

Strong CH Hydrogen Bonds: The Newest Player in the Field of Anion Receptors

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Anions are everywhere. The binding and transport of them are processes carried out an infinite number of times inside cells every day. Deficiencies in these processes can cause health problems. Therefore, sensing and manipulating anions using supramolecular chemistry is one way to investigate these links to our wellbeing. As this field continues to grow, philosophies behind receptor design are being re-evaluated through theory and experiment. Here we consider the anion binding potential of activated CH hydrogen bond donors, rivaling that of traditional NH donors, using macrocyclic receptors called triazolophanes. These receptors show surprisingly strong anion affinities wherein CH hydrogen bond donors act as the sole source of anion stabilization. Quantitative inspection of the facts reveals that CH donors from click-chemistry installed 1,2,3-triazoles are extrinsically activated. Thus, we offer a broadened concept of what a “strong” hydrogen bond donor is for the design of anion receptors.

