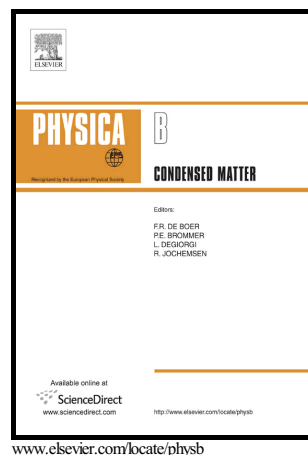


Author's Accepted Manuscript

Investigation on the growth, spectral, lifetime, mechanical analysis and third-order nonlinear optical studies of L-Methionine admixed D-Mandelic acid single crystal: a promising material for nonlinear optical applications

P. Jayaprakash, P. Sangeetha, C. Rathika Thaya Kumari, M. Lydia Caroline



PII: S0921-4526(17)30235-1
DOI: <http://dx.doi.org/10.1016/j.physb.2017.05.017>
Reference: PHYSB309941

To appear in: *Physica B: Physics of Condensed Matter*

Received date: 12 April 2017
Revised date: 8 May 2017
Accepted date: 9 May 2017

Cite this article as: P. Jayaprakash, P. Sangeetha, C. Rathika Thaya Kumari and M. Lydia Caroline, Investigation on the growth, spectral, lifetime, mechanical analysis and third-order nonlinear optical studies of L-Methionine admixed D-Mandelic acid single crystal: a promising material for nonlinear optical applications, *Physica B: Physics of Condensed Matter* <http://dx.doi.org/10.1016/j.physb.2017.05.017>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting galley proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Investigation on the growth, spectral, lifetime, mechanical analysis and third-order nonlinear optical studies of L-Methionine admixed D-Mandelic acid single crystal: a promising material for nonlinear optical applications

P. Jayaprakash, P. Sangeetha, C. Rathika Thaya Kumari, M. Lydia Caroline*

^aDepartment of Physics, Arignar Anna Govt. Arts College, Cheyyar - 604 407, TamilNadu, India

***Corresponding author.** Tel: +91 9841720216; Fax: +0091 04182 222286.

lydiacaroline2006@yahoo.co.in

Abstract

A nonlinear optical bulk single crystal of L-methionine admixed D-mandelic acid (LMDMA) has been grown by slow solvent evaporation technique using water as solvent at ambient temperature. The crystallized LMDMA single crystal subjected to single crystal X-ray diffraction study confirmed monoclinic system with the acentric space group $P2_1$. The FTIR analysis gives information about the modes of vibration in the various functional groups present in LMDMA. The UV-visible spectral analysis assessed the optical quality and linear optical properties such as extinction coefficient, reflectance, refractive index and from which optical conductivity and electric susceptibility were also evaluated. The frequency doubling efficiency was observed using Kurtz Perry powder technique. A multiple shot laser was utilized to evaluate the laser damage threshold energy of the crystal. Discrete thermodynamic properties were carried out by TG-DTA studies. The hardness, Meyer's index, yield strength, elastic stiffness constant, Knoop hardness, fracture toughness and brittleness index were analysed using Vickers

Download English Version:

<https://daneshyari.com/en/article/5491961>

Download Persian Version:

<https://daneshyari.com/article/5491961>

[Daneshyari.com](https://daneshyari.com)