

Effect of Co-60 gamma radiation on Optical, Dielectric and Mechanical properties of Strontium L-Ascorbate Hexahydrate NLO crystal

M.S. Dileep, H.M. Suresh Kumar



PII: S0969-806X(16)30805-2
DOI: <https://doi.org/10.1016/j.radphyschem.2017.12.021>
Reference: RPC7727

To appear in: *Radiation Physics and Chemistry*

Received date: 23 December 2016
Revised date: 18 August 2017
Accepted date: 24 December 2017

Cite this article as: M.S. Dileep and H.M. Suresh Kumar, Effect of Co-60 gamma radiation on Optical, Dielectric and Mechanical properties of Strontium L-Ascorbate Hexahydrate NLO crystal, *Radiation Physics and Chemistry*, <https://doi.org/10.1016/j.radphyschem.2017.12.021>

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.

Effect of Co-60 gamma radiation on Optical, Dielectric and Mechanical properties of Strontium L-Ascorbate Hexahydrate NLO crystal

Dileep M.S^a, Suresh Kumar H. M^{b*}

^a Department of Physics, Sir M. Visvesvaraya Institute of Technology, Bengaluru-562157, India

^b Department of Physics, Siddaganga Institute of Technology, Tumakuru-572103, India

* Corresponding author: Suresh Kumar H.M., Department of Physics, Siddaganga Institute of Technology, Tumkur-572 103, India, E-mail address: sureshkumarhm@rediffmail.com

Tel.: +91 9483692842, +91 9341243791, Fax: +91-816-2282994

ABSTRACT

A potentially useful nonlinear optical semi-organic single crystal of strontium L-ascorbate hexahydrate (SLAH) was grown by solution growth slow evaporation technique at room temperature. The grown crystal is semi transparent, yellowish in color with monoclinic crystal system having space group $P2_1$ and is stable up to 198 °C. Further, SLAH crystals were irradiated with gamma rays produced by ^{60}Co with different doses of 10 KGy, 30 KGy and 50 KGy at room temperature and then studied the effect of gamma-rays on dielectric properties, optical absorption, microhardness and SHG efficiency. The absorption study reveals that the absorbance of the grown crystal is appeared to be low throughout the visible region with a lower cutoff wavelength of 277 nm and these parameters are not affected upon gamma irradiation. The luminescence intensity of the crystal is also not affected by the irradiation. There is noticeable changes were observed in dielectric properties and hardness of the materials for different doses of gamma irradiation. The second harmonic generation (SHG) efficiency of the grown crystal is 0.54 times that of the KDP crystal and is decreased moderately by increasing the dosage of gamma irradiation.

Download English Version:

<https://daneshyari.com/en/article/8251553>

Download Persian Version:

<https://daneshyari.com/article/8251553>

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