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Title: Can Csingle bondH...Fsingle bondC hydrogen bonds alter crystal packing features in the presence of Nsingle bondH...Odouble bondC hydrogen bond?

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Abstract: Intermolecular interactions involving organic fluorine have been the contemporary field of research in the area of organic solid state chemistry. While a group of researchers had refuted the importance of "organic fluorine" in guiding crystal structures, others have provided evidences for in favor of fluorine mediated interactions in the solid state. Many systematic studies have indicated that the "organic fluorine" is capable of offering weak hydrogen bonds through various supramolecular synthons, mostly in the absence of other stronger hydrogen bonds. Analysis of fluorine mediated interaction in the presence of strong hydrogen bonds has not been highlighted in detail. Hence a thorough structural investigation is needed to understand the role of "organic fluorine" in crystal engineering of small organic fluorinated molecules having the possibility of strong hydrogen bond formation in the solution and in the solid state. To fulfil this aim, we have synthesized a series of fluorinated amides using 3-methoxyphenylacetic acid and fluorinated anilines and studied their structural properties through single crystal and powder X-ray diffraction methods. Our results indicated that the "organic fluorine" plays a significant role in altering the packing characteristics of the molecule in building specific crystal lattices even in the presence of strong hydrogen bond.

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