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Title:Investigation on the growth of DAST crystals of large surface area for THz applications

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Abstract:The growth of high quality 4-N,N-dimethylamino-4-N-methyl-stilbazoliumtosylate (DAST) crystal with large surface area is reported by adopting the slope nucleation coupled slow evaporation method (SNM-SE). The structure and composition of the crystal are studied by single crystal X-ray diffraction and CHN analyses. The linear optical properties are investigated by UV-vis absorption. The melting point and thermal behavior of DAST are investigated using differential scanning calorimetric (DSC) and thermogravimetric analyses (TGA). The Vickers microhardness number (VHN) and work hardening coefficient of the grown crystal have been determined. The surface features of the DAST crystal are analyzed by scanning electron microscopy (SEM) and it confirmed the presence of narrow line defects (NLDs) in the sample. [All rights reserved Elsevier].

Number of references:30

Inspec controlled terms:crystal growth - differential scanning calorimetry - evaporation - melting point - microhardness - nucleation - organic compounds - scanning electron microscopy - ultraviolet spectra - Vickers hardness - visible spectra - work hardening - X-ray diffraction

Uncontrolled terms:DAST crystal growth - large surface area - THz applications - 4-N,N-dimethylamino-4-N-methyl-stilbazoliumtosylate crystal - slope nucleation coupled slow evaporation method - single crystal X-ray diffraction - CHN analyses - linear optical properties - UV-vis absorption - melting point - differential scanning calorimetry - DSC - thermogravimetric analyses - TGA - Vickers microhardness number - VHN - work hardening coefficient - scanning electron microscopy - SEM - narrow line defects - NLD - SNM-SE

Inspec classification codes:A8110 Methods of crystal growth and purification - A8140N Fatigue, embrittlement, and fracture - A8140E Cold working, work hardening; post-deformation annealing, recovery and recrystallisation; textures - A6460Q Nucleation in phase transitions - A6470F Liquid-vapour transitions - A6470D Solid-liquid transitions - A6220M Fatigue, brittleness,

fracture, and cracks - A7840H Visible and ultraviolet spectra of other nonmetals

Treatment:Experimental (EXP)

Discipline:Physics (A)

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