SENSING FOR HEALTH USING BORONIC ACIDS

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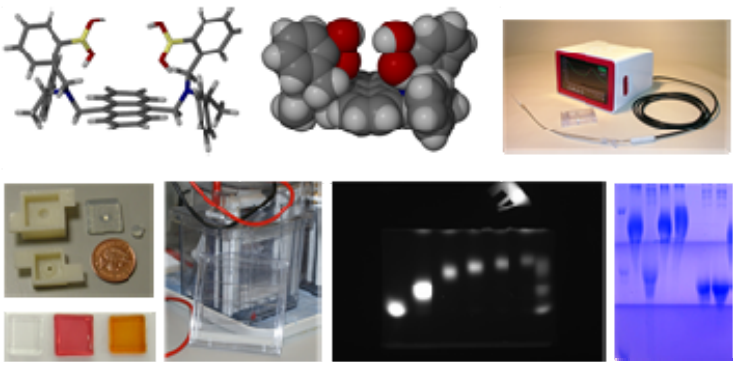
The ability to monitor analytes within physiological, environmental and industrial scenarios is of prime importance. Since recognition events occur on a molecular level, gathering and processing the information poses a fundamental challenge. Therefore robust chemical molecular sensors "chemosensors" with the capacity to detect chosen molecules selectively and signal this presence continue to attract considerable attention. Real-time monitoring of saccharides is of particular interest, such as D-glucose in blood. Towards that end the covalent coupling interaction between boronic acids and saccharides has been exploited with some success to monitor the presence of such saccharides. The boronic acid Lewis acid-base interaction is also suitable for the capture and recognition of anions. Anions are involved in fundamental processes in all living things. Our aim as synthetic chemists is to mimic nature's level of sophistication in designing and producing chemosensors capable of determining the concentration of a target anylates (ie saccharides and anions) in any medium.



[1] 'Boronic acid building blocks: Tools for sensing and separation' R. Nishiyabu, Y. Kubo, T. D. James, and J. S. Fossey, Chem Commun., **2011**, *47*, 1106-1123.

[2] 'Boronic acid building blocks: Tools for self assembly ' R. Nishiyabu, Y. Kubo, T. D. James, and J. S. Fossey, *Chem Commun*., **2011**, *47*, 1124-1150.

Biography

Current research interests include: -Supramolecular chemistry - Sensor design - Chiral recognition - Saccharide recognition - Anion recognition

TDJ has wide-ranging experience within the field of supramolecular chemistry having published over 140 publications, including one book, 8 book chapters and 134 papers in international peer reviewed journals. He is also the named inventor on 16 international patents. He has delivered 122 invited lectures within the UK and internationally. Citation statistics indicate that one of his publications has been cited over 400 times, three over 300, six over 200 times, ten over 100, and 29 over 50, with a total of >5,500 citations from 134 papers at a frequency of >33 citations per paper. He also has an h-index of 38.