

# Crystal Structure of Trimethylammonium Tetrafluoroborate in Three Solid Phases

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The crystal structure of  $(\text{CH}_3)_3\text{NHBF}_4$  was studied in three solid phases by X-ray diffraction techniques. The structures of the ionic plastic phase (Phase I) stable above 453 K and Phase II between 384 and 453 K are CsCl-type cubic ( $a = 5.772(4) \text{ \AA}$ ) and tetragonal ( $a = 9.815(5)$  and  $c = 6.895(5) \text{ \AA}$ ), respectively. The room temperature phase (Phase III) forms a monoclinic lattice (space group  $\text{P}2_1/\text{m}$ ,  $a = 5.7017(8)$ ,  $b = 8.5724(9)$ ,  $c = 7.444(1) \text{ \AA}$ , and  $\beta = 102.76(1)^\circ$ ).  $\text{BF}_4^-$  ions in this phase were shown to be disordered in four orientations.

*Key words:* Crystal Structure; X-ray Diffraction; Ionic Plastic Phase; Disorder.