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**Ultrasonic study of elastic anisotropy of unidirectional Rochelle salt single crystals grown using the Sankaranarayanan-Ramasamy method**

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**Abstract:**

Sodium potassium tartrate tetrahydrate- $\text{NaKC}_4\text{H}_4\text{O}_6 \cdot 4\text{H}_2\text{O}$  known as Rochelle salt is a well-known ferroelectric. This paper deals with the following topics: (i) the Sankaranarayanan-Ramasamy method of growth of a parallelepiped-shaped single crystal of Rochelle salt having the (100), (010) and (001) planes mutually perpendicular to each other, (ii) evaluation of the second-order elastic stiffness constants  $C_{11}$ ,  $C_{22}$ ,  $C_{33}$ ,  $C_{44}$ ,  $C_{55}$  and  $C_{66}$  using the parallelepiped-shaped single-crystal sample of Rochelle salt, (iii) growth of large [011]-, [101]- and [110]-oriented cylindrical-shaped single crystals of Rochelle salt from appropriately prepared seeds using the same method, (iv) determination of elastic constants  $C_{23}$ ,  $C_{13}$  and  $C_{12}$  using the [011]-, [101]- and [110]-oriented single-crystal samples of Rochelle salt, respectively, and (v) calculations of elastic compliance constants  $S_{11}$ ,  $S_{22}$ ,  $S_{33}$ ,  $S_{44}$ ,  $S_{55}$ ,  $S_{66}$ ,  $S_{12}$ ,  $S_{23}$  and  $S_{13}$ , Young's modulus  $E$ , bulk modulus  $K$ , Poisson's ratio  $\nu$ , linear compressibility  $\beta_1$ ,  $\beta_2$  and  $\beta_3$  along the three principal directions and volume compressibility  $\beta$  of the crystal.

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