This book deals with the confined energy of a two electron in a spherical quantum dot. The interaction energy and its effect on confined energy are also been discussed. The singlet and triplet state of electron also analyzed. The external perturbation effects on hydrostatic pressure and temperture are also been studied. One can get the idea of finding energy of two electron quantum using perturbation method.



A. Rejo Jeice



A. Rejo Jeice has authored or Co-authored more than 17 research papers in Quantum Mechanics. He has 10 years of teaching and research experience. His recent research focuses on Nanostructures and Quantum devices. At present he is working as Assistant Professor in Physics, in Annai Velankanni College, Tholayavattam, TamilNadu, India.

# Confined Energy Of Two Electrons In a Spherical Quantum dot



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CONFINED ENERGY OF TWO ELECTRONS IN A SPHERICAL QUANTUM DOT AND THEIR CORRELATION EFFECTS WITH

EXTERNAL PERTURBATIONS

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**Abstract** 

In the present chapter the confined energy of two electrons in a

spherical QD and its interaction effects with external perturbations are

investigated. The perturbation method is used to find the confined energy and

interaction energy. The combined effect of hydrostatic pressure and

temperature on interaction energy in a triplet state of two electron spherical

quantum dot is computed. All the calculations have been carried out with

finite models. The confined energy and its interaction effects of singlet and

triplet state of GaAs/GaxIn1-xSb are discussed. A brief introduction about

quantum dot also been given.

**Key Words:** Spherical quantum dot. Square well confinement. Correlation

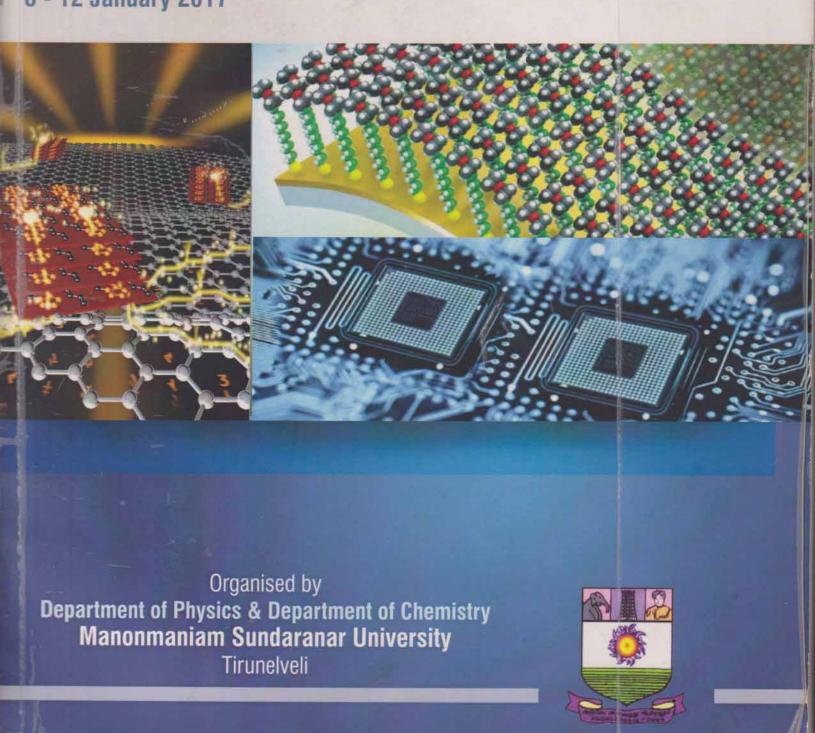
energies. Singlet and Triplet states. Total Confined energies

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# A functional deep UV nonlinear optical crystal Sulphamic acid admixtured Phosphoric acid (SAPA): Synthesis, growth and Characterization

Y.Samson<sup>1,3</sup>, S. Anbarasu<sup>2</sup>, M. Ambrose Rajkumar<sup>3</sup> D. Prema Anand<sup>3\*</sup>

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### Abstract:

An advanced optical functional DUV NLO Sulphamic acid admixtured Phosphoric acid (SAPA) crystal was synthesized and grown from aqueous solution by slow evaporation technique at room temperature. SAPA crystallizes in Tetragonal P. It exhibits a short absorption edge closer to 200 nm in UV spectrum. SHG efficiency is measured as 0.59 times of KDP.

Key-words: SAPA, slow evaporation technique, deep UVNLO, SHG

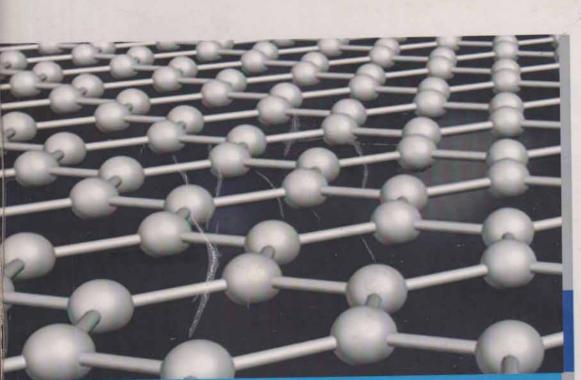
### Introduction:

