in relation to the micelle formation changes of the self-assembled B-Azo-Cn. First, we evaluated B-Azo-C8 in a 1% methanol–99% water solution under basic conditions. The wavelength of maximum absorption in the ultraviolet–visible (UV–vis) spectra of B-Azo-C8 was shifted ...

Saccharide Recognition Based on Self-Assembly of ...
Selective recognition of saccharides through morphological changes of phenylboronic acid-based self-assembly system by saccharide stimulation is a key concept in boronic acid design. Experiments In the present study, we designed a tuning-fork-shaped amphiphilic diboronic acid (OPAB-C8) which formed vesicular aggregates through self-assembly ...

Self-assembly of intramolecularly hydrogen-bonded ...
In association with increasing diabetes prevalence, it is desirable to develop new glucose sensing systems with low cost, ease of use, high stability and good portability. Boronic acid is one of the potential candidates for a future alternative to enzyme-based glucose sensors. Boronic acid derivatives have been widely used for the sugar recognition motif, because boronic acids bind adjacent ...

Colorimetric Sugar Sensing Using Boronic Acid-Substituted ...
A boronic acid is a compound related to boric acid in which one of the three hydroxyl groups is replaced by an alkyl or aryl group. As a compound containing a carbon–boron bond, members of this class thus belong to the larger class of organoboranes.Boronic acids act as Lewis acids.Their unique feature is that they are capable of forming reversible covalent complexes with sugars, amino acids ...

Boronic acid - Wikipedia
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The boronic acids in saccharide recognition (eBook, 2006 ...
We synthesized novel PET (photoinduced electron transfer)-type fluorescence glucose probe 1 [(4-(anthracen-2-yl-carbamoyl)-3-fluorophenyl)boronic acid], which has a phenylboronic acid (PBA) moiety as the recognition site and anthracene as the fluorescent part. Although the PBA derivatives dissociate and bind with sugar in the basic condition, our new fluorescent probe can recognize sugars in ...

Selective Sugar Recognition by Anthracene-Type Boronic ...
A novel boronic acid fluorophore 1/β-cyclodextrin (β-CyD) complex sensor for sugar recognition in water has been designed.The probe 1 bearing pyrene moiety as a fluorescent signal transducer exhibits no fluorescence emission, due to its aggregation in water containing 2% DMSO; however, the addition of β-CyD to this solution largely changes UV−vis and fluorescence spectra of 1 by forming ...

Boronic Acid Fluorophore/β-Cyclodextrin Complex Sensors ...
The desire to quantify the presence of analytes within diverse physiological, environmental and industrial systems has led to the development of many novel detection methods. In this arena, saccharide analysis has exploited the pair-wise interaction between boronic acids and saccharides. Boronic Acids in Saccharide Recognition provides a comprehensive review and critical analysis of the ...

Boronic Acids in Saccharide Recognition - Tony D James ...

However, boronic acid–based synthetic recognition elements are better choices with regard to stability and cost . All these advantages showed promising results for saccharide detection. The reversible covalent interaction of boronic acids with cis-1,2- or 1,3-diols forms very strong binding affinity for saccharides in mM or sub-mM levels.