Article Light induced absorption and optical sensitizing of Sn2P2S6:Sb December 2015 · <u>Optics Communications</u> 356:208-211 DOI:10.1016/j.optcom.2015.07.077 Authors:	
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Citations (8) References (18) Abstract Photorefractive sensitivity of antimony doped Sn2P2S6 can be increased at temperature by preexposure of the sample with an intense auxiliary light be that the largest enhancement of sensitivity occurs if the photon energy of pris close to the crystal bandgap, it decreases gradually with increasing wave preexposure gives rise also to a pronounced transient light induced absorpt vanishes approximately one order of magnitude faster than the decay of the state.	ambient am. It is shown eexposure light ength. The ion which sensitized
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... Single crystals of Sn 2 P 2 S 6 (often referred to as SPS) have interesting and useful photorefractive properties [1][2] [3][4]. Doping with antimony (Sb) ions has been shown to significantly improve the photorefractive response of the SPS crystals, especially in the 530-675 nm region [5] [6][7][8][9][10][11]. Of special interest is the increase in the photorefractive sensitivity of Sb-doped SPS when there is a pre-exposure to light with wavelengths near the optical band edge [5,9]. ...

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... Of special interest is the increase in the photorefractive sensitivity of Sb-doped SPS when there is a pre-exposure to light with wavelengths near the optical band edge [5,9]. Recent observations of the transmittance dynamics (i.e., temporal dependence) of a red testing beam after terminating an intense green "pre-illumination" beam suggest that at least two distinct primary traps with different thermal stabilities are present in the Sb-doped crystals [5]. To better understand these photoinduced results, the identification and characterization of all Sb-related optically active defects in SPS is needed. ...

Dual role of Sb ions as electron traps and hole traps in photorefractive Sn_2P_2S_6 crystals

Article

Dec 2016

B. E. Kananen · Eric Golden · S. A. Basun · Larry E. Halliburton

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... Although a hyperbolic decay was not anticipated, Sn 2 P 2 S 6 :Sb was initially chosen for an in depth study of the thermal decay of photo-created Sb 2b ions, which was in part motivated by the recently found optical sensitizing of photorefraction in Sn 2 P 2 S 6 :Sb used for dynamic holography. 3, 4 Pre-illumination in the visible increases the photorefractive gain in beam coupling measurements; the enhancement is transient, and at room temperature it disappears in tens of seconds after removal of the pre-illumination source. Elucidation of the decay character of the photo-created Sb 2b ions in this paper was anticipated to answer the question whether Sb 2b ions are the "secondary photorefractive centers" in Sn 2 P 2 S 6 :Sb . 3 The Sn 2 P 2 S 6 :Sb crystals were grown at the Uzhgorod National University, Ukraine, by the chemical vapor transport method. ...

... It is this creation of a "donor density" that provides the means for optical sensitizing of photorefraction in Sn 2 P 2 S 6 :Sb. 3, 4 ...

Hyperbolic decay of photo-created Sb 2+ ions in Sn 2 P 2 S 6 :Sb crystals detected with electron paramagnetic resonance

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Jan 2017 · APPL PHYS LETT

S. A. Basun . Larry E. Halliburton . D. R. Evans

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... Sn 2 P 2 S 6 is a semiconductor ferroelectric with high electro-optic coefficients which make it promising for its application as a photorefractive material, whose properties can be improved by the addition of different dopants [1][2][3], specially with small percentages of Te and Sb [4][5] [6]. Besides, from the point of view of ferroelectrics specially attractive to study in depth the physical mechanisms responsible for those varied phase transitions. One tool suited to that end is the study of the critical behavior of the transitions. ...

... In order to carry out this kind of study, a high resolution ac photopyroelectric calorimetry technique in the standard back detection configuration has been employed. [18,19] In particular, its usefulness has been well demonstrated in the thermal diffusivity study of Sn(Pb) 2 P 2 S(Se) 6 ferroelectric mixed compounds [8][9][10][11]. In this setup, the front surface of the sample under study is illuminated by a modulated low power laser beam, while the rear surface is in thermal contact with a LiTaO 3 pyroelectric sensor with metallic electrodes on both faces. ...

Influence of dopants on the thermal properties and critical behavior of the ferroelectric transition in uniaxial ferroelectric Sn2P2S6

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Sep 2016 · J Mater Sci

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... Although basic studies of the lattice dynamics associated with the paraelectric-to-ferroelectric phase transition near 64 C are continuing, 1-5 much of the recent interest in this material has been focused on its photorefractive applications in the red and near-infrared spectral regions. [6] [7][8][9][10][11][12][13][14][15][16][17][18][19][20][21][22][23] Fast response times and high gain factors make SPS a potentially attractive photorefractive material, but little detailed information is presently available about the optically active point defects in these crystals. With the goal of optimizing the

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Article	
Linear a	nd nonlinear properties of ultrasmall CuInS 2 x Se 2(1- x) particles in a glass matrix
January	1996 · Optical Materials
K.V.	Yumashev · V. P. Mikhailov · P. V. Prokoshin · [] · N. P. Solovej
We have in the ran depende techniqu Read mor	e studied nonlinear optical properties of CuInS2xSe2(1-x)-doped silicate glasses. The CuInS2xSe(1-x) particles had the size nge of 10–30 nm and structured in the glass matrix as fractal aggregates. The transient change of absorption and intensity- nt transmission under picosecond excitation have been investigated by means of pump-and-probe and single-beam es, [Show full abstract]

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