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First structurally characterized anion exchanged product of noval cyclohexane containing substituted thio piperazinium chloride [C6H11S(CH2)3C4H9N2C6H5Cl (L1Cl)]: Synthesis, crystal structure and supramolecularity of (L1NO3)

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## **ACCEPTED MANUSCRIPT**

# First structurally characterized anion exchanged product of noval cyclohexane containing substituted thio piperazinium chloride $[C_6H_{11}S(CH_2)_3C_4H_9N_2C_6H_5Cl\ (L^1Cl\ )]: synthesis, crystal structure and supramolecularity of \ (L^1NO_3).$

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### **Graphical Abstract**

#### Abstract

 $[C_6H_{11}S(CH_2)_3C_4H_9N_2C_6H_5Cl\ (L^1Cl\ )]$  has been synthesized by reaction of cyclohexyl thiol with 1-(chlorophenyl) -4- (3-chloropropyl) piperazine hydrochloride( $\mathbf{P}^1$ ) under dry nitrogen atmosphere. The  $\mathbf{L}^1C\mathbf{l}$  on reaction with  $Cd(NO_3)_2$  forms a compound  $[\mathbf{L}^1\ NO_3]$  having NH-----O hydrogen bonding. The single crystal structure of the compound  $L^1NO_3$  is solved. The characteristic feature of these reactions is the retention of the piperazinium character from starting material( $\mathbf{P}^1$ ) to ligand formation( $\mathbf{L}^1C\mathbf{l}$ ) as well as in the formation of anion exchange

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