

Thermosalient Effect of an Organic Aminonitrile and its Derivatives

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Abstract : The thermosalient effect is an extremely rare propensity of certain crystalline solids for self-actuation by elastic deformation or a ballistic event¹. Thermosalient compounds, colloquially known as 'jumping crystals' are promising materials for fabrication of actuators that are also being considered as materials for clean energy conversion because of their capabilities to convert thermal energy into mechanical motion directly. Herein, an organic aminonitrile and its derivatives have been probed by a combination of structural, microscopic and thermoanalytical techniques. Crystals of these compounds were analysed by means of single crystal XRD and hotstage microscopy in the temperature range of 100 to 298 K and found to exhibit the thermosalient effect. We also carried out differential scanning calorimetric analysis at the temperature corresponding to that at which the crystal jumps as observed under a hotstage microscope.

Keywords : aminonitrile, jumping crystal, self actuation, thermosalient effect

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