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Studies on the Anion Recognition Properties of Synthesized Receptors III: A Novel Thiourea-Based Receptor Constructed by Benzo-15-Crown-5 for Sensing Anions in a Strong Polar Solvent

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Abstract: A new series of receptors were designed and synthesized, and their interactions with anions, such as F^-, Cl^-, Br^-, I^-, CH_3COO^-, HSO_4^-, and NO_3^-, in DMSO solvent were investigated using UV-Vis absorption spectroscopy. The results showed that hydrogen-bonding complexes were formed between the receptors and the tested anions, such as CH_3COO^- and F^-. It was also found that the selectivity of the receptors for anions could be efficiently tuned by changing the place of the substituent group at the N-phenyl moiety. The recognition mechanism and binding mode are discussed. These findings were expected to be of significance for designing and developing a novel, highly selective receptor for the acetate anion in a strong polar solvent.

Key Words: Anion recognition, thiosemicarbazone, binding constant

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