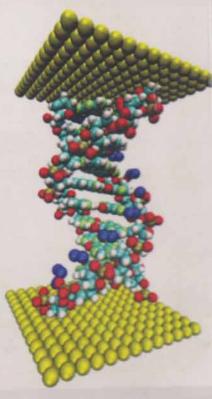
Global concern has been converged on functional nonlinear optical (NLO) materials which charted the path to harvest energy hugely profitable in laser micromachining, photochemistry, photoemission spectroscopy, lithography, fluorescence detection, surface-enhanced Raman scattering, communication, surgery, atto-second pulse generation etc [1,2]. Functional NLO materials are capable of functioning to control and alter electromagnetic radiation in ultraviolet (UV), visible, infrared (IR) spectral region. Their optical character as a function of incident wavelength and frequency depends on inherent properties like structure, thermal, chemical stabilities and on external fields applied [3]. Deep UV (DVU) NLO crystals are optically functioning to transmit the light of wavelengths lesser than 200 nm in UV region by cascaded frequency conversion. They have been fabricated by fusing borates, borate-fluorides, carbonate-fluorides and phosphates with various metal units (alkali, alkaline earth, transition elements). The challenges of decomposing nature of carbonates, hard growth habit and toxicity of berilyium borates, cost effective melt growth techniques were identified. In contrast, phosphate endowed with long chain geometry, good thermal, chemical stabilities, enhanced SHG, easily grown nature circumvent the aforesaid problems. It leverages us to design Sulphamic acid admixture Phosphoric acid (SAPA) optical functional crystal for desired DUV NLO applications.

## Experimental Techniques and Material Characterization:

SAPA was obtained from an aqueous solution containing sulphamic acid admixtured with phosphoric acid in equimolar ratio was stirred for 3 hrs and allowed for slow evaporation at room temperature. Centimeter sized crystal was harvested within 28-30 days. Crystallographic data was collected from Bruker Kappa APEXII Single Crystal X-ray Diffractometer. The crystalline phases were







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# BIOTECHNOLOGY TOWARDS SUSTAINABLE AGRICULTURE AND ENVIRONMENT

# Dr.J.M.SASI PREMILA

Asst.Professor ,Department of Biotechnology

Annai Velankanni College, Tholayavattam.

### Abstract:

Biotechnology is a frontline technologies today being developed and used to understand and manipulate biological molecules for applications in medical, agricultural, industrial and environmental sectors of the national economy. Biotechnology is safe, effective and widely used by more than 18 million farmers around the world. It is a proven tool that has successfully improved crop productivity for growers around the world since 1995, resulting in an abundant and affordable food supply. Various studies have shown the safety of the technology to human beings, animals and the environment. Increasing global food production within existing land area and the use of modern plant breeding methods have enhanced increased production of crops like legumes to improve soil structure, organic matter and fertility. These lead to conservation of bioresources and prevent soil erosion. The aim of this review is to emphasize the importance of Biotechnology towards attaining a safe and sustainable environment for increased global agricultural production.

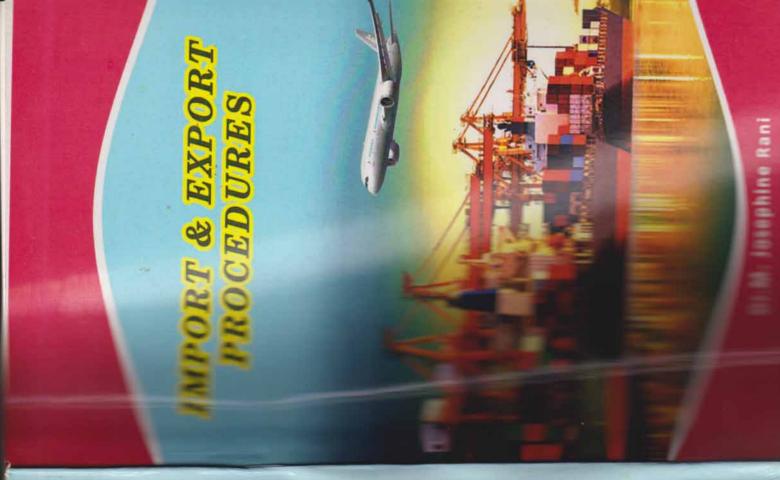
Key words: Biotechnology, Bioresourses, agricultural production,

Introduction:

Biotechnology can be defined as any technological application that uses biological systems, living organisms or derivatives to make or modify products or processes for specific use (UNCBD, 1992). Traditionally, micro-organisms have been deliberately used to produce beverages and fermented foods (Olatunji, 2007). Environmental biotechnology is the application of biotechnology to the study of natural environment. Environmental Biotechnology as the development, use and regulation of

University, Tirunelvell, 6ths than main than ill years teaching experience in the se sell so in Tirunelvell, She has pithinned many articles in various approved research postules who had attended and organical nettons as and in Nadu Open University and Decimal Manie (Ph.D) from Mannimaniam mindaini Manney 17 College, Tholayavallam, who setslined has College, (Autonomous) Palayamballal, Marian of Business Administration (MHA) tiam taini and she had produced signt to this southing Dr. M. Josephine Hant is an Asserting Professor of Commerce, Annal Valentani Master degree in Comments turn at assert a recognition teament Sundarana. International conferences Manonmaniam

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