**Spectral, thermal and antimicrobial studies on 3-methylpyridinium oxalate single crystals**

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**ABSTRACT**

An organic 3-methylpyridinium oxalate (3MPO) single crystal was grown at ambient temperature by slow evaporation procedure. The grown crystal was characterized by single crystal X-ray diffraction which confirms that the crystal belongs to orthorhombic system with the space group P212121. The 3-methylpyridinium N-H atom is clearly judged from the appearance of strong difference electron density peak near the N atom. The crystal structure was stabilized by N-H...O and O-H...H bond interaction and its super molecular aggregation have been reported. Optical property of the grown crystal was analyzed by UV-Visible spectral measurements. The thermal stability of the grown crystal was analyzed by thermogravimetric (TG) and differential thermal (DTA).The antimicrobial activity of the grown as well as pathogens by Agar disk diffusion method 3MPO showed powerful antibacterial activity against Gram- positive bacteria E.coli and Gram- negative bacteria staphaureus with zone of inhabitation of 18 nm and 21 nm respectively. This signifies that the grown Crystals have biomedical and optical application.

**Keywords:** Slow evaporation technique,Single crystal XRD, TG/ DTA, Antimicrobial Activity.