



INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI
SHORT ABSTRACT OF THESIS

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Thesis Title: Urea Functionalized Acyclic Receptors: Anion Coordinated Hydrogen Bonded Supramolecular Self-assembly

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SHORT ABSTRACT

The thesis entitled "Supramolecular Self-assemblies of Hydrogen Bonding Acyclic Scaffolds: Anion Coordination by Urea Functionalized Receptors" have been divided into five chapters established on the results of experimental work performed during the research period. The first chapter provides a brief introduction to 'supramolecular host-guest chemistry' regarding the recognition of anions/hydrated anions within the preorganized cavity or self-assemblies of artificial acyclic receptors, isomeric with respect to either terminal substituents or preliminary materials. It also summarizes general introduction and literature survey in context with the thesis title, which is documented nicely. The citation of the previously reported work in this field and general idea for the thesis objective is described nicely. Chapter 2 gives a comprehensive report of the various reagents used in the synthesis of the receptors, their synthetic pathways, crystallization details, binding study and specifications of analytical instruments employed in the characterization of designed and synthesized free receptors and their various anion complexes with anions/hydrated-anions and anionic associations are represented thoroughly. The chapter 3 describes the design and syntheses of two electron-rich naphthyl rings containing bisurea receptor derived from ortho (L_1) and meta (L_2)-phenylenediamine moiety for investigating their anion coordination behavior. Receptor L_1 self-assembled in the presence of organic terephthalate anion into a dimeric pseudo-capsular host-guest assembly sealed by tetrabutylammonium counter cation. Chapter 4 deals with three linear flexible bisurea receptors (L_3 - L_5) with different terminal substituents have been synthesized for a comprehensive analysis of host-guest binding propensity in their neutral form. The highlight of the chapter 5 is that with the cyano group as a terminal substituent, three positional isomeric bis-urea receptors (L_6 - L_8) have been synthesized for extensive analysis of host-anion binding propensity in their neutral form.